



TOWN OF APEX 2009 ANNUAL DRINKING WATER QUALITY REPORT



Consumer Confidence Report

The Town of Apex Public Works and Utilities Department is proud to report that Apex's water continues to exceed State and Federal drinking water standards. This water quality report is being furnished in accordance with the Safe Drinking Water Act in order to inform you about the contents of your drinking water and other pertinent water related issues. We strive to meet the challenges of source water protection, water conservation and distribution quality while continuing to meet the needs of all our water customers. There were no regulatory violations during the 2009 report year.

The Cary/Apex Water Treatment Plant (WTP) is a member of the Partnership for Safe Water Program. This program was formed in conjunction with the Environmental Protection Agency (EPA) to encourage water suppliers to survey their utilities and identify and implement treatment improvements that will enhance the water system's ability to prevent microbial contaminants in the treated water. The Cary /Apex WTP has received the Director's Award from the Partnership for Safe Drinking Water for the



Aerial view of Jordan Lake Dam

seventh consecutive year. Less than 5% of water utilities nationwide have received this honor. More information about this award and the Partnership for Safe Water can be obtained from the American Waterworks Association at www.awwa.org/science/partnership/.



PWSID NC0392045

Best Tasting Water Award Recipient

We're proud to announce that in November 2009 the Cary/ Apex Water Treatment Facility won the annual "Best Tasting Water" contest at the 89th Annual Conference of the N.C. American Waterworks and Water Environment Associations. The competition included drinking water samples submitted from twenty seven water utilities from throughout the state of North Carolina.

Community Involvement

The Town of Apex encourages public interest and participation in our community's decisions affecting our drinking water. You may also voice any other concerns to the Town Council during regular meetings which are held on the 1st and 3rd Tuesday of every month. The Town Hall is located at 73 Hunter Street and the meetings start at 7:00 pm in the Council Chambers. For more information on Council meetings, call the Town Hall at 249-3400 or visit our web page at www.apexnc.org

Should you have additional questions not answered by this report, please call your Public Works and Utilities Department at 249-3427 or visit the website. www.epa.gov/safewater

Inside this 2009 edition please refer to the chart entitled "[Water Quality Data Table of Detected Contaminants](#)" for a detailed analysis of our drinking water.

Contact Information:

Timothy L. Donnelly, PE,
Director of Public Works and
Utilities Department
PO Box 250
Apex, NC 27502
Phone: 919-249-3427

WHERE DOES THE WATER COME FROM?

B. Everett Jordan Lake is used by Apex and Cary water systems as a source of drinking water. Many other communities have expressed interest in the lake as a future water supply. Jordan Lake is a prominent geographic feature in the Research Triangle region and an important water source for the growing population of central North Carolina. Jordan Lake is a US Army Corps of Engineers multi-purpose lake located northwest of Apex in Chatham County. This man-made lake was created in 1982 by damming the Haw River. The lake is designed to provide for water supply, recreation, flood control, fish and wildlife management, and low-flow augmentation. As is typical for

multi-purpose reservoirs, the lake's storage volume is divided vertically into several "pools" which are keyed to lake level elevations. Specifically, there is a flood pool, which provides for flood control storage; a conservation pool, which provides for water supply and low flow augmentation; and a sediment pool, which provides for the accumulation of sediment. The top of the conservation pool corresponds with the normal lake level of 216 feet mean sea level (MSL). At this elevation, Jordan Lake covers 13,900 acres. Usable water in the lake at its normal elevation amounts to a total volume of approximately 140,400 acre-feet and is referred to as the conservation storage. Approximately 45,800 acre-feet in conservation

storage, or about 15 billion gallons, is designated to provide water supply. This amount of storage is estimated to be able to furnish approximately 100 million gallons per day (MGD) during most of the severest droughts. In addition to water supply, the lake's conservation storage provides 94,600 acre-feet for downstream flow augmentation to benefit water quality and economic development. The low flow augmentation storage is used to maintain a minimum flow of about 388 MGD (600 cfs) at Lillington. The minimum stream flow recorded by the US Geological Survey at Lillington prior to Jordan Lake's impoundment was 7.1 MGD (11 cfs). Storage and releases for flow augmentation are provided

in addition to storage for the 100 MGD water supply. Withdrawals from the water supply storage pool have no impact on the low-flow augmentation storage pool.

Lake Trivia

Did you know that B. Everett Jordan Lake was originally called New Hope Lake? The name was changed in 1973 to honor the former senator from North Carolina.

Do the names Farrington, Beaver Creek, and Seaforth sound familiar? These communities were flooded to form the lake but their names live on as designated recreation areas and roads.

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We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The table below lists all the drinking water contaminants that we detected in the last round of sampling for the particular contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing performed from January 1 through December 31, 2009** The Environmental Protection Agency (EPA) and/or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

Water Quality Data Table of Detected Contaminants

CONTAMINANTS (UNITS)	SAMPLE DATE	YOUR WATER	RANGE	MCLG	MCL	TYPICAL SOURCE
Inorganic Contaminants						
Fluoride (ppm)	2009	1.19	< 0.100 - 1.19	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Water Characteristics Contaminants						
Iron (ppm)	2009	0.094	< 0.05- 0.094	N/A	0.3	Erosion of natural deposits.
Manganese (ppm)	2009	0.03	< 0.01 - 0.03	N/A	0.05	Erosion of natural deposits.
Sodium (ppm)	2009	38.4	17.1 - 38.4	N/A	N/A	Erosion of natural deposits.
pH	2008	8.5	7.1 - 8.5	N/A	6.5 - 8.5	
Turbidity-Systems with population > 10,000						
Turbidity (NTU)	2009	0.15	N / A	N/A	TT= 1NTU	Soil runoff. Note; The turbidity rule requires that 95% or more of the monthly samples be less than or equal to 0.3 NTU. 100 % of samples were below 0.3 NTU.
		100%			TT = % of samples < 0.3	
Microbiological Contaminants						
Total Coliform Bacteria	2009	0%	None	0%	5% of monthly samples are positive	Naturally present in the environment.
		positive				
Disinfection By-Product Contaminants						
Total Trihalomethanes (ppb)	2009	0.059 (4-qtr. avg.)	0.038 - 0.109	None	80	By-product of drinking water chlorination.
Haloacetic Acids (ppb)	2009	0.027 (4- qtr. avg.)	0.012 - 0.059	None	60	By-product of drinking water chlorination
Chlorine (ppm)	2009	2.96	2.0 - 3.9	4	4	Water additive used to control microbes.
Note: Compliance with the MCLs for Disinfection by Products is based on the running average shown in "Your Water" column						
Lead and Copper Contaminants						
Lead (ppb) (90th. Percentile)	2007	10	< 3 - 83	0	15 (action level)	Corrosion of household plumbing systems; Erosion of natural deposits. Fifty sites tested. Four sites tested above the action level. Residents notified.
Copper (ppm) (90th. Percentile)	2007	0.176	< 0.005 - 0.323	1.3	1.3 (action level)	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.
Disinfection By-Products Precursors Contaminants						
		Removal ratio annual avg.	Monthly removal ratio			
Total Organic Carbon (ppm) -Treated	2009	1.32	1.01 - 1.61	N/A	TT	Naturally present in the environment.
*Note: Based on the average TOC and alkalinity levels in our source water, we are required to meet an average percent (%) removal of TOC of 45%. If we don't achieve that % removal we are in violation of the Treatment Technique. In the year 2009 our average (%) for removal of Total Organic Carbon was 59.4%						
Unregulated Inorganic and Volatile Organic Chemical Contaminants						
Sulfate (ppm)	2009	38	N/A	N/A	250	Erosion of natural deposits.
Chloroform (ppb)	2009	62	11- 62	N/A	N/A	
Bromodichloromethane (ppb)	2009	28	13 - 28	N/A	N/A	
Bromoform (ppb)	2009	2.1	0.6 - 2.1	N/A	N/A	
Chlorodibromomethane (ppb)	2009	13	7.4 - 13	N/A	N/A	

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We routinely monitor for over one hundred and fifty contaminants in your drinking water according to Federal and State regulations.

GLOSSARY OF TERMS

Maximum Contaminant Level (MCL)

The highest level of a contaminant that is allowed in drinking water. MCL's are set as close as possible to the MCLG's as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) The level of a contaminant in drinking water below which has no known or expected risk to health. MCLG's allow for a margin of safety.

Parts per Million (ppm) Equivalent to milligrams per liter. One part per million corresponds to one penny out of \$1,000,000.

Parts per Billion (ppb)

One part per billion corresponds to one penny out of \$1,000,000,000.

Nephelometric Turbidity Unit (NTU)

A measure of the cloudiness of water by the amount of light that is reflected by the particles.

Action Level

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements, which a Water System must follow.

Treatment Technique (TT)

A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Unregulated Substances

Unregulated substances are those for which EPA has not established drinking water standards. The purpose of unregulated substance monitoring is to assist EPA in determining the occurrence of these substances in drinking water and whether future regulation is warranted.

Not-Applicable (N/A)

Information not applicable/not required for that particular water system or for that particular rule.

Picocuries per liter (pCi/L)

Picocuries per liter is a measure of the radioactivity in water.

WATER DISTRIBUTION OPERATIONS

Treatment.

Raw surface water from Jordan Lake is treated at the jointly owned Cary/Apex WTP. Maximum capacity is 40.0 million gallons per day (MGD). The treatment process has four main steps: **coagulation**, **sedimentation**, **filtration**, and **disinfection**. First, chemicals are mixed with the raw water to encourage the particulate matter and colloids in the water to join together (**coagulation**) and settle out (**sedimentation**). The settled material is removed and the water is filtered (**filtration**) to remove any remaining undesirable particulates. Finally, the water is disinfected (**disinfection**) to remove microscopic organisms such as viruses and bacteria. Your drinking water is tested on a daily basis by the Cary/Apex

WTP laboratory. The laboratory is certified by the State of North Carolina and approved by the EPA. Samples are analyzed by the chemists for hundreds of tests that are required for your drinking water. The presence of substances does not necessarily indicate that water poses a health risk.

Distribution.

Once the water has been treated at the Cary/Apex WTP, it is pumped from the plant into approximately one hundred and sixty-five miles of water transmission and distribution mains. These mains range in size from four inches to thirty inches. The Town currently has three elevated storage tanks. The Water Quality Division practices an on going water distribution

flushing program as required by the State of North Carolina. We utilize automatic flushing devices in low water usage areas to comply with water quality regulations. Specific areas of the water system such as the entry points, the elevated tank sites, and the furthest points are monitored daily for chlorine, ammonia, pH, fluoride, and temperature. All major, secondary, and dead-end lines are monitored on a weekly, biweekly, and monthly schedule. The Water Quality Division completes a thorough unidirectional system flushing once a year during the month of March. The treatment method for disinfection is changed from chloramines to free chlorine. During this operation the entire water system is isolated and each line is flushed pulling water

in one specific direction at a flow rate that cleans the pipe's interior and removes any sediment that has collected. Free chlorine allows us to super chlorinate the lines at safe levels while removing any sediment. These practices help to prevent the growth of any bacteria or the formation of disinfection by-products in the water system.

The water division continues to perform water system upgrades in the older parts of our infrastructure each year to improve the water quality including available pressure and flow. These upgrades also remove any existing lead fittings from our system as a part of our corrosion control awareness program.

BACKFLOW PREVENTION PROGRAM

The Public Works and Utilities Department is dedicated to providing safe and clean water to all of our customers. We want to make sure the water delivered to each customer is of the highest quality. When water leaves the Cary/Apex WTP, it is at its freshest and purest. One of the safeguards we have in place is our backflow prevention program. This program is designed to prevent contamination of the public water supply.

Whenever there is a connection to the system, whether temporary or permanent there is potential for contamination of the water system through backflow. Protective measures must be taken to prevent this backflow hazard. Federal law requires the Town of Apex to protect the water supply from such potential contamination. This is why we require all industrial, commercial and irrigation customers to install backflow

protection. These assemblies must be installed before any connection of the customer's plumbing can occur. Different types of backflow preventers are required based on the potential hazard it may pose to the system. Facilities on the Town's water system are evaluated to determine which hazard, if any, may potentially exist and the



type of backflow prevention assembly that will be required. After an approved backflow prevention assembly has been installed and tested, it must be re-tested annually. Only individuals who have been certified through a State of North Carolina School or Town of Apex approved school can test and inspect backflow assemblies.

IMPORTANT HEALTH CONCERNS

Drinking water, including bottled water, may reasonably be expected to contain at least some small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at : 1-800-426-4791. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infection. These people should seek advice about drinking water from their health care provider. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Town of Apex is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/>

Conservation Tips

The Town continues to encourage residents to conserve water through the odd/even watering schedule implemented in 2008.

Please do your part to conserve this very precious (and limited) resource!

- **Odd/even watering:**
Odd-numbered addresses may water only on Tuesday, Thursday, and Saturday.
Even-numbered addresses may water only on Wednesday, Friday, and Sunday. Lawn irrigation will not be allowed on Monday. Hand-held hose watering is allowed every day.
- **Refit your plumbing:** Install water-saving devices. Place a water-filled 2L bottle in your toilet tank to reduce the amount of water needed to fill it after each flush.
- **Check for leaks and repair them:** A single dripping water faucet can waste more water in a single day than one person could drink in an entire week! Leaks can amount to over 15% of all household water use.
- **Use indoor water wisely:** Turn off the water while lathering, shaving, or brushing your teeth. In the kitchen and laundry room, only run the dishwasher and washing machine on full loads. Limit flushing of toilets. Time your showers!
- **Take advantage of free water:** Catch rainwater from your gutters and use it to water your flowers and vegetables. Collect water from the shower while waiting for it to heat up.
- **Research:** Please visit: www.apexnc.org/depts/pw/divEnvironProg.cfm for more information and tips!

EPA Wants You to Know

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 the land or through the ground, it dissolves naturally-occurring minerals, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

SOURCE WATER ASSESSMENT PROGRAM RESULTS (SWAP)

The North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate or Lower. The relative susceptibility rating of Jordan Lake was determined by combining the contaminant rating (number and location of

PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the watershed and its delineated assessment area.). The assessment reported a rating of **Higher** for Jordan Lake watershed. The SWAP report date was May 17, 2007. The complete SWAP Assessment report for the Town of Apex may be viewed on the Web at: <http://swap.deh.enr.state.nc.us/swap/>.

Please note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this Consumer Confidence Report was prepared. To obtain

a printed copy of the report, please mail a written request to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh NC 27699-1634, or email request to swap@ncmail.net. Please indicate the system name, PWSID, and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-715-2633.

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

PWSID NC0392045