2012 Water Quality Report Card

Orange Water and Sewer Authority, 400 Jones Ferry Road, Carrboro, NC 27510

2012 Water Quality Report

We are pleased to provide this report on the quality of our drinking water in 2012. We are committed to supplying excellent water for our community's quality of life, health and safety and economic vitality.

In 2012, we treated about 2.6 billion gallons of drinking water, or 7.3 million gallons per day, in accord with Federal standards under the Safe Drinking Water Act, and related State standards.

Substances found in the Orange Water and Sewer Authority's Drinking Water in 2012

(Public Water System Identification Number: 03-68-010) Please see the definitions on page 3.

Substance and Unit Measurement	MCL Violation? Y = yes N = no	Highest Level Detected (except as noted)	Range Detected	Highest Level Allowed (MCL)	Highest Level Goal (MCLG)	Major Source in Drinking Water
Microbiological Substances						
Turbidity (NTU)	N	0.497 and 99.9% of samples below 0.3	0.015 to 0.497	TT = 1 NTU and 95% of samples below 0.3	0.3	A measure of the cloudiness of water. Turbidity may be caused by inorganic soil particles or fragments of organic matter that can interfere with treatment
Radiological Substances						
Combined radium (pCi/L) (last tested in 2008)	N	0.1	no range	5	0	Erosion of natural deposits
Inorganic Substances						
Fluoride (ppm)	N	0.66	no range	4*	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories **
** The fluoride level in our water (0.66 of one part per million) was well below the maximum allowed (4 parts per million).* *** In accord with Federal requirements, our annual Water Quality Report Cards include a statement that potential sources of fluoride in drinking water include erosion of natural deposits; water additive which promotes strong teeth; [and] discharge from fertilizer and aluminum. However, there are no fertilizer or aluminum factories in the watersheds of our Cane Creek Reservoir and University Lake.*						
Sulfate (ppm)	N	24	no range	250 [Secondary MCL]	N/A	A mineral that occurs naturally in soils
Disinfectants and Disinfection By-products						
Total Haloacetic Acids (ppb)	N	22.6 (running yearly average)	17.0 to 29.0 (individual sample sites)	60 (running yearly average)	0	By-product of disinfecting drinking water with chlorine or chlorine-ammonia compound (chloramines)
Total Trihalomethanes (ppb)	N	31.4 (running yearly average)	23.7 to 44.7 (individual sample sites)	80 (running yearly average)	0	By-product of disinfecting drinking water with chlorine or chlorine-ammonia compound (chloramines)
Chloroform (ppb)	N	11	no range	not regulated	not regulated	By-product of disinfecting drinking water with chlorine or chlorine-ammonia compound (chloramines)
Bromodichloromethane (ppb)	N	6.1	no range	not regulated	not regulated	By-product of disinfecting drinking water with chlorine or chlorine-ammonia compound (chloramines)
Chlorodibromomethane (ppb)	N	1.5	no range	not regulated	not regulated	By-product of disinfecting drinking water with chlorine or chlorine-ammonia compound (chloramines)
Chloramines (ppm)	N	2.9 (average for Jan., Feb. and April-Dec.)	0.1 to 3.9 (range for Jan., Feb. and April-Dec.)	MRDL = 4	MRDLG = 4	Compound of chlorine and ammonia used to disinfect water
Chlorine (ppm)	N	1.17 (average during chlorine-only disinfection in March.)	0.02 to 2.03 (range during chlorine-only disinfection in March.)	MRDL = 4	MRDL = 4	Compound of chlorine and ammonia used to disinfect water
Disinfection By-product Precursors						
Total Organic Carbon (removal ratio) – **TREATED WATER**	N	1.77	1.09 to 2.53	TT = Removal ratio greater than or equal to 1.0	N/A	Naturally present in environment

The presence of contaminants does not necessarily indicate that water poses a health risk.

DEFINITIONS of words and phrases in the table of substances found in our water

Maximum Contaminant Level Goal (MCLG) - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) - the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. MCLs are set at very stringent levels. A person would have to drink 2 liters (about two quarts) of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having adverse health effects from many regulated contaminants.

Secondary Maximum Contaminant Level - a guideline for aesthetic (taste and odor), rather than health purposes.

Parts per million (ppm) - one part per million corresponds to about one minute in two years, or one penny in $10,000. One ppm is equivalent to 1 milligram per liter (mg/L).

Parts per billion (ppb) - one part per billion corresponds to about one minute in 2,000 years, or one penny in $10 million. One ppb is equivalent to 1 microgram per liter (ug/L).

Nephelometric Turbidity Unit (NTU) - a measure of cloudiness in water. Turbidity over 5 NTU is barely noticeable to the average person.

Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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

90th Percentile – the contaminant level which 90 percent of the samples for a given water characteristic were below. The 90th percentile level is the required reporting unit for lead and copper.

Below Detectable Level (BDL) - a concentration below the level that can be detected using accepted laboratory methods.

Maximum Residual Disinfection Level Goal (MRDLG) - the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of using disinfectants to control microbial contaminants.

Maximum Residual Disinfectant Level (MRDL) - the highest level of a disinfectant allowed in drinking water. Disinfection is necessary to control microbial contaminants (germs) in drinking water.

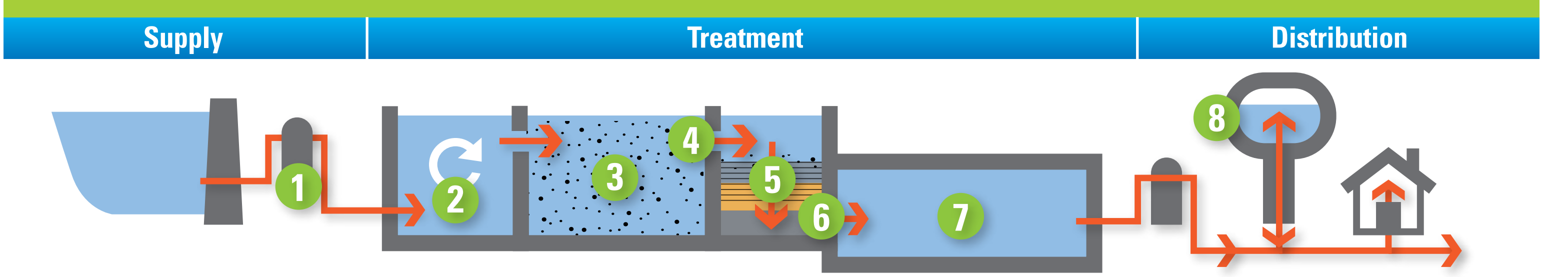
Disinfection by-products - substances such as haloacetic acids and trihalomethanes, which are formed when chlorine or chloramines used to disinfect drinking water react with organic compounds naturally present in lake water. Federal standards require public water systems to limit the levels of haloacetic acids and trihalomethanes because they could be harmful at high levels.

Disinfection by-product precursors - organic carbon compounds that can combine with disinfectants (chlorine and chloramines) to form haloacetic acids and trihalomethanes as discussed above.

Removal Ratio - measure of the effectiveness of total organic carbon removal during our water treatment process. This ratio should be greater than or equal to 1.0. The Removal Ratio is the Federally required reporting unit for total organic carbon.

Picocuries per liter (pCi/L) - a measure of the radioactivity in water. (A picocurie is one trillionth of a curie.)

Drinking Water Treatment



1 Pump Station
Untreated water from University Lake or the Cane Creek Reservoir is pumped to our Jones Ferry Road Water Treatment Plant.

2 Mixing
When the water enters our plant, powdered carbon and alum are mixed into the water to make solid particles clump together and to improve the taste and odor of the water.

3 Clarification
Water then flows to either a "pulsator" or settling basins, where solids settle out of the water.

4 Disinfection
As water flows to filters, chlorine in the form of liquid bleach is added for initial disinfection.

5 Filtration
Water flows down through filters with layers of sand and anthracite coal, where additional particles are removed from the water.

6 Post Treatment
We add fluoride for dental health, and a chemical to set the pH (acidity/alkalinity) of the water at the right level.

7 Clearwell
The water flows to our 1.5 million gallon "clearwell" tank for temporary storage. Ammonia is added to the water and the ammonia combines with chlorine to form "chloramines" to further disinfect the water. Water is then pumped to our water storage tanks.

8 Water Tower
The elevated tanks maintain water pressure so that drinking water can be delivered to your tap through our network of more than 380 miles of public water mains. The water tanks also help ensure that water is available to fight fires and to meet peak demand by our customers.

DRINKING WATER QUALITY—Basic Information

All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily pose a health risk. To ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) limits the amount of certain contaminants in water from public drinking water systems. The Food and Drug Administration sets limits for contaminants in bottled water, which must provide the same protection for public health.

ADDITIONAL Characteristics of our Drinking Water

- **DISINFECTION WITH CHLORAMINES**. We disinfect our water with chloramines, a compound of chlorine and ammonia, in all months except March, when we instead use chlorine in accord with State requirements.
- **CHLORAMINES AND CHLORINE ARE TOXIC TO FISH AND TO AMPHIBIANS** such as frogs. If you have an aquarium filled with OWASA water, please contact a pet supply store for advice on how to neutralize chloramines and chlorine to protect fish, etc.
- **WHEN YOU REPLACE A TOILET FLAPPER**, please choose a model that is designed for use in water systems with chloramine disinfection.
- **OUR DRINKING WATER IS VERY SOFT**. It has a low mineral content (dissolved calcium, etc.) of about 2 grains per gallon of water.
- **OUR WATER IS SLIGHTLY ALKALINE**. On the scale of acidity to alkalinity, our water normally has a pH of about 8 on a scale of 1 to 14, with 7 being neutral. During chlorine disinfection in March, the pH of our water is 7.1 to 7.3, compared to the pH of 8.0 to 8.1 in months with chloramine disinfection.
- **SOMETIMES OUR WATER IS DISCOLORED OR BUBBLY**. During repairs, firefighting and the release of water from hydrants, iron or other minerals can be stirred up in a water main. Air may also get into our pipes during a repair. Running cold water in a bathtub for 5 to 10 minutes usually clears up the discoloration or bubbles. If the water does not clear up, please call us at **919.968.4421**.

WHERE Do Contaminants Come From?

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells.

As water travels over the surface of land or through the ground, the water dissolves naturally-occurring minerals and, in some cases, radioactive material. Water can also pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in water before it is treated include:

- Microbial contaminants such as viruses and bacteria, which may come from wastewater treatment plants, septic systems, pets, agricultural livestock operations and wildlife.
- Inorganic contaminants such as salts and metals, which may be naturally present in water or may result from stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources, such as agriculture, stormwater runoff and residential uses.
- Organic chemical contaminants including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations and stormwater runoff from paved and other impervious surfaces.
- Radioactive contaminants, which may be naturally-occurring or result from oil and gas production and mining activities.

THE VALUE of Water

A reliable supply of high quality drinking water is essential for:

- Public health (drinking, food preparation, flushing toilets, bathing/showering, laundry, dishwashing, hygiene, etc.)
- Public safety (including protection by fire departments and sprinkler systems in buildings)
- Our local economy and employment
- Public services and public facilities
- Services by private businesses and non-profit agencies
- Recreation
- Landscaping and gardening

THE COST of Water

For a typical residential customer using 4,000 gallons per month, the average cost of one gallon of water and sewer service is 1.8 cents. We are a non-profit agency owned by the local community, and we set our rates to cover the costs of our services.

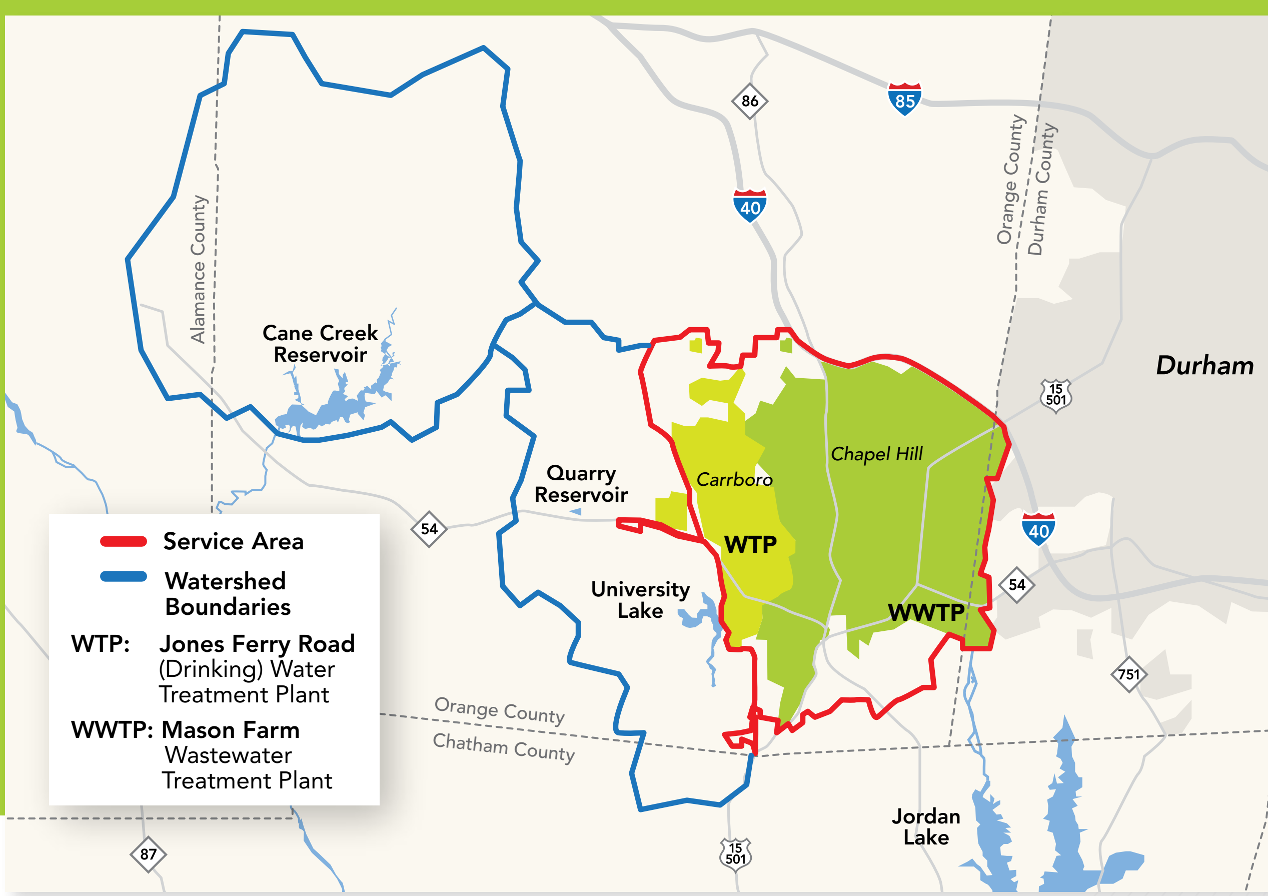
The largest single component of our monthly bills is our infrastructure costs, which account for about half of our bill.

WHERE DOES Our Water Come From

The Carrboro-Chapel Hill community has four water sources, which are in the Cape Fear River watershed:

- The **Cane Creek Reservoir**, which is about eight miles west of Carrboro on the north side of NC 54 just west of Stanford Road (storage capacity of about 3 billion gallons);
- **University Lake**, which is on the west side of Carrboro (capacity of about 450 million gallons); and
- The **Quarry Reservoir,** which is about two miles west of Carrboro on the north side of NC 54 (capacity of about 200 million gallons).
- **Jordan Lake** in Chatham and Wake Counties. The NC Environmental Management Commission has given us an allocation of Jordan Lake capacity equal to about 5 million gallons per day which we would use only in severe droughts and operational emergencies.

By the year 2030, an expanded quarry about two miles west of Carrboro will become available to OWASA with an estimated capacity of 2.4 billion gallons.



N.C. SOURCE Water Assessment Program Results

The N.C. Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) has done assessments for all drinking water sources in North Carolina. The purpose of the assessments was to determine the susceptibility of each source to potential contaminant sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a susceptibility rating of Higher, Moderate or Lower.

The susceptibility rating of each water source for OWASA was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions in the watershed and its delineated assessment area). The SWAP findings are summarized below:

Susceptibility of OWASA's Water Sources to Potential Contaminant Sources

Water Source	Susceptibility Rating
Cane Creek Reservoir	Moderate
University Lake	Moderate

The complete SWAP Assessment report for OWASA may be viewed on the Web at **www.deh.enr.state.nc.us/pws/swap**. For a printed copy of this report, please mail a request to: **Source Water Assessment Program – Report Request**, 1634 Mail Service Center, Raleigh NC 27699-1634, or e-mail your request to **swap@ncmail.net**.

Please indicate your water system name (OWASA), OWASA's public water supply number (03-68-010), and provide your name, mailing address and phone number. If you have any questions about the SWAP report, please contact the **NC Source Water Assessment** staff at **919.715.2633**.

At left is **Ken Loflin**, OWASA's Water Supply and Treatment Manager, in the control room at the Jones Ferry Road Water Treatment Plant

WHAT Is Cryptosporidium?

Cryptosporidium is a microbial parasite which comes from human and animal wastes and is found in surface water such as lakes throughout the U.S. Symptoms of infection by Cryptosporidium include nausea, diarrhea, and abdominal cramps. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100% removal. We monitor our lake water and treated drinking water for these organisms.

Current test methods do not enable us to determine whether the organisms are dead or whether they are capable of causing disease. Most healthy individuals are able to overcome the disease within a few weeks. However, people with compromised immune systems have more difficulty and are at greater risk of developing severe, life-threatening illness. People with compromised immune systems are encouraged to consult their doctors regarding appropriate precautions to prevent infection. Cryptosporidium must be ingested for it to cause disease, and it may be spread through means other than drinking water.

We test our water annually for Cryptosporidium and it has not been detected.

FOR PEOPLE With Special Risk of Infection

Some people may be more vulnerable to contaminants in drinking water than the general population. People with compromised immune systems such as those undergoing chemotherapy for cancer, people who have had organ transplants, people with HIV/AIDS or other immune system disorders, some elderly people and infants may be particularly at risk for infection.

These people should seek advice from their health care providers about drinking water. Guidelines from the U.S. Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention (CDC) on appropriate means to lessen the risk of infection by Cryptosporidium (please see additional information in this report about Cryptosporidium) and other microbial contaminants are available from the **EPA's Safe Drinking Water Hotline, 800.426.4791**.

Water that has received extra filtration (reverse osmosis) and disinfected with ultraviolet light is available at several supermarkets in our community.

Lead and Your Health

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. OWASA is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Plumbing code limits for lead in solder and fixtures were tightened in 1986 to reduce the potential for lead to dissolve from pipes, solder or fixtures into drinking water.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by running water for 30 seconds to 2 minutes before using water for drinking or cooking.

If you are concerned about lead in your water, you may wish to have your water tested (please see additional information below). Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the **EPA's Safe Drinking Water Hotline**, **800.426.4791**, or at **www.epa.gov/safewater/lead**.

TESTING Our Drinking Water for Lead

The Federal limit on lead in drinking water is a maximum of 15 parts per billion in at least 90% of the samples tested. (One part per billion corresponds to one penny in $10 million.) Our testing results are significantly better than this standard.

We regularly test our water as it leaves the Jones Ferry Road Water Treatment Plant. For over 10 years, all of these test results have been less than the detectable level of 3 parts per billion. In accord with Federal and State standards, we also test every three years for lead in tap water at 30 homes built between 1983 and 1985. The results from this testing in 2011 were all below the detectable level of 3 parts per billion.

In response to customers' requests in 2012, we tested tap water for lead in 12 homes. In all of the water samples, lead was below the detectable level of 3 ppb.

For more information, including how you can have the water in your home tested for lead at no charge, please contact the **OWASA Laboratory** staff at **919.537.4227** or **rmonschein@owasa.org.**

GETTING INVOLVED in Water Quality and Supply Issues

You can get involved in water resource issues at the local, State and national level.

- Being informed is the first step in being an effective participant.
- You can learn about water and water resource issues from news media; books in the library; websites such as those of the U.S. Environmental Protection Agency, American Water Works Association and other organizations; and by contacting OWASA (telephone: **919.968.4421**; e-mail: **info@owasa.org**; website: **www.owasa.org**).
- If you have an e-mail address, we would be glad to send you our electronic notices and news releases about OWASA-related topics of interest to you. We invite you to contact OWASA Public Affairs at **919.537.4267** or **info@owasa.org** about the topics you are interested in.
- Expressing your views at public meetings, by contacting public officials, etc. is important when improvements, plans, policies and standards affecting water quality and watershed protection are needed or proposed.

We invite you to attend and participate in meetings of the OWASA Board of Directors, which makes decisions on plans and policies and adopts the annual budget for our water and wastewater services. The OWASA Board meets at 7 PM on second Thursdays of most months in the Community Room on the lower floor of the OWASA Administration Building, 400 Jones Ferry Road, Carrboro; and on fourth Thursdays at the Chapel Hill Town Hall. On fourth Thursdays, OWASA Board meetings are televised live on channel 18 of the cable television systems serving Chapel Hill and Carrboro.

Tip!

If you are a residential customer and you use more than an average of **4,000 gallons** per month, feel free to contact us or visit our website for information on conservation opportunities.

WATER CONSERVATION: Part of Our Sustainable Quality of Life

Water conservation makes us better prepared for future droughts, reduces the community's long-term costs for water and sewer system capacity and lowers greenhouse gas emissions. (All water and wastewater is pumped, and most of the energy for pumping comes from fossil fuels comprised of hydrocarbons.) For information on the best ways to conserve, please visit the Conservation and Education part of our website, **www.owasa.org**; or contact **OWASA Public Affairs** at **919.537.4267** or **info@owasa.org**.

OUR WATER Supply Plans, Including Access to Jordan Lake

Thanks largely to the 30 percent reduction in drinking water use by OWASA customers since 2002, our Cane Creek, University Lake, and Quarry Reservoir supplies can meet our expected needs for the next 50 years under most circumstances. Expanding the Quarry Reservoir west of Carrboro (after 2030, when the present quarry lease will end) is the most effective supply supplement for the least investment and will provide local control of a substantial amount of high quality water.

However, we will still need the additional reliability offered by Jordan Lake in a severe drought or operational emergency.

Johnny Riley, our new Senior Lake Warden, joined OWASA after serving for 12 years at the NC Wildlife Resources Commission. His areas of expertise include wildlife habitat management, wildlife surveys, forestry management and land conservation. Johnny earned a Bachelor of Science degree in Fisheries and Wildlife Science from NC State University in 2001. However, he is no stranger to OWASA, the Cane Creek Reservoir or University Lake. In the summers of 1997 and 1998, Mr. Riley worked at our lakes as a part-time employee.

Our water sources including the **Cane Creek Reservoir**, our primary water source, are protected through local regulations which limit the amount of development, and through our program of acquiring land and conservation easements in our watersheds.

For More Information

If you have any questions or comments about our drinking water, we invite you to contact our Water Treatment Plant Laboratory Supervisor at 919.537.4227 or our Water Supply and Treatment Manager at 919.537.4232; visit our website, www.owasa.org; or send us a letter (400 Jones Ferry Road, Carrboro, NC 27510), an e-mail (info@owasa.org) or fax (919.968.4464).

We welcome your questions and feedback!

OWASA

A public, non-profit agency providing water, sewer and reclaimed water services to the Carrboro-Chapel Hill community.

Orange Water and Sewer Authority
Public Water Supply No.: 03-68-010

400 Jones Ferry Road
Carrboro, NC 27510
919.968.4421 | info@owasa.org | www.owasa.org
Twitter: @owasa1
EPA's Safe Drinking Water Hotline: 800.426.4791