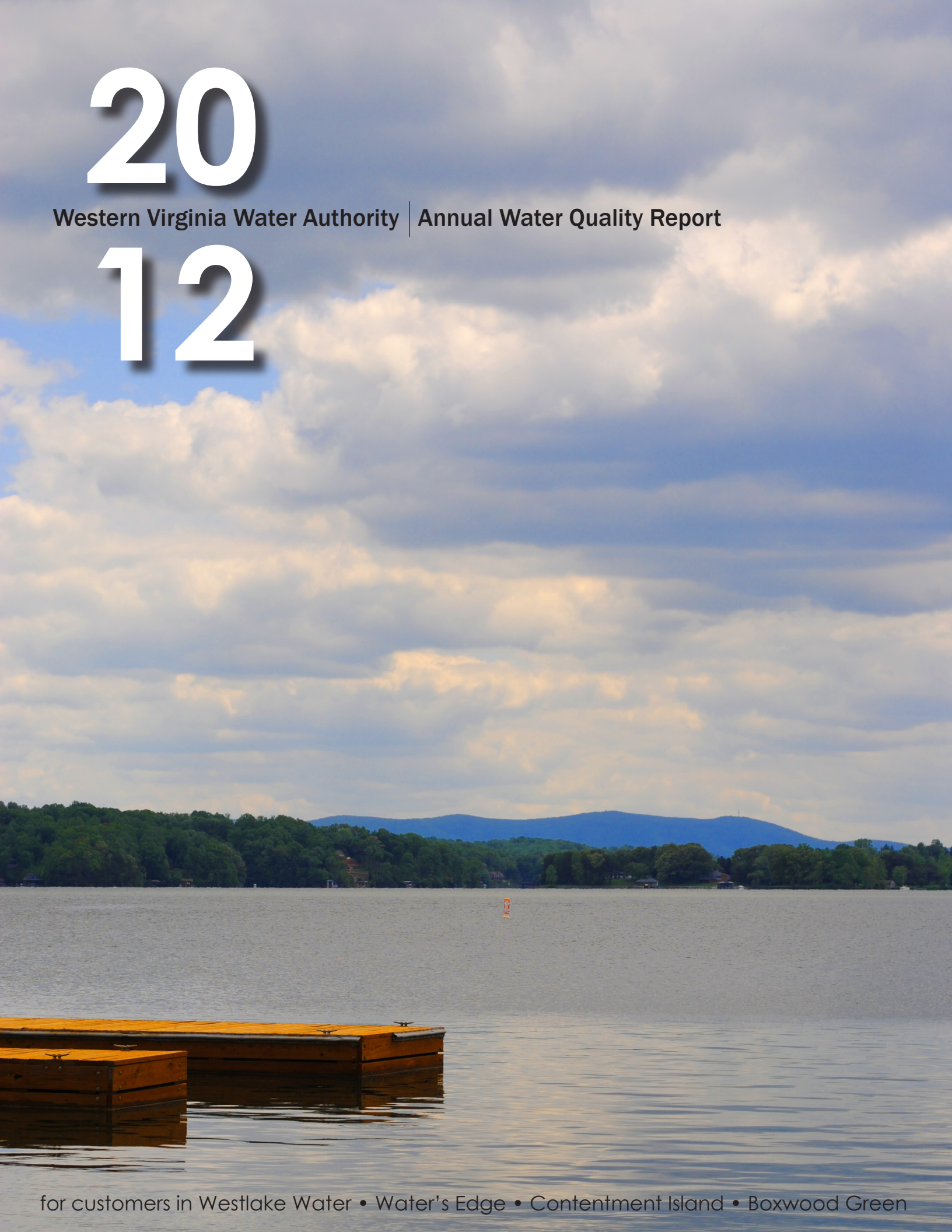
2012

Western Virginia Water Authority | Annual Water Quality Report



for customers in Westlake Water • Water's Edge • Contentment Island • Boxwood Green

Your Water Quality Report

This Annual Drinking Water Quality Report for calendar year 2011 is designed to inform you about your drinking water quality. Our goal is to provide you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

If you have questions about your water supply or any of the information in this report, please contact us. Or give us a call to schedule a tour of one of treatment facilities, schedule a free SOL-correlated classroom presentation or arrange for a civic presentation to your civic or community group.

Getting to Know Us

Established in July 2004, the Western Virginia Water Authority, is a public authority funded by utility rates and new connection fees, not taxes. In November 2009, Franklin County joined the Water Authority, offering a larger regional approach to meeting our communities' water and wastewater needs. Although our customer base expanded, our mission remains the same - we proudly protect and manage essential water resources through the delivery of quality water and wastewater service to our customers.

Our Executive Directors are Mike McEvoy (left), Executive Director, Wastewater Services and Gary Robertson, P. E. (right), Executive Director Water Operations.

If you have questions about this report, please contact our customer service representatives. They are available Monday-Friday from 8am to 5pm to assist you on the phone at 853.5700 or in person. You can also send us an email at info@westernvawater.org.

If you want additional information about any aspect of your drinking water or want to know how to participate in decisions that may affect the quality of your drinking water, we've created a link for Franklin County Customers directly on our home page (www.westernvawater.org) so you can get project updates, rates and water quality reports all in one easy location.

And you are always welcome to attend our Board meetings at the Authority's main office, the Coulter Building in downtown Roanoke. Representatives from each member locality make up the Authority's Board of Directors. Board Members meet on the 3rd Thursday of every month with the exception of August and December.

WESTERN VIRGINIA
WATER AUTHORITY

Drinking Water Information

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. Contaminants in source water may be naturally occurring substances, or may come from septic systems, discharges from domestic or industrial wastewater treatment facilities, agricultural and farming activities, urban stormwater runoff, residential uses, and many other types of activities. Water from surface sources is treated to make it drinkable while groundwater may or may not have any treatment.

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 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, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- 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 and 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.

All drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Do I Need to Take Special Precautions?

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 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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Water Discoloration

Changes in water pressure in water systems, such as when water mains break or technicians flush hydrants, can occasionally cause drinking water to be discolored. The discoloration is caused by sediments in pipes mixing with clear water. The sediments occur naturally from the oxidation of iron in pipes. While discolored water is ordinarily safe to drink, it is best to flush any discolored water from pipes by turning on all cold-water faucets in your home or business. Avoid turning on hot-water faucets so the discolored water is not drawn into water heaters.

One cause of water pressure change is from the use or flushing of fire hydrants. If you notice evidence of a water main break or leaking fire hydrants, please call 853.5700.

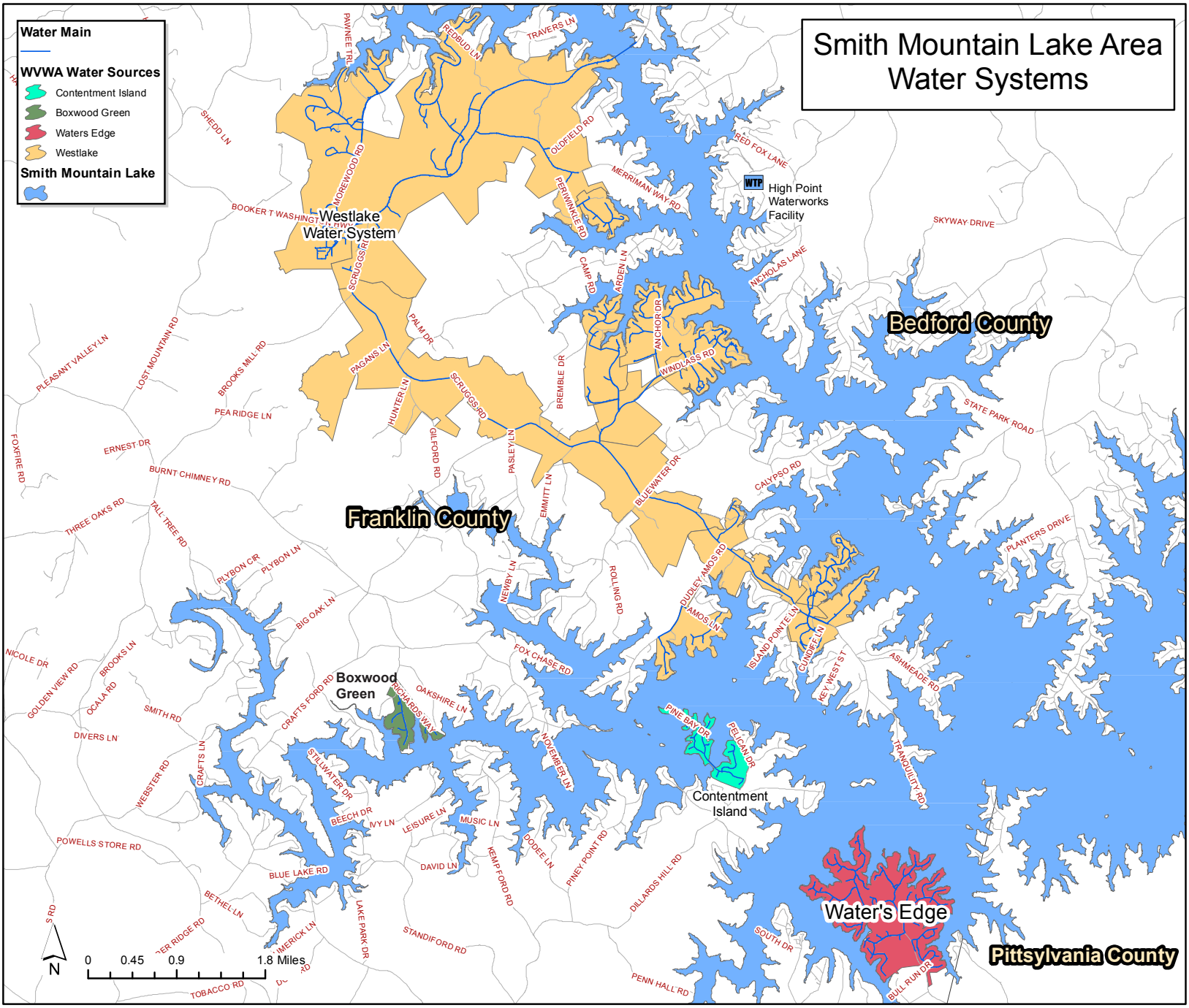
Lead & Copper

Copper is a nutritionally essential element, but at high levels, copper can cause gastrointestinal difficulties such as nausea and diarrhea.

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 Western Virginia Water Authority 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.



Where Does Your Water Come From?

Westlake Area Public Water System

Customers who live in the Westlake Commercial District, the Chestnut Creek, Waterfront, Boardwalk and Windmere Point communities and along Scruggs Road are served by the Westlake Area Public Water System. The Authority has a successful working relationship with the Bedford County Public Service Authority (BCPSA) to provide treated drinking water from the Highpoint Water Treatment Plant to the Westlake area.

This membrane filtration facility treats water from Smith Mountain Lake. The Authority's share of the plant's capacity is 400,000 gallons per day (GPD). The finished water in the distribution system is re-chlorinated at The Boardwalk and at the Waterfront Section 2-9 subdivisions for continuous chlorination.

Boxwood Green Water System

Customers who live in the Boxwood Green community get their drinking water from groundwater wells (Wells No. 3, 4 and 5). Greensand filters are used to remove iron, manganese and radium from the drinking water.

A source water assessment of the Boxwood Green Water System was conducted in 2003 by the Virginia Department of Health. Wells No. 3, No. 4 and No. 5 were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last five years. The report is available by contacting the Authority at the phone number or address provided in the drinking water quality report.

Contentment Island Water System

Customers who live in the Contentment Island community get their drinking water from groundwater wells (Wells 1, 2 and 3). Treatment of the water is provided by feeding chlorine for continuous disinfection of the water and soda ash for pH adjustment of the water.

According to results of the chemical analyses for Metals based on a sample collected on May 4, 2011 the sodium in the treated water is 21.8 mg/L. This is above the EPA recommended optimal level of less than 20 mg/L for sodium in drinking water, which is established for those individuals on a "strict" sodium intake diet. This elevated level of sodium could be caused by the soda ash being added to the water for pH adjustment.

On January 12, 2011, the Virginia Department of Health issued a violation for failure to provide lead and copper consumer notices within the thirty day deadline for the June 1 thru September 30, 2010 monitoring period. This occured while the system was under previous ownership. The public notification was completed on January 28, 2011.

A source water assessment for Contentment Island will be conducted in the next year. After the assessment is conducted, we will provide you with information about potential sources of contamination and ways to reduce or eliminate them.

Water's Edge Water System

Customers who live in the Water's Edge community get their drinking water from four groundwater wells (Well No. 3, 4, 11 and 12) that are located throughout the Water's Edge subdivision. Treatment of the water at Well No. 12. is provided by feeding continuous chlorination for disinfection of the water, adding soda ash for pH adjustment of the water and potassium permanganate for removal of iron and manganese. Three greensand filters are used to remove iron, manganese and radium from the drinking water. No treatment is added to Wells No. 3 and 7.

A source water assessment of the Water's Edge Water System was conducted in 2002 by the Virginia Department of Health. Wells No. 3, No. 4 and No. 7 were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last five years. The report is available by contacting the Authority at the phone number or address provided in the drinking water quality report.

According to results of the chemical analyses for Metals based on a sample collected on July 23, 2009 for entry point EP001 (Wells No. 4 and 11), the sodium in the treated water is 26.4 mg/L. This is above the EPA recommended optimal level of less than 20 mg/L for sodium in drinking water, which is established for those individuals on a "strict" sodium intake diet. This elevated level of sodium could be caused by the soda ash being added to the water for pH adjustment.

The Authority has been working with the Virginia Department of Health to design a new treatment for the Water's Edge Water System that will raise the pH level without also increasing the sodium level. The project consists of the addition of an orthophosphate feed system for corrosion control and a sodium hydroxide feed system for pH adjustment. Construction on the new process should be completed by early fall.

Substance	Units	Ideal Goals (EPA's MCLG)	Highest Level Allowed (EPA's MCL)	Violation	Most Recent Data Presented as (Range) Average Boxwood Green	Water's Edge	Contentment Island
Chlorine	ppm		4-MDRL	no	(0.6 - 0.8) 0.72	(0.27 - 1.09) Average 0.58	(0.06 - 1.24) 0.5
Fluoride	ppm	4	4	no		(ND - 0.13) High 0.13	0.22
Total Nitrate & Nitrite (as N)	ppm	10	10	no		(ND - 0.38) High 0.38	0.19
Barium	ppm	2	2	no		(0.0036 - 0.57) HIgh 0.57	0.03
Chromium	ppb	100	100	no		(ND - 0.9) High 0.9	
TTHMs	ppb	0	80	no	0	1.3	2
HAA5s	ppb	0	60	no	0	ND	ND
pH	pH units		6.5 - 8.5	no		(6.12 - 7.86)	6.77
Turbidity	NTU	TT	0.3	no		(ND - 0.39)	1.76
Total Coliforms	MPN/ 100 mL or P/A	0	Presence of coliform bacteria in >5% of monthly samples	no	0	0	1 of 5 samples collected was positive (Feb 2011)
Fecal Coliforms	MPN/ 100 mL or P/A	0	A routine and a repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive.	no	0	0	0
Most Recent Monitoring Period							
Gross Alpha	pCi/L	0	15	no		(<0.5 - 10.8)	1.9
Gross Beta	pCi/L	0	50	no		(2.6 - 8.6)	
Radium 226/228	pCi/L	0	5	no	1.1	(ND - 0.8) High 0.8	1.3
Lead	ppb	0 ppb	AL = 15	no	9 (90th percentile) Of 10 samples, two were above the AL	12 (90th percentile) Of 23 samples, 2 were above the AL	3 (90th percentile) Of the five samples collected, none exceeded the AL
Copper	ppm	1.3 ppm	AL = 1.3	Yes - Water's Edge only	0.5 (90th percentile) Of 10 samples, none were above the AL	2 (90th percentile) Of 23 samples, 6 were above the AL	0.3 (90th percentile) Of the five samples collected, none exceeded the AL
Other Parameters (Not Regulated)							
Iron	ppm	unregulated	0.3	n/a		(ND - 0.021)	0.032
Manganese	ppm	unregulated	0.05	n/a		(ND - 0.005)	0.041
Zinc	ppm	unregulated	5	n/a		(0.004 - 0.031)	0.373
Alkalinity	ppm	unregulated		n/a		(36.7 - 134)	84.7
Hardness	ppm	unregulated		n/a		(24.8 - 121)	46.4
Conductivity	µmhos/cm	unregulated		n/a		(84.6 - 332)	162
Sodium	ppm	unregulated		n/a		(5.76 - 26.4)	21.8
Corrosivity		unregulated	Based on the Langelier index, 0 is neutral <-2.0 highly aggressive >0.0 non aggressive	n/a		(-2.97 to -1.06)	-0.85

2011 Water Quality Data

Contaminants in your drinking water are routinely monitored according to federal and state regulations. This table shows the results of this monitoring for the period of January 1st through December 31st, 2011. The table lists only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

Most of the results in the table are from testing done in 2011. However, the state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our results, though representative, are more than one year old.

The U.S. Environmental Protection Agency sets MCLs at very stringent levels. In developing the standards EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs at levels that will result in no adverse health effects for some contaminants or a one-in-ten-thousand to one-in-one-million chance of having the described health effect for other contaminants.

Westlake Area Public Water	Bedford County PSA Source for Westlake Area Public Water	Source of Substance
(0 - 0.96) 0.31	(0 - 1.4) 0.8	Required disinfectant added during treatment process to eliminate bacteria
		Erosion of natural deposits; water additive which promotes strong teeth; discharge from aluminum and fertilizer factories
0.4	0.4	Run-off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
	0.03	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
		Discharge from steel and pulp mills; erosion of natural deposits
(58 - 101) 73 RAA	(34 - 54) 53	By-product of drinking water chlorination
(12-59) 34 RAA	(17 - 46) 41	By-product of drinking water chlorination
(7.1 - 8.5) 8.0	(7.1 - 8.5) 8.0	Acidity or basicity of water
0.094 (highest level detected 2011)	0.094 (highest level detected 2011)	Soil run-off
0	0	Naturally present in the environment
0	0	Human and animal waste
0.1	0.1	Erosion of natural deposits
		Decay of natural and man-made deposits
0.8	0.8	Erosion of natural deposits
1.5 (90th percentile) Of 11 samples, none were above the AL	5 (90th percentile) Of 12 samples, none were above the AL	Natural\industrial deposits, plumbing solder, brass alloy in faucets
0.38 (90th percentile) Of 11 samples, none were above the AL	1.1 (90th percentile) Of 12 samples,one was above the AL (0.05 - 1.4)	Natural\industrial deposits, plumbing, wood preservatives
		Naturally occurring in the environment
		Naturally occurring in the environment
		Naturally occurring in the environment
		Measurement of naturally occurring carbonates
(69 - 199) 114	(69 - 199) 114	Measurement of naturally occurring hardness metals
		Physical property of water
		Naturally occurring in the environment
		Physical property of water that occurs when water reacts with metal

Water Hardness

As water naturally flows over rocks and through the soil, it picks up minerals. The more calcium and magnesium present, the harder your water. While water hardness is not a safety issue, you may notice increased mineral build-up or soap residue with harder water.

Hardness can be expressed as PPM - parts per million or GPG - grains per gallon.

PPM	GPG	Rating
0 - 75	0 - 4.3	Soft
76 - 150	4.4 - 8.7	Moderately Hard
151 - 300	8.8 - 17.5	Hard
over 300	17.6 +	Very Hard

Definitions

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

HAA5s: Haloacetic acids.

Maximum Contaminant Level (MCL):
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available treatment technology.

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 Residual Disinfection Level (MRDL): The highest level of a disinfection allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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

mg/L: Milligrams per liter (for example, one minute in two years).

MPN: Most probable number.

ND: lab analysis indicates that the contaminant is not detectable, based on the limits of the analytical equipment used.

NTUs: Nephelometric Turbidity Units; a measure the cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L: Picocuries per liter is a measure of the radioactivity in water.

Parts per million (ppm): One part per million (for example, one minute in two years or one penny in $10,000).

Parts per billion (ppb): One part per billion (for example, one minute in 2,000 years or one penny in $10,000,000,000).

RAA: Running Annual Average based on four quarters of analysis results.

TTHMs: Total Trihalomethanes

Treatment Technique (T.T.): A required process intended to reduce the level of a contaminant in drinking water.

µg/L: Micrograms per liter (for example, one minute in 2,000 years).

µmhos/cm: Micromhos per centimeter; a measure of conductivity.

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WATER AUTHORITY
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If you are interested in a presentation for your school or civic group about your water and the treatment of your drinking water treatment, please give us a call at 540.853.5700 to schedule a presentation. This past year, over 10,000 students participated in free Water Authority outreach programs and presentations have been given to over 50 civic groups.