



Working Towards Water Justice in North Carolina Mobile Home Parks

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Executive Summary

Since 1984, Clean Water for North Carolina has worked towards clean, safe, accessible water for all North Carolinians, protected by empowered, educated citizens and a publicly accountable government and economy. As part of our water justice campaign, we conducted research on water access, water quality, and water affordability issues in mobile home parks across the state.

CWFNC Mobile Home Park Research

Many people across the United States who struggle to find affordable housing turn to mobile homes as less expensive and more available housing options. Unfortunately, living in mobile home parks comes with inherent challenges and vulnerabilities. Many mobile home park residents are essentially trapped because they often do not own the land beneath their mobile homes and may not be able to relocate. As a result, they can be forced to deal with water justice issues there. Clean Water for North Carolina researched these water justice issues across the state. This report was written based on a literature review in addition to insights from our own limited qualitative research.

Water Access

Water access is a crucial human right given that water is such an important aspect of daily life. This section will explain how people get their water and issues with water access in mobile home parks. The source water from which untreated water is drawn has implications for its contamination risks and which drinking water regulations apply. People who rely on wells drink water from the groundwater close to them. Those who rely on municipal systems drink water that has been collected, treated, and transported to them. Public water systems provide drinking water for most North Carolinians and are regulated under the Safe Drinking Water Act. The remainder of people rely on private wells or springs for water, which they must test themselves for water quality. Water shutoffs are a significant problem in mobile home parks,

limiting people's access to necessary supplies of water. Mobile home park residents can lose water access because of water infrastructure problems, nonpayment shutoffs, landlord decisions, extreme weather events, and water shortages.

Water Quality

Water quality is important to safeguard public health. This section will explain threats to water quality, drinking water legislation, and issues with water quality in mobile home parks. The Environmental Protection Agency sets Primary and Secondary Drinking Water Regulations for contaminants based on the Safe Drinking Water Act. These regulations limit contaminants to reduce health risks and ensure that the water is palatable.

The North Carolina Department of Environmental Quality is responsible for implementing federal and state health standards for drinking water. The NC DEQ enforces standards for many contaminants. However, residents in mobile home parks are particularly vulnerable to some types of water contamination: lead, volatile organic compounds, synthetic organic compounds, radium, nitrates, and total coliform bacteria. Certain contaminants are especially dangerous for groups like the elderly, children, and pregnant women.

Every state reports water quality violations to the EPA. The North Carolina Department of Environmental Quality has rules about how the public is notified after water quality violations. Protecting water quality is paramount to preventing health problems for mobile home park residents.

It is important to protect water sources so that the treated water is safer when it reaches mobile home park residents. Some contaminants are not regulated tightly enough, and some are not yet even regulated. This means that contaminants can cause health problems for mobile home park residents even if the laws are enforced. Current drinking water quality laws are not being enforced adequately in North Carolina, meaning that mobile home residents can be exposed to contaminants for longer periods of time.

The law requires that all consumers receive annual water quality reports so that they understand any potential health risks that their water poses. When mobile home park residents

do not receive these reports, they can end up unnecessarily paying for bottled water or drinking tap water and getting sick because of it. They can similarly get sick if they are on private well water and do not test and treat their water well enough.

Many mobile home park residents do not feel able to speak up about their water quality concerns out of fear that they will be evicted. Thus, they remain exposed to potentially harmful or unpalatable water. Many mobile home park residents feel that they need to drink bottled water instead of tap water, but this bottled water often has no better water quality than tap water because of lax regulations under the Food and Drug Administration.

Water Affordability

Prices of water service continue to rise in North Carolina and across the country. With no enforced water affordability metric, this will increasingly become a concern for low income families like those that live in mobile home parks. This section will explore water affordability concerns in North Carolina mobile home parks.

Water bills in mobile home parks are delivered in a variety of ways. In mobile home parks, the variable and complicated nature of water billing methods can mean that people have difficulty understanding their water bills. Some landowners for mobile home parks may create water bills that are not regulated by the North Carolina Utilities Commission as required by law.

Infrastructure problems may cause utilities to increase water bills to compensate for repairs and maintenance. This would affect low income households in mobile homes that might not have the money to pay for these increased bills. Leaks may increase the water bills in mobile home parks. Mobile home park residents who feel they must use bottled water instead of tap water are forced to pay hundreds of times what they normally would for water. Certain groups of people suffer the most when the price of water increases.

CWFNC MHP Research

Mobile Home Parks in North Carolina

Many people across the United States who struggle to find affordable housing turn to mobile homes as less expensive and more available housing options.

Extremely low income populations are defined as those who earn

0-30%

of area median income

Across the country,

71%

of extremely low income renters spend more than 50% of their total income on housing and utilities.

Across the country, there is a

7 million

unit shortage of affordable and available homes for extremely low income renters¹

In North Carolina,

26%

of renter households are extremely low income

In North Carolina,

70%

of extremely low income renters spend more than 50% of their total income on housing and utilities.

In North Carolina, there is a

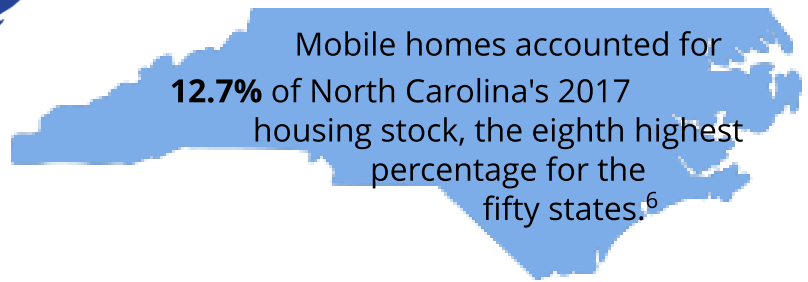
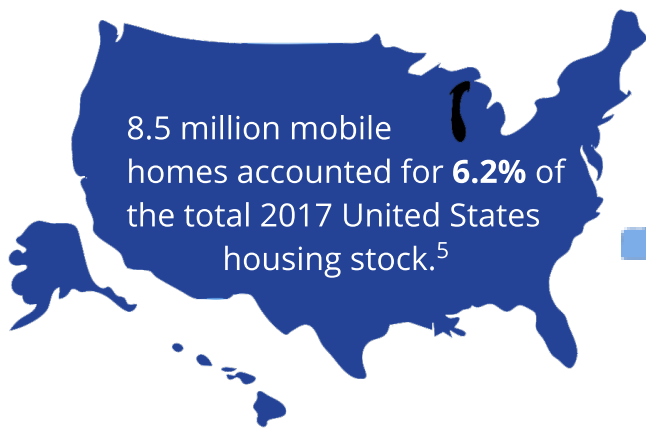
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unit shortage of affordable and available homes for extremely low income renters²

According to the National Low Income Housing Coalition, a North Carolinian working at minimum wage would have to work 78 hours per week to afford a modest one bedroom rental home at fair market rent.³

As a result of widespread housing unaffordability, many are drawn to mobile homes as less expensive and more available housing options. In 2018, manufactured housing units sold for \$78,600 on average, excluding land costs. In comparison, the median sales price for small homes was \$197,000 in 2017.⁴

Mobile home parks are typically the private property of landowners who run them to make profit. Landlords can live on the property and manage mobile home parks directly or live elsewhere and delegate the day-to-day management to a park manager. It is common for



people to own their mobile homes but still rent the land they live on, becoming owner-tenants. 65.4% North Carolinians owned their own mobile homes in 2017, while 34.6% rented them.⁷

Vulnerability of Mobile Home Park Residents

Living in mobile home parks comes with inherent challenges and vulnerabilities.

Rates of income, high school graduation, and home ownership are much lower for those living in mobile homes.⁸ Mobile home residents often have a high proportion of income expended on rent, utilities, and transportation.⁹ They can be trapped in financially risky situations because their homes depreciate over time, and they receive little legal protection or security of investment.

Relocating mobile homes can be a financial burden. Moving mobile homes can cost thousands of dollars, a significant percentage of the mobile home's worth. Those with limited or fixed incomes often do not have that amount of money saved up. Additionally, even if residents can afford to move, their homes can deteriorate or lose value during the process of moving. Some mobile homes are physically incapable of being moved because they are in such disrepair.¹⁰

Many mobile home park residents have less power to control their housing situations. Typically, renters move away if they do not like their landlords, their rents, or their housing situations. However, some mobile home residents cannot afford to move or lose investment in their mobile homes. Thus, many do not want to risk eviction by complaining about high lot rents, rent increases, capricious park management, and high utility costs. Overall, this means that mobile home residents have less leverage in settling disputes or advocating for themselves.¹¹

CWFNC Qualitative Research

Many mobile home park residents are essentially trapped because they often do not own the land beneath their mobile homes and may not be able to relocate. As a result, they can be forced to deal with water justice issues there. Clean Water for North Carolina researched these water justice issues across the state.

CWFNC conducted an extensive literature review about mobile home parks, water justice, water access, water quality, and water affordability. We also designed and conducted a pilot project to do qualitative research in mobile home parks across North Carolina. This helped CWFNC to begin to directly discover water justice issues in the state's mobile home parks.

We initially chose to do research in mobile home parks that had recent lead and copper rule violations as well as mobile home parks that were near our two offices in Durham, NC, and Asheville, NC. Then we expanded the search to include more counties and types of mobile home parks. We also sought to look at mobile home parks relying on privatized water systems like Aqua or Carolina Water for water.

We conducted all of the qualitative interviews in teams of two or three. One interviewer asked the residents questions about their drinking water based on a pre-developed questionnaire centered around water access, water quality, and water affordability. Another interviewer wrote down the answers to these questions and asked follow-up questions. We aimed to conduct about three interviews per mobile home park. In the end, we conducted 2.72 interviews per mobile home park on average.

We visited

37

mobile home parks

- 16 in Buncombe County
- 2 in Catawba County
- 1 in Cleveland County
- 5 in Gaston County
- 3 in Henderson County
- 3 in Mecklenberg County
- 4 in Orange County
- 1 in Rutherford County
- 2 in Transylvania County

We spoke with

101

mobile home park households

- 43 in Buncombe County
- 5 in Catawba County
- 1 in Cleveland County
- 12 in Gaston County
- 12 in Henderson County
- 7 in Mecklenberg County
- 10 in Orange County
- 3 in Rutherford County
- 8 in Transylvania County

Limitations of Research

This report was written based on a literature review in addition to insights from our own limited qualitative research.

CWFNC has conducted broad research on water access, water quality, and water affordability issues in the United States as well as in North Carolina specifically. We also conducted a literature review of mobile home park research. There is limited research about water rights for people specifically living in mobile homes. We hope that this report will add to that body of knowledge.

The qualitative data we collected through mobile home park outreach is limited in its scope, consistency, and quality. This pilot project was never meant to be fully comprehensive. We covered only a limited range of North Carolina mobile home parks due to geographical, practical, and time constraints. Some interviews provided more information than others depending on the interviewee's knowledge, available time, and willingness to be interviewed.

CWFNC used EPA's EJ Screen Tool¹² to calculate the percentages of low income populations, minority populations, and populations with less than high school education within a 0.25-mile radius of each mobile home park that CWFNC visited. We use this proxy to estimate the demographics of the mobile home parks covered in this study. Two mobile home parks are not included in the averages because they did not have enough population in surrounding areas to calculate percentages on EJ Screen.

The percentage of minorities within a 0.25-mile radius of the mobile home parks CWFNC visited was 25.26%, about 10% lower than the state average percentage of minorities. This matches with expected values. All but four of the mobile home parks visited in this pilot project were in Western North Carolina, which has a higher percentage of white people than other parts of the state. Indeed, the average percentage of non-white people in just the counties CWFNC visited was 29% in 2017.¹³ Additionally, a nationwide study of mobile home parks noted that mobile home park residents are much more likely to self-identify as non-Hispanic white than the general population.¹⁴ It is important to note that the minority population percentages for

individual mobile home parks ranged from 0% to 66%. Some had very high minority populations, while others had virtually none.

The percentage of low income populations within a 0.25-mile radius of the mobile home parks CWFNC visited was about 2% higher than the state average percentage. It is important to again note the wide range of low income population percentages. Some mobile home parks had about 70% low income residents, while others had significantly less. The mobile home parks were different in terms of both racial makeups and economic situations.

The percentage of the population with less than high school education within a 0.25-mile radius of the mobile home parks was about 4% higher than the state average percentage. The range was much narrower than that of percent minority population and percent low income population.

	Average percentage within 0.25 mi radius of each mobile home park CWFNC visited	Range of percentages within 0.25 mi radius of each mobile home park CWFNC visited	State average percentage
Percentage of minorities	25.26%	0%-66%	36%
Percentage of low income populations	40.4%	15%-70%	38%
Percentage of population with less than high school education	17.8%	5%-35%	14%

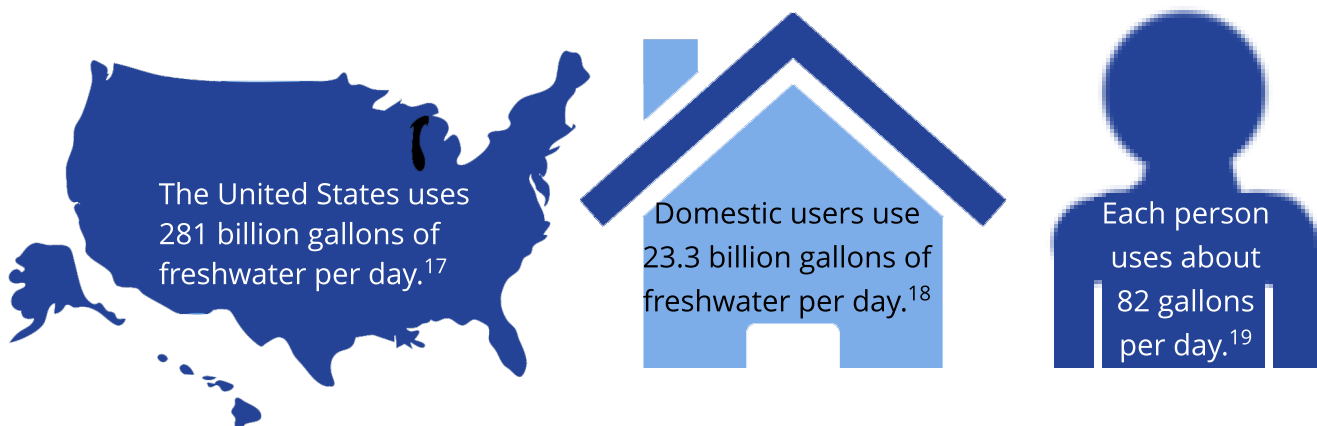
Water Access

Need for Water Access

Water access is a crucial human right given that water is such an important aspect of daily life. This section will explain how people get their water and issues with water access in mobile home parks.

The human right to water and sanitation was officially recognized in 2010 with the UN's Resolution 64/292, which stated that everyone has "the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights."¹⁵ The World Health Organization also notes that, "Water safety and quality are fundamental to human development and well-being. Providing access to safe water is one of the most effective instruments in promoting health and reducing poverty."¹⁶ Both international organizations emphasize that the right to water access should be protected so that people can live fulfilled, productive lives. Indeed, water access is a crucial part of daily life.

Because water is so important, water infrastructure has been put in place throughout the country to ensure that people have access. In some places, however, Americans still do not have consistent access to adequate water in their homes. There is no federal statute or policy in the United States that ensures that residents have access to water.



Water Sources

The source water from which untreated drinking water is drawn has implications for its contamination risks and which drinking water regulations apply.

Water can be groundwater, surface water, or a combination of the two. Surface water comes from sources like lakes and rivers. Groundwater comes from sources like aquifers or wells. Surface water is typically more at risk of contamination because it is more directly exposed to natural and human activities whereas groundwater has to filter through rock before it reaches aquifers. However, groundwater can still be contaminated. In 2015, surface water sources supplied 61% of the freshwater from public supply sources, with groundwater sources supplying the rest.²⁰ However, a study of California mobile homes showed that they were 40% more likely than other housing types to rely on groundwater.²¹ This may be a trend in North Carolina as well. 62% of the mobile home parks CWFNC visited during our outreach relied on wells for their water.

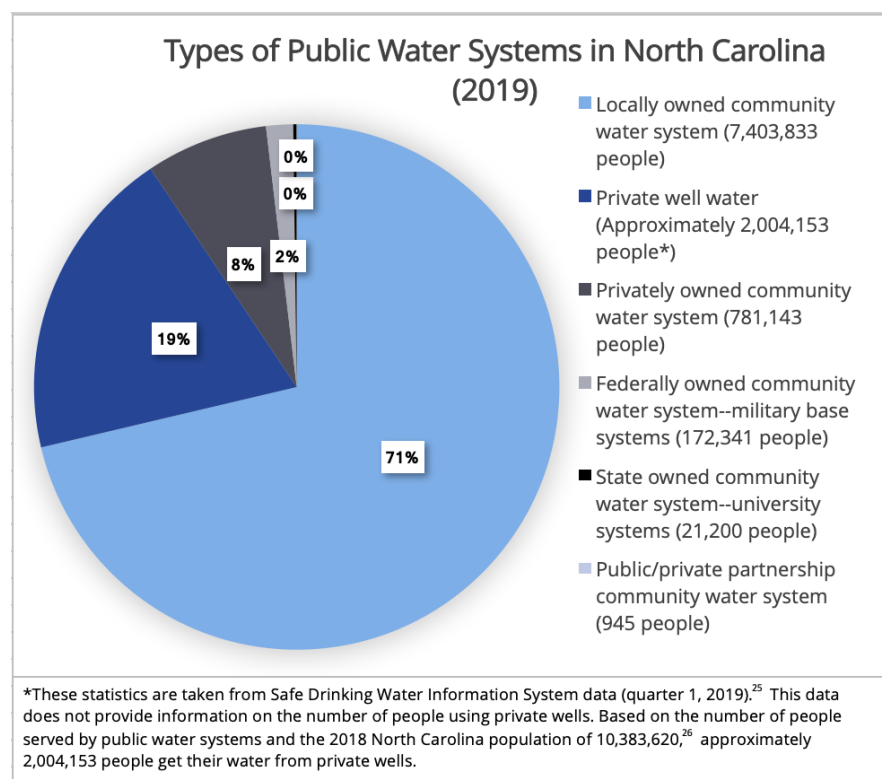
The source of drinking water also has implications for the drinking water regulations that apply. For example, those that get their drinking water from groundwater in private wells or from public water systems serving 25 people or fewer are not protected by Safe Drinking Water Act regulations. It is estimated that more than 13 million households rely on private wells for drinking water.²² These well owners are responsible for testing their own water quality.

Water Distribution

People who rely on wells drink water from the groundwater close to them. Those who rely on municipal systems drink water that has been collected, treated, and transported to them. Public water systems provide drinking water for most North Carolinians and are regulated under the Safe Drinking Water Act. The remainder of people rely on private wells or springs for water, which they must test themselves for water quality.

Though people who use well water are more likely to know where their drinking water is coming from, those that receive water from municipalities may not be aware of how their water gets from its source to their faucet. Essentially, water is collected from groundwater and surface water sources and transported to water treatment plants, which use various methods of water treatment like filtration, disinfection, sedimentation, and corrosion control. These treatment processes are guided by the Safe Drinking Water Act to make the water safe to drink according to federal and state standards.²³ This water is then distributed through pipe systems to people's homes.

Public water systems are responsible for ensuring that water is reliably treated and distributed to consumers. As defined by the Safe Drinking Water Act, public water systems regularly provide drinking water to more than 25 people or have at least 15 service connections.²⁴ These water systems are classified based on the source of water, the number of people they serve, and whether they serve the



same customers permanently or only temporarily. Safe Drinking Water Act regulations only apply to public water systems. Private wells must be privately monitored. Well water is only regulated when it is the water source for public water systems. The North Carolina Department of Environmental Quality is responsible for enforcing the water standards for public water systems.

In 2015, public supply water systems provided 282 million people (87% of the U.S. population) with potable drinking water.²⁷ In North Carolina, there are 5,432 public water systems. 1,998 of them are community water systems that provide drinking water directly to people's homes.²⁸ The Safe Drinking Water Inventory Search tool lists the numbers and types of public water systems in North Carolina.

Some mobile home parks are connected to city or regional water systems. In other cases, mobile home park owners manage their own public water systems, especially if the mobile homes depend on well water.

Water Access Challenges in MHPs

Water shutoffs are a significant problem in mobile home parks, limiting people's access to necessary supplies of water.

Many of the people CWFNC spoke with during our outreach in mobile home parks said that their water had been shut off for hours or even days. For some, these shutoffs were one-time events because of water main breaks elsewhere. For others, these shutoffs were periodic because the systems were in constant need of maintenance. Some people did not even know why their water was shut off and received no notice about it beforehand. They reported that these periods without water seriously disrupted their lives. Residents had to adjust their routines because they could shower, go to the bathroom, or drink tap water.

Those living in North Carolina mobile home parks may be more vulnerable to water shutoffs than other people. In a study of California mobile homes, mobile home park systems were three times more likely to experience a water service interruption and four times more likely to experience a significant service shutoff than other housing unit types.²⁹ In a nationwide study, ownership of mobile homes was associated with a 40% reduction in the probability of a water service interruption compared to mobile home renters.³⁰

Water Infrastructure Challenges

Water infrastructure problems and repairs cause many water shutoffs in mobile home parks.

Water infrastructure is difficult and expensive to maintain. Every year, 240,000 water mains in the United States break due to poorly maintained water lines.³¹ The American Society of Civil Engineers gave North Carolina's drinking water infrastructure a C+ rating with the United States overall receiving a D rating.³² Because water utilities and states often do not have enough money to make needed repairs, upgrades are delayed, increasing the risk of catastrophic water infrastructure failure.

One of the reasons that water infrastructure cannot be appropriately maintained is the

lack of industry professionals available to fix problems. In 2014, a study reported that one third of water sector employees were eligible for retirement. Workforce replacement needs exceeded the 23% national replacement need of the total workforce.³³ Additionally, smaller systems in economically distressed areas have more difficulty attracting experienced workers.



Dozens of mobile home park households that CWFNC spoke with mentioned that they had experienced water shutoffs because of maintenance on parts of their water system.

Nonpayment Shutoffs

Low income residents living in mobile home parks are vulnerable to nonpayment shutoffs if they cannot afford to pay their utility bills.

Water shutoffs can also occur because of nonpayment. There are no national standards to protect residents against water shutoffs due to nonpayment.³⁴ In a nationwide study of large water systems, the average water utility shut off 5% of households for nonpayment in 2016.³⁵ More than half a million households were disconnected for unpaid bills in 2016.³⁶ Some cities routinely have nonpayment shutoffs. Between 2014 and 2017, water was shut off for 50,000 delinquent households in Detroit, Michigan.³⁷

42% of responding North Carolina utilities reported that they routinely have 1-2% of customers cut off because of nonpayment. 31% of these utilities said they have 2-5% of customers cut off from water.³⁸ People living in mobile home parks may be more vulnerable to nonpayment water shutoffs because many have fixed or low incomes.

Landlord Decisions

Sometimes landlord decisions can prevent their tenants from having water access.

Landlords have power over water access in their mobile home parks. News accounts also show that a Clyde trailer park that was cut off from water for a month because the landlord did

not pay the total water bill to the district. Community members were unable to use water even though water was included in rent and they had paid the landlord for it.³⁹

Though landlords are often in control of the public water systems that provide residents with drinking water, these landlords often live elsewhere or even out of state. Some residents we spoke with mentioned that they could not get in contact with their landlords to ask questions about their water. Results from one study imply that landlords may affect water shutoff rates. California mobile homes located in mobile home parks were twice as likely as residents of standalone mobile homes to experience water service interruption.⁴⁰



One resident reported that his landlord refused to connect his mobile home park to water for 28 days because of a dispute during the auction of the mobile home he had just moved into.

Extreme Weather Events

Extreme weather events like hurricanes can damage mobile home parks and drinking water infrastructure, preventing people from being able to access water.

Mobile homes tend to be more structurally and geographically vulnerable to extreme weather events. For example, one study found that people in the Southeast are 15-20 times more likely to be killed by tornadoes if they live in a mobile home compared to a permanent home.⁴¹ 86.7% of the North Carolina tornado fatalities between 1996 and 2007 were people in mobile homes.⁴²

Hurricanes are more destructive for people in mobile homes because they cannot withstand the winds and pelting rain. Mobile home park residents can be more exposed to flooding risks because they tend to live in lower elevation areas and have less resources to prepare for storms. One study of Pitt County, North Carolina, found that a higher proportion of mobile homes were found in flood zones relative to other housing types. They are more than twice as likely to be located in the 100-year flood zone as single-family housing.⁴³ People living in mobile homes can thus experience more material losses and more damage to their homes

during extreme weather.

Additionally, extreme weather can cause significant damage to drinking water infrastructure and may interrupt service. People often must use bottled water or alternative sources of water until drinking water infrastructure can be fixed and quality restored.⁴⁴

After Hurricane Florence, many water and sewer systems in Florence disaster areas needed significant help dealing with the damage, especially in areas where people leaving meant fewer ratepayers to fund infrastructure fixes.⁴⁵ At the worst point of Hurricane Florence, 43 water systems were not producing water with four operating only on stored water. One week after the storm, 16 water systems were not producing water. Two weeks after the storm, two systems still were not producing water.

There were many use restrictions during the hurricane as well. At one point, 20 systems were out of water, one told users not to use the water, two had system-wide boil water notices, one had a partial system water notice, 62 had system-wide boil water advisories, 10 had partial system boil water advisories, and 31 had other use restrictions.⁴⁶

After Hurricane Maria, almost half of the 237 small, independent water systems surveyed in Puerto Rico noted that there was significant deterioration in operational capacity months after the storm in November and December 2017. Some of them were unable to deliver water at all. At least 37 sites did not have the proper supplies to treat water, and others sustained significant damage or were inaccessible because of debris.⁴⁷

Studies find that hurricanes are likely to become more intense with large peak wind speeds and heavier precipitation in the future.⁴⁸



Three households told CWFNC that they had experienced water shutoffs as a result of weather. Multiple people on community well water reported that sediments often contaminated their water after heavy rains.

Water Shortages

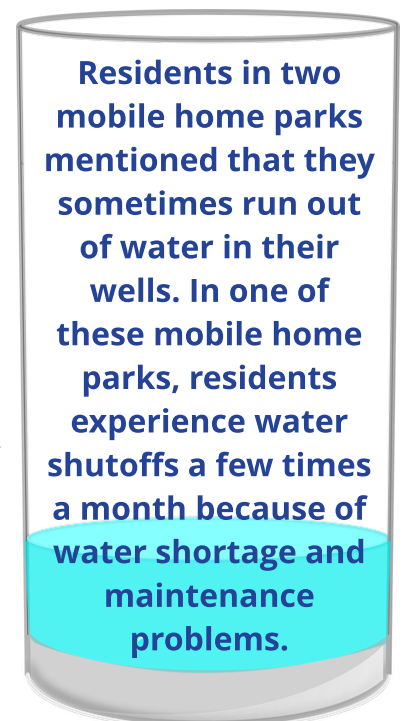
In some areas, there are regional water shortages, which can impact mobile home residents' abilities to access water.

In some areas, water demand increases unsustainably due to population changes or other factors, especially considering climate change's effects on the hydrological cycle. Groundwater depletion is becoming recognized as a serious problem that threatens the sustainability of water systems. Groundwater depletion can have negative impacts on water supply, land subsidence, reductions in surface water flows, and more. Much of the storage loss cannot be easily recovered.⁴⁹

Drinking water systems in drought-prone areas may not always be able to provide adequate water, especially in areas reliant on well water.⁵⁰ 48% of people nationwide surveyed said that they were very concerned about having enough water to sustain their communities if there was a drought.⁵¹

North Carolina had severe water shortages in 2007 with drought in all 100 counties, 98 of which were in exceptional, extreme, or severe drought by September. 80 public water systems imposed mandatory or voluntary water use restrictions, and non-essential water use restrictions were imposed by the state for every county east of I-95. The governor also increasingly called for voluntary water conservation because reserves were running low.⁵²

This is just one example of a water shortage that affected people across the state. With climate change, these kinds of water shortages could become more common. These shortages would have a disproportionate impact on many mobile home park residents.

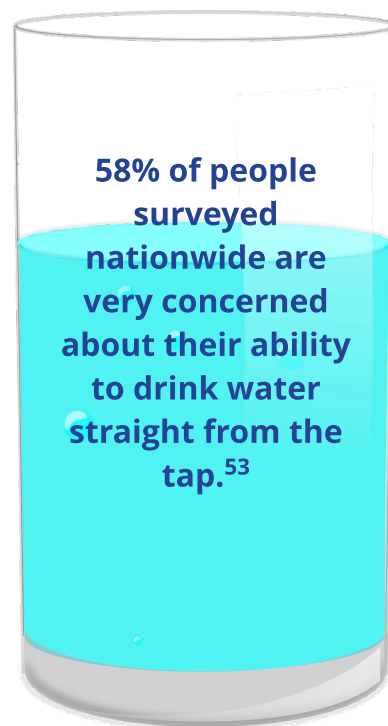


Water Quality

Need for Water Quality

Water quality is important to safeguard public health. This section will explain threats to water quality, drinking water legislation, and issues with water quality in mobile home parks.

Advances in water management and sanitation have improved water quality and reduced waterborne disease in the United States. Still, there are many threats to drinking water quality that threaten access to safe drinking water and could cause serious health impacts. Sources of contamination including things like sewage, animal waste, fertilizers, manufacturing processes, and naturally occurring chemicals and minerals. Runoff from storms can make this contamination more likely. Water treatment facilities can leave disinfection byproducts and perchlorate in the water. Additionally, poorly maintained infrastructure can add another venue for contamination: the pipes. Some contaminants may be especially dangerous for groups such as children, pregnant women, the elderly, and immune-compromised individuals.



Federal Water Quality Standards

The Environmental Protection Agency sets Primary and Secondary Drinking Water Regulations for contaminants based on the Safe Drinking Water Act. These regulations limit contaminants to reduce health risks and ensure that the water is palatable.

The 1974 Safe Drinking Water Act gives the Environmental Protection Agency (EPA) the responsibility to set enforceable standards for drinking water that all owners or operators of public water systems must follow. These standards are known as National Primary Drinking

Water Regulations. The EPA has set standards and regulations for over 90 contaminants in public drinking water.⁵⁴

Setting National Primary Drinking Water Standards

- **Choosing Contaminants to Regulate:** The EPA sets drinking water standards for contaminants that they have determined cause adverse health effects and occur in public water systems at levels of concern. Every five years, they must publish a list of unregulated contaminants and decide whether these should be regulated based on the best available public health information. Priority is given to those contaminants that affect at-risk populations like pregnant women, children, and the elderly.⁵⁵
- **Setting Maximum Contaminant Level Goals:** The EPA determines the contaminant levels at which no known or anticipated adverse health effects will occur based on scientific research.⁵⁶
- **Setting Maximum Contaminant Levels:** The EPA then sets the enforceable maximum contaminant levels, which are as close to the maximum contaminant level goals as possible taking into account economic and technological feasibility. They also determine the best treatment techniques for different size categories of public water systems: 25-500 people, 500-3,300 people, and 3,300 to 10,000 people.⁵⁷
- **Revising Drinking Water Standards:** No less than every six years, the EPA is required to review and revise the national primary drinking water regulations.⁵⁸

National Secondary Drinking Water Regulations

The EPA has also established National Secondary Drinking Water Regulations and maximum contaminant levels for fifteen contaminants, though these are not federally enforceable except for fluoride. These contaminants cause color, taste, and odor problems as opposed to health problems. They include sediment, manganese, and iron.⁵⁹ North Carolina has not chosen to enforce these standards, though secondary pollutants can still cause problems for residents. For example, dissolved iron can stain laundry.⁶⁰

Water Standard Enforcement Responsibility

The North Carolina Department of Environmental Quality is responsible for implementing federal and state health standards for drinking water.

Under the Safe Drinking Water Act, states can apply for and receive primacy, which means that they are responsible for implementing the federal health standards for drinking water as well as managing drinking water protection under emergency circumstances like floods and hurricanes.⁶¹ States can also enforce additional requirements.

Three groups have the authority to establish laws, policies, and rules about drinking water quality in North Carolina. The EPA determines federal standards. The appointed members of the Environmental Management Commission adopt rules to protect and preserve North Carolina's water and air resources.⁶² The North Carolina General Assembly is the state's legislative body that can create new standards. The NC DEQ's Division of Water Resources administers the resulting laws, policies, and rules.

The Division of Water Resources is divided into five sections:⁶³

1. The **Public Water Supply Section** regulates public water systems within North Carolina under the statutory authority of G.S. 130A Article 10, the North Carolina Drinking Water Act.
2. The **Water Planning Section** develops standards, rules, and management strategies to protect water quality. They also provide guidance to local water systems.
3. The **Water Quality Permitting Section** implements federal and state permitting programs for point source wastewater treatment and develops the Department of Water Resource's emergency response plans for events like sewage system overflows, hurricanes, and industrial explosions.
4. The **Water Quality Regional Operations Sections** protect North Carolina's surface water and groundwater. They are also responsible for groundwater well permitting and compliance.
5. The **Water Sciences Section** provides the scientific and technical support needed to manage water quality throughout North Carolina

Key Contaminants

The NC DEQ enforces standards for many contaminants under the Safe Drinking Water Act. However, residents in mobile home parks are particularly vulnerable to some types of water contamination: lead, volatile organic compounds, synthetic organic compounds, radium, nitrates, and total coliform bacteria. Certain contaminants are especially dangerous for groups like the elderly, children, and pregnant women.

Lead



Contamination Source

6-10 million service lines across the United States are at least partially made out of lead.⁶⁴ This lead can enter drinking water when lead pipes, faucets, and fixtures corrode. Lead pipes are more likely to be found in homes built before 1986.⁶⁵ 53.5% of the mobile homes in North Carolina were built before 1989,⁶⁶ which means that mobile home residents can be exposed to lead.



Health Risks

There is no completely safe level of lead. Young children and infants are very vulnerable to low lead levels, which can cause nervous system damage, learning disabilities, slowed growth, and anemia. Adults are at risk of increased blood pressure and kidney problems. Lead can also cause premature birth and slow growth of fetuses if pregnant women are exposed.⁶⁷



Regulating Lead

The Lead and Copper Rule requires water systems to use a specific treatment technique to control the water's corrosiveness so that it does not corrode pipes containing lead or copper. The rule also requires public water systems to sample water and take action if more than 10% of samples exceed the action level of 15 parts per billion.⁶⁸

Volatile Organic Compounds (VOCs)



Contamination Source

Volatile organic compounds are chemicals found in many commercial and household products like gasoline, diesel fuel, cleaners, lotions, and paints. They are also used for manufacturing processes. Many are persistent once they have dissolved into groundwater. The most common VOCs in drinking water are solvents (used as degreasers and cleaning agents) and gasoline compounds. Leaking underground gasoline storage tanks are a common source of VOCs in groundwater.⁶⁹



Health Risks

The 21 VOCs regulated by the EPA have varying health effects. Exposure to volatile organic compounds can result in things like cancer and problems with the cardiovascular, immune, and nervous systems.⁷⁰



Regulating VOCs

The Chemical Contaminant Rules sets maximum contaminant levels for over 65 contaminants including volatile organic contaminants. For known cancer-causing contaminants, the MCLGs are set at zero because any exposure could increase the risk of cancer.⁷¹

Synthetic Organic Compounds (SOCs)



Contamination Source

Synthetic organic compounds are manmade chemicals created for use in things like pharmaceuticals, personal care products, flame retardants, and pesticides. Point contamination sources include landfills, CAFOs, industrial sites, and leaking septic tanks.⁷²



Health Risks

The 34 SOCs regulated by the EPA have varying health effects. Exposure can lead to things like cancers, developmental defects, reproductive difficulties, and liver and kidney problems.⁷³



Regulating SOCs

The Chemical Contaminant Rules sets maximum contaminant levels for over 65 contaminants including synthetic organic contaminants. For known cancer-causing contaminants, the MCLGs are set at zero because any exposure could increase the risk of cancer.⁷⁴

Radium



Contamination Source

Radium is a naturally occurring radioactive metal that is found at trace levels in almost all rocks, soil, and water. In areas where the concentration of radium is higher in rocks and soil, groundwater can gain a high radium content.⁷⁵ Those that rely on wells for drinking water are vulnerable to radium.



Health Risks

Low level exposure is not harmful. However, chronic exposure to high levels of radium can cause a higher risk of bone, liver, and breast cancer.⁷⁶



Regulating Radium

The Radionuclides Rule sets maximum contaminant limits for beta/photon emitters, gross alpha particles, combined radium 226/228, and uranium. It also describes the required monitoring for these substances.⁷⁷

Nitrate



Contamination Source

Nitrate is largely used as fertilizer on agricultural fields. This nitrate can run off into waterways. Additionally, nitrate leaking from septic tanks or overflowing from concentrated animal feeding operations can get into drinking water.⁷⁸



Health Risks

Infants under the age of six months that drink water contaminated with high concentrations of nitrate can become seriously ill with shortness of breath and blue baby syndrome. Infants can die if not treated.⁷⁹



Regulating Nitrate

The Safe Drinking Water Act sets a maximum contaminant limit of 10 ppm for nitrate in drinking water.⁸⁰

Total Coliform Bacteria



Contamination Source

Total coliform bacteria are separated into two main groups, fecal coliform and E. coli. They are used as indicators for potentially harmful pathogens (bacteria, parasites, and viruses) that are found in human and animal waste. If total coliform bacteria are present in water, it means that there may be contamination from human or animal waste.⁸¹



Health Risks

Total coliform bacteria are generally not harmful by themselves. They are indicators for other pathogens that could pose health risks. Thus, if coliform bacteria are present in drinking water, risk of water-borne illnesses increase.⁸²



Regulating Total Coliform Bacteria

The Revised Total Coliform Rule sets maximum contaminant levels, treatment technique requirements, and monitoring requirements to prevent exposure to harmful pathogens.⁸³

Water Quality Violations

Every state reports water quality violations in six categories to the EPA.⁸⁴

- 1. Monitoring violations:** Monitoring violations occur when public water systems fail to conduct regular monitoring or to submit the monitoring results on time.
- 2. Consumer notification violations:** Consumer notification violations occur when public water systems do not deliver consumer confidence reports to their customers containing information about the source of water, any contaminants found, and compliance with drinking water regulations.
- 3. Maximum contaminant level violations:** MCL violations occur when contaminants are detected at higher levels than the federally enforceable standards.
- 4. Maximum residual disinfectant level violations:** The EPA sets national limits on residual disinfectant levels in drinking water to reduce exposure to substances formed after public water systems add chemical disinfectants during water treatment processes. MRDL violations occur when disinfectants are found at higher levels than the federally enforceable standards.
- 5. Treatment technique violations:** TT violations occur when public water systems do not use the proper methods to control unacceptable levels of things like lead, viruses, bacteria, and turbidity.
- 6. Variances and exemptions:** Primacy states can grant variances from primary drinking water regulations if systems are not able to reasonably meet MCLs given the water source conditions even after installing the best available technology and treatment techniques. They can only be given if the variances will not result in unreasonable health risks and must be reviewed every five years. Primacy states can also grant exemptions temporarily permitting public water systems to be noncompliant with MCLs or treatment techniques given compelling factors. Public water systems are supposed to comply with the water standards as quickly as possible but no later than three years after the otherwise applicable compliance date.

Public Notice for Water Quality Violations

The North Carolina Department of Environmental Quality has rules about how the public is notified after water quality violations.

The NC DEQ has set three tier levels for public notification about water quality violations.⁸⁵

- 1. Tier 1 violations** include things like E. coli violations, nitrate violations, and waterborne disease outbreaks. Consumers must be notified within 24 hours by radio, TV, hand delivery, or other methods if needed.
- 2. Tier 2 violations** include things like all maximum contaminant level and treatment technique violations as well as monitoring violations if elevated by the state. Consumers must be notified as soon as possible but within 30 days.
- 3. Tier 3 violations** include special public notices and monitoring or testing violations unless the state elevates them higher. Consumers must be notified within one year of the violation date.

Notices must be provided to all people served not just billing customers. Even if water is included in the rent and people in mobile home parks do not directly buy the water, they must be notified about water quality issues.

Where the public water system serves 30% or more non-English speaking people, notifications in the corresponding language must be included or the system must provide information about how to get a translated copy.⁸⁶

Water Quality Challenges in MHPs

Protecting water quality is paramount to preventing health problems for mobile home park residents.

Many of the mobile home park residents that CWFNC spoke with mentioned that they were concerned the health risks posed by their drinking water and did not want to risk drinking it. Some noted specific water quality concerns, and some noted specific health concerns that they believed were the result of poor drinking water quality.

There are many health problems that can be caused by drinking water quality issues, especially when multiple contaminants affect people at the same time. There are many health problems that can be caused by drinking water quality issues, especially when multiple contaminants affect people at

the same time. Flint, Michigan, is one dramatic example of poor water quality causing a public health crisis. The city did not properly treat its water after it switched water sources. As a result, corrosive water leached lead out of the pipes and into drinking water. The city's water also tested positive for total coliform bacteria and disinfectant byproducts.⁸⁷ A Legionnaires' outbreak caused by the water resulted in 90 illnesses. 12 people died within the first 30 days and are counted as part of the official outbreak death toll. However, 8 of the people who were sick died within a year, and 12 more have died in the years following. The improper water treatment and negligence that followed has had lasting impacts for thousands of Flint residents.⁸⁸

Flint, Michigan, is not the only city where drinking water has caused public health crises. A 2015 CDC study notes that there were 32 drinking water-associated outbreaks between 2011-2012, accounting for at least 431 cases of illness, 102 hospitalizations, and 12 deaths.⁸⁹ This is why safeguarding water quality in North Carolina is so important.



Some mobile home park residents reported stomach problems in their neighborhood that they thought were caused by the poor drinking water quality.

Water Resource Contamination

It is important to protect water sources so that the treated water is safer when it reaches mobile home park residents.

Many things can contaminate drinking water sources, making water treatment more difficult. Rising temperatures from climate change can increase biological activity in drinking water sources that may cause changes in water treatment or temporary bans of usage for that water source.⁹⁰ Additionally, runoff from CAFOs, agricultural operations, industrial sites, coal ash pits, and more can contaminate drinking water sources. In extreme weather events, this runoff can be much worse. During Hurricane Florence, bypasses at 59 wastewater facilities released 49.8 million gallons, and sanitary sewer overflows at 149 systems released 43.3 million gallons. Additionally, CAFO lagoons caused contamination with 6 lagoon breaches, 32 lagoons overtopping, and 10 lagoons inundated.⁹¹

Because the source of water is so important, many source protection programs have been put in place to protect consumers. Pollution prevention is the most effective approach to ensure reliable access to clean drinking water. The Safe Drinking Water Act Amendments of 1996 require that all states establish Source Water Assessment Programs to systematically address issues of public water supply contamination. The North Carolina Department of

Environmental Quality (NC DEQ) runs a voluntary wellhead protection program to safeguard well water by identifying and managing the well's recharge area. They also run a Water Supply

Table 2. SWAP Results Summary

Source Name	Inherent Vulnerability Rating	Contaminant Rating	Susceptibility Rating
WELL #1	Higher	Lower	Moderate
WELL #5	Moderate	Lower	Moderate
WELL #6	Moderate	Lower	Moderate

Watershed Protection program to protect public water systems relying on surface water.⁹² Programs like these safeguard water sources so that the water is cleaner before its withdrawal, treatment, and distribution to consumers.

Shortcomings of Current Water Quality Standards

Some contaminants are not regulated tightly enough, and some are not yet even regulated. This means that contaminants can cause health problems for mobile home park residents even if the laws are enforced.

Many of the currently enforced water quality standards are not protective given the political and economic considerations that dictated their enforceable levels. Additionally, sometimes these standards did not adequately take into consideration the effects of contaminants on certain populations like children and babies. For example, the amount of disinfection byproducts and nitrate in drinking water that were previously deemed acceptable by the government can increase the risk of cancer and may harm developing fetuses.⁹³

While dozens of contaminants are regulated by federal standards, many contaminants remain completely unregulated. Since 1996, the EPA has not set a new standard for a drinking water contaminant under the SDWA.⁹⁴ Some contaminants suspected to be present in drinking water are monitored under the Unregulated Contaminant Monitoring Rule. Every five years, 30 contaminants are monitored in water systems serving over 10,000 people and some small systems. Public water systems must report when these contaminants are over the minimum reporting level set by the EPA. These reporting levels are based on whether laboratories can detect the substance as opposed to any standards that deem contaminants significant or harmful.⁹⁵ Water systems must include this information in consumer confidence reports.

Still, there are many other contaminants that are present in unknown quantities in drinking water because they are not monitored or regulated at all. Many industrial chemicals are unregulated. 600 new chemicals are approved by the EPA each year, but only 30 are monitored every year with the Unregulated Contaminant Monitoring Rule.⁹⁶

Twenty years ago, a study of streams in 30 states showed that pharmaceuticals, hormones, and organic wastewater contaminants were found in 80% of streams sampled.⁹⁷ Since then, it is likely that more of these kinds of contaminants have gotten into surface water, groundwater, and even drinking water. Many potentially dangerous emerging contaminants may

be slipping through the cracks.

Recently, North Carolinians have become concerned about perfluorinated chemicals like PFOS and PFOA, perfluoroalkyl substances (PFAs), and GenX. In 2015, over 200 scientists from around the world collaborated on the Madrid Statement, which highlights the dangers of PFAs and calls on the international community to limit the production and use of these substances as well as to develop safer nonfluorinated alternatives.⁹⁸ Perfluorinated compounds are not included on the unregulated contaminant monitoring rule list.

Water Quality Violations & Lack of Enforcement

Current drinking water quality laws are not being enforced adequately in North Carolina, meaning that mobile home residents can be exposed to contaminants for longer periods of time.

If the treated water violates the health-based standards set by the Safe Drinking Water Act, public water systems can be fined up to \$25,000 per day and must work to fix the problems. Each owner or operator of a water system must also notify the public about a maximum contaminant level or treatment technique violation to explain the violation, the health implications of the violation, the steps that the public water system is taking to correct the problem, and any actions that people should take to protect their health.⁹⁹

In 2015, about 35% of the 52,000 community water systems in the United States reported at least one violation. 77 million people were served by these 18,000 community water systems. Systems serving small communities had a higher rate of health standard violations and a higher percentage of total violations in comparison with larger systems. Systems serving less than 500 people accounted for nearly 70% of all violations and a little over half of all health-based violations.¹⁰⁰

Though there were many water quality violations, there was a significant lack of enforcement across the country. According to an NRDC report analyzing SDWIS data, the EPA or states only took enforcement action for 13.1% of the 80,834 total SDWA violations in 2015. Only 23% returned to compliance by the end of the year, and only 3.3% faced penalties from the state

or federal government. The EPA and states took formal enforcement action in only 21.2% of the 12,137 health-based violations. Only 20.5% returned to compliance by the end of the year, and only 6.7% faced penalties.¹⁰¹

Year	NC Water Quality Violations	% Returned to Compliance at Year End	Public water systems in violation
2014	3,730	40.38%	1,863
2015	4,285	41.45%	2,212
2016	4,601	35.25%	2,081
2017	3,673	37.57%	1,908

North Carolina also struggles to ensure that public water systems return to compliance,¹⁰² although their record of return to compliance is better than the nationwide percentages.

Failure to Provide Annual Public Notifications (Consumer Confidence Reports) About Water Quality

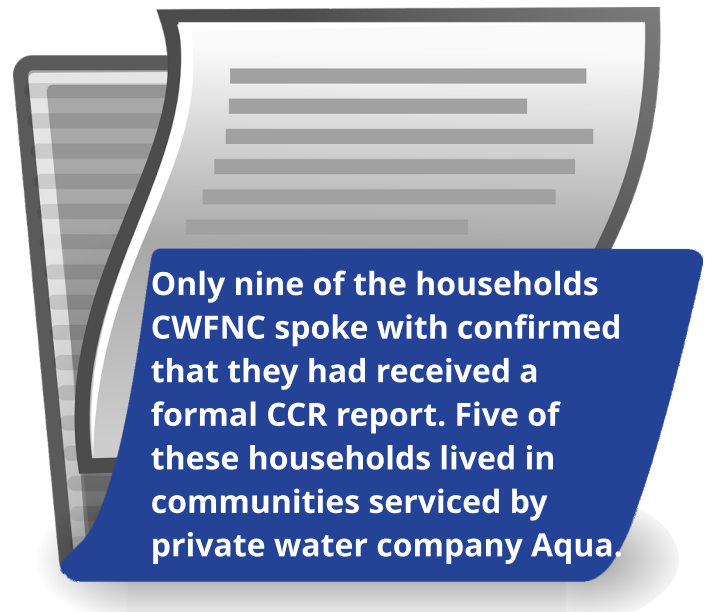
The law requires that all consumers receive annual water quality reports so that they understand any potential health risks that their water poses. When mobile home park residents do not receive these reports, they can end up unnecessarily paying for bottled water or drinking tap water and getting sick because of it.

Public water systems must provide their customers with annual consumer confidence reports (CCRs). These reports include:¹⁰³

- Key definitions
- Information about the source of the drinking water
- Any contamination risks
- Any regulated contaminants found in the drinking water
- Potential health effects of any contaminants at higher concentrations than allowed by the EPA standards
- Actions the system has taken to restore safe drinking water
- Additional sources of information about drinking water
- Contact information

Systems serving 100,000 or more must post the CCR on a publicly accessible website. Systems serving 10,000 or more must distribute the CCR by mail or direct delivery. Systems serving 500-10,000 people must distribute the CCR by mail or direct delivery. Alternatively, they can notify their customers that the CCR will instead be in newspapers and available upon request. Systems serving fewer than 500 people must distribute the CCR by mail or direct delivery or notify their customers that a copy is available upon request.¹⁰⁴

Some mobile home park residents CWFNC spoke with learned about their water quality informally by talking with their landlords. Some knew about measures the landlord was taking to improve the water quality. Others had no idea where their water came from or if the water was ever tested. Many people did not trust the water quality and did not know what was in it.



Some residents may not have received CCRs because their landlords paid the water bills and then included that price in rent, had their renters pay a flat fee for water, or sub-metered to charge renters for individual water bills. If these landlords are managers of their water systems, they are responsible for distributing the CCRs as described above. Even if they are just connected to larger water systems, they do have some responsibilities to spread water quality information. In North Carolina, if a landlord charges for the cost of providing water and knows that the water exceeds a maximum contaminant level, they are required to provide notice of this violation.¹⁰⁵

Private Wells Not Monitored for Contaminants

When mobile homes rely on private wells for water and do not test and treat the water well enough, residents can be exposed to many contaminants that could cause health effects.

While most mobile homes in mobile home parks are on public water systems, individual mobile homes often rely on private well water. These private wells are not regulated by the Safe Drinking Water Act. It is up to home owners to manage their wells appropriately. CWFNC recommends that well owners test their wells every 3-5 years for total coliform bacteria, arsenic, lead, zinc, and nitrates/nitrites.¹⁰⁴ In a study about disease outbreaks from 2011-2012, untreated groundwater was the second highest identified deficiency that led to drinking water-associated outbreaks, though it is worth noting that none of these cases were actually from private wells.¹⁰⁷ Many people who rely on private wells may not understand the potential contaminants or may not have the resources to get their water appropriately tested and treated, which puts them at risk of various health effects.

New private drinking water wells in North Carolina were tested from 2008 to 2009 by local health departments to monitor groundwater quality. 2% exceeded arsenic groundwater standards, 3.3% exceeded lead standards, 7% exceeded zinc standards, 0.9% exceeded nitrate standards, and 0.1% exceeded nitrite standards. Additionally, 35.25% exceeded iron standards, 25.1% exceeded manganese standards, and 23.5% exceeded pH standards.¹⁰⁸ Iron, manganese, and pH are secondary contaminants; their levels are not federally enforceable in drinking water even in public water systems.¹⁰⁹ The North Carolina State Laboratory of Public Health has also compiled county averages of contaminants found in private water samples they have tested between 1998 and 2010.¹¹⁰

Reluctance to Speak Out Because of Eviction Fears

Many mobile home park residents do not feel able to speak up about their water quality concerns out of fear that they will be evicted. Thus, they remain exposed to potentially harmful or unpalatable water.

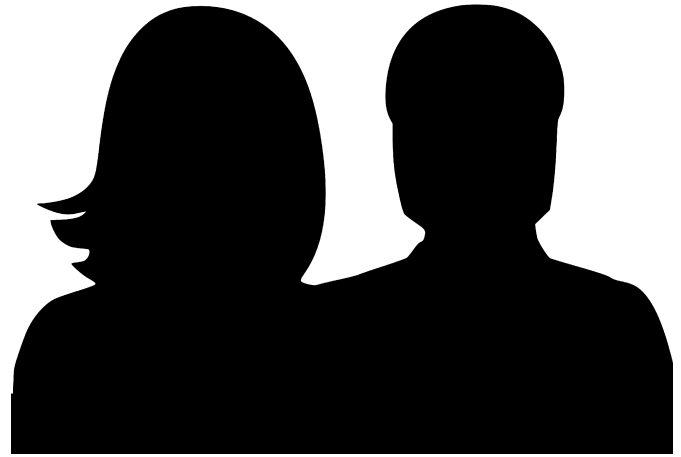
Many residents that CWFNC spoke with had landlords who they did not feel comfortable going to for help with water issues because they feared eviction or retaliatory actions. In North Carolina, residents can be evicted without just cause. The state has no statutes addressing grounds for eviction from mobile home communities. If landlords do not want their residents to continue leasing the land, they need only provide notice 60 days or more in advance so that

residents can find a place where they can move their mobile home.

However, some rationales for eviction are not allowed under North Carolina landlord tenant laws. Retaliatory evictions are not allowed. These are evictions filed as a result of a tenant's good faith attempts to get required repairs completed, health violations fixed, or other rights respected within the previous year. Nonpayment of water bills also cannot be used as the basis for termination of a lease.¹¹¹ Still, many residents do not want to go through the hassle of legal battles especially when they are required to provide the burden of truth to show that the landlord's actions were substantially in response to a protected action. The statutes also note circumstances where landlords are able to prevail in these cases.¹¹²

Residents are allowed to work together in resident associations to complain about their drinking water quality and work for it to change. Under North Carolina landlord tenant laws, landlords are not allowed to evict their residents when they organize, join, or become involved with an organization promoting or enforcing tenants' rights.¹¹³

Indeed, landlords are supposed to fix imminently dangerous issues including lack of drinkable water or excessive water, sewage, or flooding problems caused by plumbing leaks or inadequate drainage. Once tenants notify their landlords about these imminently dangerous conditions, landlords must fix them in a reasonable amount of time under the North Carolina Residential Rental Agreements Act.¹¹⁴



Multiple residents in multiple mobile home parks told CWFNC that they did not want to speak about their water or work to improve their water quality because they did not want to make their landlords mad or worsen their living situations. One woman specifically said that her landlord was looking for excuses to evict her and might try to punish her if she expressed her concerns about the water quality.

Reliance on Bottled Water

Many mobile home park residents feel that they need to drink bottled water instead of tap water, but this bottled water often has no better water quality than tap water because of lax regulations under the Food and Drug Administration.

Many mobile home park residents during our CWFNC outreach did not like the taste of their drinking water or did not trust the water quality coming from their taps so they turned to bottled water as a better alternative. Some of them mentioned specifically noticing problematic colors, tastes, or odors in their water which made them distrust the water quality. Others cited what happened in Flint, Michigan, as a reason not to trust their city's water quality. Many said that they were just in the habit of drinking bottled water and did not have a thought out reason for doing so.

Americans across the country drink bottled water. One International Bottled Water Association survey reports that 37% of people drink bottled water and tap/filtered water equally with another 37% drinking only/mostly bottled water. When asked why they chose bottled water, 98% cited taste, 98% cited quality, and 90% cited safety.¹¹⁵ Per capita consumption is now 42 gallons of bottled water per year.¹¹⁶

One cross-sectional study showed that African American and Latino parents were more likely than white parents to give their children bottled water. 34.3% of African American parents and 23.7% of Latino parents believed that bottled water is cleaner than tap water in comparison with 11.6% of white parents. 28.9% of African American parents and 24.8% of Latino parents believed that bottled water tasted better than tap water compared to 14.2% of white parents. More than 20% of Latino and African



When one mobile home park resident was asked about his water quality, he said he was 100% confident in the water. Still, he said that he only drank bottled water. Many residents drank bottled water even if they did not have a specific reason to distrust their water.

American parents used only bottled water in comparison with less than 10% of non-Latino parents. Minority children were given only bottled water three times more than non-Latino white children.¹¹⁵ Of course, bottled water is frequently just filtered tap water, meaning it is no different than tap water. Nearly 64% of bottled water comes from municipal tap water.¹¹⁸

Bottled water is regulated less than tap water. Bottled water is regulated by the US Food and Drug Administration, which treats it as packaged food. Like tap water, bottled water must be tested and meet regulatory standards before it can be sold to consumers in the United States. These FDA contaminant standards are based on the EPA standards for tap water.¹¹⁹ However, FDA safety and consumer protections are often less stringent than the EPA standards.¹²⁰ Bottled water companies have fewer requirements to provide information to consumers than public water systems. They also have fewer requirements to conduct safety monitoring. They must only test their source water for microbiological contaminants once a week, chemical contaminants once a year, and radiological contaminants once every four years. The FDA also only has authority to oversee bottled water sold across state lines, meaning that they do not regulate the 60-70% of water bottled and sold within the same state. States have passed laws and regulations to fill in the FDA's gaps when it comes to bottled water, but these are less comprehensive than tap water regulation.¹²¹

Water Affordability

Need for Water Affordability

Prices of water service continue to rise in North Carolina and across the country. With no enforced water affordability metric, this will increasingly become a concern for low income families like those that live in mobile home parks. This section will explore water affordability concerns in North Carolina mobile home parks.

Water affordability is becoming an increasingly large issue in North Carolina and across the country. 52% of people surveyed nationwide are very concerned about having an affordable water bill with 29% being somewhat concerned.¹²² The EPA and water industry professionals predicted a decade ago that the cost of water-related services would increase by as much as four times in the next few decades.¹²³ Water and wastewater services across the United States have risen 41% from 2010-2015, faster than inflation. This has made water unaffordable for low income families.¹²⁴ One study predicts that household water unaffordability may rise from 11.9% of households to 35.6% of households between 2017 and 2022.¹²⁵ Across North Carolina, the average price of water has risen much faster than inflation since 2009. Based on trends of water prices, inflation, and median income, the UNC Environmental Finance Center predicts that affordability issues in North Carolina may begin to reach more groups of people and that the lowest income customers may have even more trouble paying bills in the future.¹²⁶

The affordability of water and sewer bills has typically been measured by the annual cost of water bills as a percentage of median household income. The EPA declared that water bills are unaffordable if households spend more than 2% of median household income on



The city of Charlotte, North Carolina, experienced a rate hike of over 50% from 2009 to 2014.¹²⁷ This is just one example of the concerning trend of increasing water prices that can lead to unaffordable water for many consumers.

water and 4.5% on both water and sewer combined.¹²⁸ Measuring affordability based on the percentage of median household income does not always capture the vulnerability of households in certain areas. Other measures include poverty level, unemployment rate, percentage of people receiving federal benefits, and costs of water and sewer compared to disposable income at the 20th income percentile.¹²⁹

There is lack of information about water affordability in U.S. households. There is no federal law or policy governing water affordability. No one enforces the EPA's affordability metric or any other.¹³⁰ No service provider is required to report about disconnections, rate increases, or affordability impacts. Because no one enforces water affordability and little data is collected, it is hard to understand the scope of the water affordability crisis.

Water Bills

Water bills in mobile home parks are delivered in a variety of ways.

Mobile home park residents can pay for their water in many ways. Frequently, landlords will pay the overall water bill. The landlord might include water in the overall rent, charge a base price for water, or install meters and charge based on individual water usage. If water is supplied directly from a municipal or regional system, residents might instead pay directly to that utility or a billing manager.

Utility water bills pay for

- Collecting water from groundwater or surface water sources
- Protecting source water
- Treating water to remove contaminants in accordance with the SDWA and state laws
- Storing and pumping water from treatment plant or well house to customers
- Maintaining water treatment and distribution infrastructure
- Recording water usage and issuing bills

The North Carolina median residential base charge in 2018 was \$16.13 per month for water and \$18.00 per month for wastewater with large utilities having smaller base charges than smaller utilities. Once customers use a level of water above the consumption allowance included with the base charge, volumetric rates typically apply.¹³¹ The 2019 North Carolina Water and Wastewater Rates Report notes that the median total monthly bills were \$34.50 for water and \$42.75 for wastewater.¹³²

People in mobile home parks can pay for their water in many ways. If water is supplied directly from a municipal or regional system, they might pay directly to that utility or a billing manager. Oftentimes, though, their landlord will pay the overall water bill. The landlord might include water in the overall rent, charge a base price for water, or install meters and charge based on individual water usage.

Water Affordability Issues in MHPs

Issues Understanding Water Bills

In mobile home parks, the variable and complicated nature of water billing methods can mean that people have difficulty understanding their water bills.

Those that pay for their water with their rent may struggle with unaffordable rents and not understand how much of that rent money is going towards the water they drink.

Those that receive additional water bills might not know how their bills are calculated. Some mobile home residents that CWFNC spoke with mentioned that they had extremely high bills or that they did not understand the fees that their landlords required them to pay.

CWFNC also spoke with some residents who struggled with a language barrier because they spoke primarily Spanish but their bills were in English.

Unfair Rate Structure by

Landlords

Some landowners for mobile home parks may create water bills that are not regulated by the North Carolina Utilities Commission as required by law.

The North Carolina Utilities Commission regulates any entity providing water at a price to mobile homes provided there are 15 or more spaces for manufactured homes. They regulate rates and charges, meter and billing accuracy, and water service disconnection. They



One woman showed CWFNC the bill her landlord had sent the previous month, which included a metered charge for water and separate fees for stormwater and sewage. She did not understand the fees she was charged and why the metered rates were so expensive. She said that she struggled to afford the water bill in addition to lot rent.

do not regulate municipal or county systems or mobile home parks where water and wastewater are included in rent.¹³³

CWFNC spoke with some mobile home park residents whose landlord arbitrarily charged them in addition to rent without being regulated by the North Carolina Utilities Commission. Residents at multiple home parks were blatantly overcharged after their mobile home parks changed hands to different owners.

Higher Bills Because of Infrastructure Problems

Infrastructure problems may cause utilities to increase water bills to compensate for repairs and maintenance. This would affect low income households in mobile homes that might not have the money to pay for these increased bills.

Ideally, water prices are set low enough for consumers to afford but high enough that water systems are able to recover expenditures on water infrastructure. However, many water systems are struggling to make enough money. In fiscal year 2016-2017, 21% of North Carolina local government water and/or wastewater utilities did not generate enough revenue to pay for day-to-day operations, maintenance, and debt service.¹³⁴

Much of the current water infrastructure is old and failing. Additionally, current public health and environmental standards require significant new infrastructure to be built.¹³⁵ Some predict that climate change adaptation measures for drinking water, sewerage, and storm water services will cost the United States billions of dollars by 2050.

The Division of Water Infrastructure and the State Water Infrastructure Authority estimate that North Carolina water and wastewater infrastructure needs for the next 20 years range from \$17-26 billion. Grants can cover less than 10% of this.¹³⁶ Federal funding for water infrastructure has declined from 63% of total capital spending in 1977 to only 9% in 2014.¹³⁷

In 1977, the federal government spent almost \$77 per person in 2014 dollars on water infrastructure. By 2014, they spent only slightly more than \$14 per person.¹³⁸ As a result, most water infrastructure projects today are funded by the local ratepayers. This makes it difficult for water systems that have higher concentrations of low income people to improve infrastructure,

especially if it has been neglected for a long time.

One American Water Works Association study notes that the regions of the South and West will face steeper investment challenges than the Northeast and Midwest. Additionally, small communities will likely face more challenges in updating water infrastructure.¹³⁹ 34% of the share of capital needs is in the South with 23% needed in the Midwest, 23% needed in the West, and 20% needed in the Northeast.¹⁴⁰

When water infrastructure costs are high, water bills can become unaffordable for customers. In a nationwide study of large water systems, cities with the highest shutoff rates were spending 22% more per household each year on capital improvements.¹⁴¹ Even in communities where rates are much lower than the actual costs of drinking water provision, water can be unaffordable for many people.¹⁴² 16.1% of people in North Carolina lived below the federal poverty line in 2017.¹⁴³

Water infrastructure maintenance has impacts on people's financial situations. One report notes that each household will lose \$3,400 in disposable income every year between 2016 and 2025 because of various infrastructure deficiencies including water infrastructure deterioration.¹⁴⁴

Higher Water Bills Because of Leaks

Leaks may increase the water bills in mobile home parks.

Leaks within the pipe system or within the home contribute to high water bills. In mobile home parks, residents tend to own the homes but not the land that they live on. Presumably, this means that landlords are required fix the pipe system to the houses but plumbing problems between the water meter and the house and inside are the homeowner's responsibility. If mobile home parks transition from in-rent water to sub-metered water, homeowners can suddenly be forced to pay much



One mobile home park resident previously requested that her landlords fix issues with her water, but they told her that she needed to fix the problem herself, claiming it was a problem with her mobile home specifically not the water system. A month later, the problem still was not fixed. She did not want to pay for it.

more for water if leaks are not fixed before sub-metering begins.

If tenants want repairs done for water pipes below ground, they need to notify their landlords in writing about the problem and keep a copy of their requests. If landlords refuse to make the repairs, this dated notice is helpful in small claims court in order to receive money to reimburse for these needed repairs.¹⁴⁵

Cost Burden of Bottled Water

Mobile home park residents who feel they must use bottled water instead of tap water are forced to pay hundreds of times what they normally would for water.

Many of the mobile home park residents that CWFNC spoke with mentioned that paying for bottled water was a financial challenge. Americans spent about \$18.5 billion dollars on bottled water in 2017.¹⁴⁶ Indeed, bottled water costs significantly more than tap water, anywhere from \$0.89-\$8.26 per gallon for bottled water compared to fractions of a penny per gallon for tap water.¹⁴⁷

Buying bottled water has worse effects on low income and minority populations, even though these groups are more likely to be forced to buy bottled water because of water contamination or shutoffs. One bottled water study looked at how paying for bottled water affected equal groups of non-Latino whites, African Americans, and Latinos. 10.5% of overall respondents said that they had to give up other things in order to purchase bottled water. However, Latinos and African Americans struggled more. Only 6% of non-Latino whites gave up other things in comparison with 12% of the African Americans and 14% of the Latinos.¹⁴⁸

Water Affordability & Environmental Justice

Certain groups of people suffer the most when the price of water increases.

Water rates are often disproportionately unaffordable for certain groups of people. Even though customers in small and rural communities pay higher prices, their systems often struggle the most. In North Carolina, small and economically distressed communities typically have

higher water and sewer rates.¹⁴⁹ However almost all of the North Carolina utilities that did not generate enough revenue for operations, maintenance, and debt service served less than 10,000 people; 60% served less than 1,000 accounts.¹⁵⁰ Rural communities struggle as well. These areas tend to have both lower average incomes than cities and higher costs per person for water infrastructure. Plus, they face unique water contamination threats like runoff from CAFOs and agricultural lands.¹⁵¹

The Environmental Finance Center at UNC found that 57% of responding utilities charged more than 2.5% of MHI for combined water and wastewater services at 5,000 gallons/month.¹⁵² Across the country, one study found that low income households must spend an average of 9.7% of their disposable income and/or work 9.5 hours at minimum wage to pay for basic monthly water and sewer services.¹⁵³

Water bills can especially cause difficulties after disasters cause even more distress. One mobile home park ownership company in North Carolina bought mobile home parks and then raised prices after Hurricanes Matthew and Florence. Though North Carolina has a law penalizing retailers that increase prices around the time of natural disasters, these protections only last 45 days after the disaster, so the new owners were able to do this. The hurricanes had already damaged many of the nearby affordable housing options including those same mobile homes. People were left without housing options, and many had to leave because they could not afford to stay.¹⁵⁴

Recommendations

- The state budget should allocate funding for drinking water infrastructure in a way that does not increase the cost to consumers. This funding should be distributed through an environmental justice approach that takes into account the needs of low income people, rural areas, and areas where water is known to be contaminated.
- The North Carolina General Assembly should reinstate and fund its legislative commission on global climate change. This commission should plan for the long term impacts of climate change on North Carolina water supplies, extreme weather events, and drinking water infrastructure.
- The North Carolina General Assembly should protect the rights of renters like mobile home residents by changing eviction laws so that renters can only be evicted for good cause. Residents should each receive information about their rights and protections on an annual basis. This should include who to contact if their rights are violated.
- The North Carolina Department of Environmental Quality should mandate that public water systems share best practices and relevant knowledge with similar systems to improve North Carolina water systems as a whole.
- The North Carolina Department of Environmental Quality should strengthen source water protection programs and fund more staff positions to implement these programs.
- The North Carolina Department of Environmental Quality should implement financial penalties for noncompliance with water quality standards. These penalties should vary based on the health impacts of the violations as well as the financial capacity of the public water systems.
- The North Carolina Department of Environmental Quality should better enforce the Safe Drinking Water Act requirements for public water systems to provide their customers with annual consumer confidence reports.
- The North Carolina Utilities Commission should set a definition of water affordability based on percentage of household income and enforce it.

- The North Carolina Utilities Commission should set limits on rate hikes so that they can only rise by 2% per year if the price increase is well justified.
- North Carolina utilities should be more transparent about the costs of water infrastructure maintenance so that residents are more willing to accept gradual increased rates as opposed to sudden rate increases when water infrastructure degrades rapidly due to disrepair.
- North Carolina utilities should offer customer assistance programs and repayment plans so that customers are better able to pay their water bills before their water is shut off.
- North Carolina utilities should increase the frequency of water bills so that residents better understand the amount they are paying and can recognize potential leaks or ways to reduce water usage. They should also encourage water conservation through rebates to replace appliances like dishwashers, washing machines, and toilets.
- Researchers in North Carolina and across the country should conduct targeted studies to better understand water justice issues in mobile home parks.

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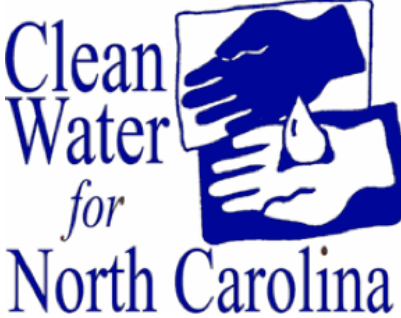
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