



2009 Water Quality Report



A Message from the Director

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The Stafford County Department of Utilities is pleased to provide you with this annual Water Quality Report for calendar year 2009. I am happy to report that all monitoring requirements were met, and all test results were well within the limits set by the U.S. Environmental Protection Agency (EPA) for safe public drinking water. Within this report, you will find information on where your public drinking water comes from, an update on construction of our new reservoir and water treatment facility and other data and sources for information you may find useful. In addition, you will find suggestions on ways you can conserve water. Please remember that we all need to remain focused on water conservation to ensure an adequate water supply for today and for the future.

We in Utilities are dedicated to providing reliable and cost-effective water services to the citizens of Stafford County. The services we provide are essential elements in the daily lives of those we serve. It has been said that water is the lifeblood of every community. The growth and sustainability of our community are, in part, driven by the adequacy as well as the location of our utilities. We try to focus all of our efforts on further enhancement of the quality of life within Stafford County by providing essential services necessary to support the current and future needs of the county.

Meeting ever-changing state and federal regulations, while supporting continued growth and redevelopment, requires us to maintain a dynamic, yet flexible, strategy. As we move forward, we must focus on our past experiences as well as on our future needs to stay ahead of growth, ensure that adequate resources are available and provide the highest level of service at the lowest possible cost. We also need to ensure that the water infrastructure and policies are in place to enhance the county's ability to withstand a drought or other catastrophe. These efforts require an extensive capital improvements program aimed at extending the useful life of water reservoirs, treatment facilities, pipes, tanks, hydrants, and valves; replacing key components as needed, and upgrading system capacities to meet future development needs and maintain the integrity and reliability of the water treatment and distribution systems.

None of our efforts would be possible without the dedicated, hard-working professionals we have in the Department of Utilities. The members of our staff are second to none in both their qualifications and in their commitment to serving the public. They work tirelessly to keep the water flowing for fire protection, commercial and industrial use and, most importantly, for drinking water purposes. In addition, we enjoy the support of County Administration and the Board of Supervisors in ensuring that adequate resources are available to allow us to focus our efforts on our mission.

As we move forward, we will continuously strive to institute new initiatives that will keep us in the forefront and enable us to become a benchmark for others within our industry. We are privileged to serve your needs and encourage your input as we all work collectively to maintain and enhance the quality of life here in Stafford County and its sustainability for the future.

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2009 Water Quality Report

Definitions for Terms Used in this Report

AL	Action Level: the concentration which, if exceeded, triggers a treatment requirement or other requirements which a water system must follow.
CDC	Centers for Disease Control
EPA	United States Environmental Protection Agency
MCL	Maximum Contaminant Level: the highest level of a contaminant allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal: 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.
MRDL	Maximum Residual Disinfectant Level: the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum Residual Disinfectant Level Goal: the level of a drinking water disinfectant below which there is no known or expected health risk. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
NTU	Nephelometric Turbidity Units: a measure of the amount of light dispersed as it passes through a column of water. Low turbidity is important because particulate matter in water can provide hiding places for bacteria which can impair disinfection of the water.
pCi/L	Picocuries per liter: unit of measure of radioactivity
ppb	Parts per billion: measure of concentration equal to 1 cent in \$10 million or about 1 minute in 1,902 years or the first 15 inches or so of a trip to the moon.
ppm	Parts per million: measure of concentration equal to 1 cent in \$10,000 or about 1 minute in 694 days.
SMCL	Secondary Maximum Contaminant Level: the level above which aesthetic qualities of the water such as its taste, odor, color or appearance may be affected.
TT	Treatment Technique: required process intended to reduce the level of a contaminant in drinking water.

Lead and Copper

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. Stafford County Utilities 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 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Abel Lake Water Treatment Facility Table of Detected Contaminants

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Regulated Contaminants (samples taken from the water distribution system)							
Parameter	Average Results	Range of Results	Units	MCL	MCLG	In Compliance? Yes / No	Source
Haloacetic Acids (HAA5s)	45 (highest 4-qr. compliance avg.)	19 - 52 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 60 ppb	None	Yes	Byproduct of drinking water disinfection
Trihalomethanes (TTHMs)	64 (highest 4-qr. compliance avg.)	30 - 58 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 80 ppb	None	Yes	Byproduct of drinking water disinfection
Fluoride	0.85	0.42-1.92	ppm	4	4	Yes	Added to water to promote strong teeth
Nitrate + Nitrite	0.15	1 test performed	ppm	10	10	Yes	Erosion of natural deposits, fertilizer runoff
Total Organic Carbon (TOC)	The running annual average of quarterly TOC percent removals ranged from 1.07 to 1.19		None	Treatment Technique: Running annual avg. of quarterly TOC % removals must be ≥ 1.0		Yes	Naturally present in the environment
Chlorine (samples taken from the water distribution system)							
Parameter	Highest 12-Month Running Annual Average	Range of Results (individual sites)	Units	MRDL	MRDLG	In Compliance? Yes / No	Source
Chloramines	2.7	0 - 3.5	ppm	4.0	4.0	Yes	Added as water disinfectant
Metals (samples taken from the customer's tap)							
Parameter	Action Level	MCLG	Test Results	Number of sampling locations above the EPA Action Level	In Compliance? Yes / No	Source	
Lead	90% of all test results must be 15 ppb or less	15 ppb	Results from 2007 <2 ppb to 3.9 ppb; 100% of the 32 samples taken were 15 ppb or less	0	Yes	Corrosion in household plumbing systems	
Copper	90% of all test results must be 1.3 ppm or less	1.3 ppm	Results from 2007 100% of all test results were 0.181 ppm or less	0	Yes	Corrosion in household plumbing systems	
Turbidity (samples taken from filtered water at the treatment facility)							
Parameter	MCL	Units	Max. Detected	Lowest Percentage of Monthly Samples Meeting Limit	In Compliance? Yes / No	Source	
Turbidity	Treatment Technique (TT) - at least 95% of all samples taken each month must be 0.3 NTU or less; 1 NTU maximum	NTU	0.32	99.9% of all samples taken were 0.3 NTU or less	Yes	Soil erosion from runoff	

1. Tests were performed for an additional 115 possible contaminants which were NOT DETECTED.
2. Lead, copper, and total coliforms are reported to the Health Dept. on a County-wide basis. Levels in the table are also County-wide (not each service area).
3. Lead and copper results are from 2007 - testing not required again until 2010.

Smith Lake Water Treatment Facility
Table of Detected Contaminants

Regulated Contaminants (samples taken from the water distribution system)							
Parameter	Average Results	Range of Results	Units	MCL	MCLG	In Compliance? Yes / No	Source
Haloacetic Acids (HAA5s)	35 (highest 4-qr. compliance avg.)	14 - 39 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 60 ppb	None	Yes	Byproduct of drinking water disinfection
Trihalomethanes (TTHMs)	56 (highest 4-qr. compliance avg.)	26 - 67 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 80 ppb	None	Yes	Byproduct of drinking water disinfection
Fluoride	0.89	0.65 - 1.28	ppm	4	4	Yes	Added to water to promote strong teeth
Nitrate + Nitrite	0.11	1 test performed	ppm	10	10	Yes	Erosion of natural deposits, fertilizer runoff
Total Organic Carbon (TOC)	The running annual average of quarterly TOC percent removals ranged from 1.30 to 1.46		None	Treatment Technique: Running annual avg. of quarterly TOC % removals must be ≥ 1.0		Yes	Naturally present in the environment
Chlorine (samples taken from the water distribution system)							
Parameter	Highest 12-Month Running Annual Average	Range of Results (individual sites)	Units	MRDL	MRDLG	In Compliance? Yes / No	Source
Chloramines	2.5	0.5 - 3.8	ppm	4.0	4.0	Yes	Added as water disinfectant
Metals (samples taken from the customer's tap)							
Parameter	Action Level	MCLG	Test Results	Number of sampling locations above the EPA Action Level	In Compliance? Yes / No	Source	
Lead	90% of all test results must be 15 ppb or less	15 ppb	Results from 2007 <2 ppb to 3.9 ppb; 100% of the 32 samples taken were 15 ppb or less	0	Yes	Corrosion in household plumbing systems	
Copper	90% of all test results must be 1.3 ppm or less	1.3 ppm	Results from 2007 100% of all test results were 0.181 ppm or less	0	Yes	Corrosion in household plumbing systems	
Turbidity (samples taken from filtered water at the treatment facility)							
Parameter	MCL	Units	Max. Detected	Lowest Percentage of Monthly Samples Meeting Limit	In Compliance? Yes / No	Source	
Turbidity	Treatment Technique (TT) - at least 95% of all samples taken each month must be 0.3 NTU or less; 1 NTU maximum	NTU	0.28	100% of all samples taken were 0.3 NTU or less	Yes	Soil erosion from runoff	

1. Tests were performed for an additional 109 possible contaminants which were NOT DETECTED.
2. Lead, copper, and total coliforms are reported to the Health Dept. on a County-wide basis. Levels in the table are also County-wide (not each service area).
3. Lead and copper test results are from 2007 - testing not required again until 2010.

Potential Sources of Water Contaminants

The Abel Lake and Smith Lake reservoirs are currently the sources of public water in Stafford County. Almost 86 square miles of land drains into these reservoirs. As the water travels over the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- **Microbial contaminants** such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;
- **Inorganic contaminants** such as salts and metals, which can be naturally occurring or result from urban 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; or
- **Radioactive contaminants** which can be naturally occurring or can 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 that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some of these contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. We must test the water to ensure that any contaminants present are below the maximum levels set by EPA. We test for color, iron, manganese, turbidity, organics and other materials. We add fluoride to promote healthy teeth, and the water is disinfected to protect against waterborne disease. You can obtain additional information and learn about potential health effects by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, and some elderly people and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Source Water Assessments

In 2002, the Virginia Department of Health conducted assessments of our two water reservoirs. These assessments were done to determine how susceptible Stafford's two reservoirs are to contamination. Since both are surface water reservoirs open to the environment and both have specific land use activities and potential sources of contamination within a 5-mile radius of the raw water intakes, both reservoirs were determined to be highly susceptible to contamination. It is, therefore, imperative that we all take care to ensure that we properly dispose of trash, waste oil and other hazardous materials, so that they do not enter streams, storm drains or other possible routes of contamination to our reservoirs.

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Tips to Help Conserve Water

1. Do not water streets, driveways or sidewalks.
2. Set your lawn mower blade at 3 inches - the extra grass height will promote deeper root growth, shade the root system and hold moisture better.
3. When planting, select hardy plants that do not require much water.
4. Check for leaky faucets and toilets - our Web site has more information on how to do this.
5. Use mulch around plantings to reduce their need for water.
6. Do not let the water run while shaving or brushing your teeth.
7. Run the dishwasher only when you have a full load.
8. If you have to water your lawn or plantings, do so only in the early morning or in the evening when it is cooler and less will be lost to evaporation.

Rocky Pen Run Update

The new raw water pumping station adjacent to the Rapahannock River is essentially complete. Design is now underway for an earthen dam which will create the new 5.3 billion gallon Rocky Pen Run Reservoir. In addition, design is almost complete for the new Rocky Pen Run Water Treatment Facility adjacent to the reservoir. Initially, the water treatment facility will have a production capacity of 5 million gallons per day (MGD) and can be readily expanded in increments to 25 MGD. These improvements are expected to be operational in the spring of 2013.

WE WANT TO HEAR FROM YOU

Today, we face many water-related issues including protection of our water resources, timely renewal and replacement of aging pipes, planning to meet current and future water needs, and upgrades to our treatment facilities to meet increasingly stringent water quality requirements. As these issues are discussed, input from citizens and our water customers is needed. Please consider attending meetings of the Board of Supervisors and the Utilities Commission in the Stafford County Administration Center to keep abreast of important issues and to voice your thoughts. Check with your local newspaper and/or on the County's Web site at www.staffordcountyva.gov for meeting dates and times. Also, feel free to call us at 658-8620 to discuss particular issues that are important to you as well as to the community.



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