OWASA

ANNUAL WASTEWATER REPORT CARD

JANUARY – DECEMBER 2023

ONE WATER.
ONE COMMUNITY.

Orange Water and Sewer Authority is our community's trusted partner for clean water and environmental protection.

OWASA's wastewater team operates a system that treats about 7 million gallons of wastewater per day; that's about 3 billion gallons per year! We work hard day and night to collect, treat and clean the community's wastewater, and reclaim it (save it after treatment it for reuse) where we can.

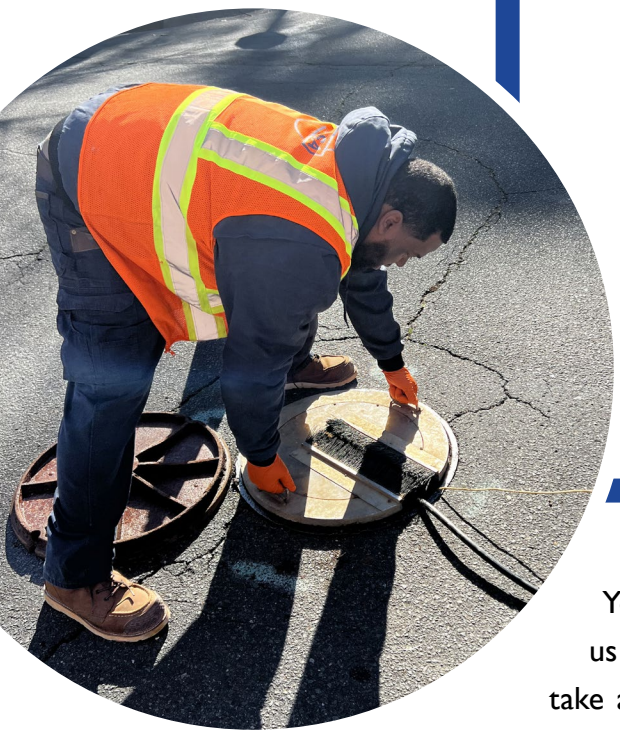
Wastewater treatment is the biological process of removing pollutants from the water so it can be returned safely to the environment. OWASA's treatment system mimics nature's processes and uses technology to speed it up.

ONE WATER: AN INTEGRATED APPROACH TO WATER MANAGEMENT

OWASA takes an integrated approach to managing surface water, drinking water, wastewater, and reclaimed water. It is our responsibility to protect the health and quality of life of our local community and environment, from our drinking water sources to the point that treated wastewater is returned to the environment. Stewardship is a core value in OWASA's daily operations. Part of that value means being a guardian of the environment through our wastewater treatment efforts. In 2023, we recycled (or reclaimed) approximately 7.8% of the wastewater treated at our Mason Farm Wastewater Treatment Plant for use in building cooling, toilet flushing, and irrigation. This helps to reduce treated drinking water demand, which increases the resilience of our community.

ONE WATER

Treated wastewater that is not reclaimed is used to maintain certain processes in the wastewater treatment plant or is returned to Morgan Creek. This water, which eventually flows into Jordan Lake, has completed a comprehensive treatment process and is not harmful to the environment, our community, or our neighbors downstream.



FOLLOW THE FLOW

You may not think about it in your daily life, but you send us wastewater every day—when you flush, wash your hands, take a shower, and wash your clothes! Anything that you flush down your toilet or goes down a drain flows through your plumbing and connects with the community sewer system that OWASA operates.

Our community sewer system is made of about 350 miles of underground pipes that carry wastewater to the Mason Farm Wastewater Treatment Plant. The sewer system uses gravity wherever possible to move the wastewater through the underground pipes in an energy-efficient way, but there are areas of low elevation where nature needs some help. To keep things moving, OWASA maintains 21 pump stations that help the wastewater along to the treatment plant.

YOUR WASTEWATER TEAM: CHAMPIONS OF THE ENVIRONMENT

It takes a team of experts to keep things moving!

The team at OWASA's Mason Farm Wastewater Treatment Plant consists of experts representing a wide range of backgrounds.

A certified operator is at the wastewater treatment plant 24 hours a day, 7 days and week, and 365 days a year. Operators are critical to ensure the plant is functioning properly and to troubleshoot any issues that arise. Their expert knowledge of our treatment plant is key for OWASA to operate effectively and efficiently.

Meanwhile, scientists on our laboratory team systematically sample different parts of the wastewater treatment process, including the treated wastewater that is released into Morgan Creek. We call this water "effluent". These checks are critical to confirm that our treatment process is working and ensures clean water for communities downstream.

At OWASA, we have made great strides in preventative maintenance over the last several years to reduce infrastructure failure across our service area. From time to time, we turn to our expert mechanics who can repair equipment quickly and get it back in operation.

Overseeing the treatment process is a complex job that falls to Wil Lawson, OWASA's wastewater treatment plant and biosolids recycling manager. Wil has a background in environmental science and has worked in multiple positions at our wastewater treatment plant. If you have any questions about the wastewater treatment process, please contact Wil at (919) 537-4351.

SPOTLIGHT: CAREERS IN WASTEWATER TREATMENT

Our wastewater treatment plant team is made of individuals with many skillsets and experiences that are valuable to OWASA's work. If you are interested in an exciting, rewarding career that allows you to serve your community, please keep an eye out for open positions on our jobs page at **OWASA.org/openings**. Here are some of the positions that make up our current wastewater treatment team:

WASTEWATER TREATMENT PLANT OPERATOR APPRENTICESHIP

Role: One-year program designed to provide on-the-job training, mentorship and classroom instruction for individuals seeking a rewarding career in wastewater treatment

Qualifications: Four years of high school or equivalent; valid NC driver's license

Salary: $49,088 plus benefits

WASTEWATER TREATMENT PLANT OPERATOR

Role: Monitor and maintain plant processes and troubleshoot issues as they occur

Qualifications: Four years of high school or equivalent; OWASA pays for the pursuit of necessary certifications

Salary Range: $54,554-$81,830 plus benefits

BIOSOLIDS RECYCLING TECHNICIAN

Role: Assist biosolids recycling program by driving tractor trailers and operating heavy equipment

Qualifications: Four years of high school or equivalent; Class A CDL with tanker endorsement

Salary Range: $44,508-$66,762 plus benefits and home every night

LABORATORY ANALYST

Role: Maintain effective quality control by conducting compliance and non-compliance sampling

Qualifications: Two-year associate degree, high school diploma, or equivalent; Wastewater Treatment Operator's Grade I certification desired

Salary Range: $54,554-$81,830 plus benefits

MAINTENANCE MECHANIC

Role: Perform mechanical repairs on all equipment within the treatment system

Qualifications: Four years of high school or equivalent

Salary Range: $46,111-$69,167 plus benefits with 6 months of facility maintenance experience

HITTING THE MARK

Last year, as in previous years, OWASA met or surpassed all federal and state standards for the quality of our treated wastewater.

Wasterwater Effluent Quality Annual Data Summary (Permit # NC0025241)			
Water Quality Measure	Regulatory Limit	OWASA Calendar Year Results	Notes
Phosphorus	Maximum of 10,188 lbs for the year	1,635 lbs	Full compliance; 84.0 % below the limit
Nitrogen	Maximum of 134,375 lbs for the year	120,023 lbs	Full compliance; 10.7 % below the limit

BIOSOLIDS: A BENEFICIAL RESOURCE

Once wastewater arrives at the treatment plant, we separate liquids from solids. While liquids are treated, we produce a nutrient-rich material called biosolids that have beneficial uses in agriculture by improving soil quality and stability. We apply these biosolids to OWASA-owned land and provide it to farmers in Orange, Chatham, and Alamance counties in accordance with state permits and regulations. What we don't apply to land as biosolids, we compost into a soil additive in partnership with a regional composter. Last year, we recycled more than 8.7 million gallons of biosolids through this program. As reported in the table below, the substances in our biosolids met or surpassed all state and federal regulations.

Biosolids Quality Annual Data Summary (Permit #'s WQ0021828/WQ0001169)		
Substance	EPA Limit for Exceptional Quality Biosolids	OWASA Calendar Year Results
Fecal Coliform Bacteria (*cfu)	1,000	145 (max)
Mercury (**ppm)	17	0.491
Cadmium (ppm)	39	1.18
Arsenic (ppm)	41	6.13
Lead (ppm)	300	11.8
Copper (ppm)	1,500	307
Zinc (ppm)	2,800	1000
Nickel (ppm)	420	17.7
Molybdenum (ppm)	n/a	6.13
Selenium (ppm)	36	9.2

**cfu = colony-forming units*
***ppm = parts per million*

RECLAIMED WATER: A PARTNERSHIP FOR CONSERVATION

OWASA and the University of North Carolina at Chapel Hill (UNC) partnered to develop a reclaimed water system following multiple droughts in the early-2000s. This system provides UNC with the capability to use considerably less treated drinking water, leaving more for community needs. This also helps extend our drinking water supply in case of extreme drought in the future. Reclaimed water is used by UNC facilities for high volume needs like chilled water for cooling, irrigation and toilet flushing. The cost to operate and maintain the reclaimed water system is paid for solely by OWASA's reclaimed water customers.

Monitoring Parameter	Monthly Average Limit	Daily Maximum Limit	OWASA Monthly Average	OWASA Max Daily Number
cBOD (*mg/L)	10	15	<2	<2
Fecal Coliform (cfu/100 mL)	14	25	<1	5
Ammonia (mg/L)	4	6	<1	2.46
Total Suspended Solids (mg/L)	5	10	<2.5	<2.5
Turbidity (**ntu)	N/A	10	N/A	9.8
Flow (***MGD)			0.75	1.75

< values are below detection limit.
** mg/L = milligrams per liter*
*** Nephelometric Turbidity Unit (measurement of cloudiness)*
**** Million Gallons Per Day*

PFAS: A PROACTIVE APPROACH

Per- and poly-fluoroalkyl substances, known as PFAS, are a group of compounds that can negatively impact the environment and public health. PFAS are used in a variety of everyday products like carpet, clothing, furniture fabric, paper packaging for food and cookware to increase resistance to water, grease, or stains. Sometimes referred to as "forever chemicals," PFAS compounds do not break down easily overtime, remaining in the environment and making their way into sources of drinking water worldwide.

OWASA is closely following scientific research on best practices to monitor and treat PFAS in wastewater and biosolids. While much is still not fully understood about detecting and addressing PFAS in wastewater and biosolids, we are committed to a holistic approach to reducing PFAS in all our services and byproducts.

More **information on PFAS** is available on the OWASA website.

A LONG-TERM PLAN FOR PUBLIC HEALTH & ENVIRONMENTAL PROTECTION

Planning for the future is important for the long-term sustainability of OWASA's operations. Our comprehensive master plan, which identifies long-term improvements for the Mason Farm Wastewater Treatment Plant, is nearing completion.

SEWER OVERFLOWS AND TREATMENT BYPASSES

Everything that goes down a drain in your home or business flows through our community's wastewater system. Sometimes, what is not supposed to be flushed can create sewer overflows. Grease, for example, can build up in sewer pipes like fatty deposits in an artery. Nature can also cause overflows when a tree root cracks an underground pipe allowing groundwater to enter the system.

OWASA's Distribution and Collection Team plays a key role in preventing sewer overflows through their maintenance efforts. Issues like broken sewer service line caps and cracked sewer lines can be identified through smoke testing, where non-toxic smoke is pushed through the sewer system. Where these issues exist, smoke can be seen exiting through the cracks. Some of these identified issues are on private property, and that is where you can help! Maintaining your private sewer lines when these issues are identified helps protect your property and the community's sewer system.

Electronic alarms at pump stations throughout our system help us prevent overflows by notifying us of potential issues, which we investigate quickly to keep the wastewater moving. This is important because untreated wastewater can have negative impacts on the environment. We count on the community to alert us, too. If you see an overflow, please keep people and pets clear of the area and notify OWASA immediately at 919-968-4421.

Last year, the total volume of reported overflows in OWASA's wastewater collection system was 4,527 gallons. As noted in the table below, overflow events occurred due to roots in sewer pipes and contractor errors.

Sewer Overflows Annual Data (Permit #WQCS00031)			
Date	Location	Gallons	Cause
1/16/2023	201 Howell St. Chapel Hill, NC	1800	Roots
3/15/2023	325 Lightning Bug Trl. Chapel Hill, NC	1575	Roots
7/10/2023	690 Martin Luther King Jr. Blvd. Chapel Hill, NC	52	Other (Contractor)
10/19/2023	1300 Arboretum Dr. Chapel Hill, NC	450	Roots
11/2/2023	851 Willow Dr. Chapel Hill, NC	650	Other (Contractor)

We also had to bypass treatment at the wastewater treatment plant for 6,500 gallons due to a mechanical issue. A bypass is when wastewater is spilled after it arrives at the treatment plant.

ONLY FLUSH THE THREE PS!

Flushing the wrong materials can harm the wastewater system by causing costly and messy clogs and can impact water quality in our streams and lakes. This is a friendly reminder that The Three P's are the only things that should be flushed down the toilet: **Pee**, **Poo** and toilet **Paper**!

Protect your community's wastewater system

Together, we can protect our community's water and wastewater systems as well as the environment. Please help keep these items out of our sewers:

FEMININE PRODUCTS

These products expand and absorb moisture, making it difficult for them to travel through pipes. They also do not break down into smaller pieces.

DISPOSABLE DIAPERS

Like feminine products, diapers expand and absorb moisture, and are very bulky. Diapers are never meant to be flushed!

DENTAL FLOSS

This strong and durable string loves to wrap itself around anything and everything that travels down the same path, helping create big clogs.

"FLUSHABLE" WIPES

Despite the advertising, these are much more durable than toilet tissue! They clog wastewater pipes and get caught in the equipment at the treatment plant. Please dispose of wipes in the trash.

OILS AND GREASE

Inside a sewer or plumbing drain, fat, oil and grease harden into a plaster-like substance that can block flow. Please scrape or wipe fat, oil and grease off pots, pans, plates and bowls before washing them and dispose of it in a waste bin.

OTHER PRODUCTS

Other products that should not be flushed include sand, hair, kitty litter, condoms and cotton balls.

PRESCRIPTION MEDICATIONS

Please don't flush prescription medications. Wastewater treatment plants were not designed to remove pharmaceuticals. If they are flushed and enter the wastewater system, they may enter a creek, river, or lake that acts as a water supply for a community downstream, or harm aquatic life. The Police Departments of Chapel Hill and Carrboro have "no questions asked" drop boxes where you can discard of your leftover medicines.

SAFE DISPOSAL LOCATIONS

Chapel Hill Police Headquarters
828 Martin Luther King Jr. Blvd.
919-968-2760
Monday - Friday, 9:00 am – 5:00 pm

Carrboro Police Department
100 N. Greensboro St.
(Century Center)
919-918-7397
Monday - Friday, 8:30 am – 5:00 pm

2023 QUICK FACTS

Our team mowed and cleared 124 miles of easements in the community to help keep tree and shrub roots from growing into the wastewater system, and to maintain access to OWASA infrastructure for maintenance and repairs.

Last year, OWASA replaced 999 feet of sewer line and rehabilitated 10,244 feet of sewer line across the community. This work helps keep wastewater flowing to the treatment plant.

Our team smoke tested over 82 miles of sewer lines across the community. Smoke testing helps identify cracks in the sewer system for repair.

New sewer line totaling 7,972 feet was installed at the cost of developers for new properties in our service area in 2023. New lines are important in OWASA's work to continue serving a growing community.

FOR MORE INFORMATION ABOUT WASTEWATER AND RECLAIMED WATER

If you have any questions about the wastewater treatment process, please contact our team! Connect with Wil Lawson, OWASA's Wastewater Treatment and Biosolids Recycling Manager, at 919-537-4211.

CONTACT OWASA ANYTIME

OWASA is proud to be our community's trusted partner for clean water and environmental protection! Under the streets, in the field, at the lab and in the office, our diverse team diligently manages the community's wastewater system. Contact us anytime. We welcome your questions and feedback!

ORANGE WATER AND SEWER AUTHORITY

400 Jones Ferry Road, Carrboro, NC, 27510
919-968-4421
info@owasa.org
owasa.org

@OWASA_NC
Orange Water and Sewer Authority
Orange Water & Sewer Authority