



Bedford Regional Water Authority



Annual Report & Consumer Confidence Report 2016

Providing Quality Service For Everyone



A Note From the Executive Director, Brian Key

It has been an incredible year of progress for the Authority! We are nearly complete with the construction of the new Smith Mountain Lake Water Treatment Plant and the twenty miles of waterlines connecting the Lakes, Town, and Forest systems all together; more information on that project can be found within this report. We have also made progress on implementing an asset management system to better assess the needs for repairs and replacements of the existing water and sewer systems throughout the County. Additionally, we recently implemented a new payment system (Paymentus), whereby our customers can view and pay their bills online or over the phone at any time of the day or night.



We also have a lot of great work that is in process. We are preparing to change to monthly billing soon, as many of our customers have been pleading for this service for some time. Having twelve bills per year (instead of just six) will not only cut the amount of the bill in half, it will also provide for a more consistent bill schedule and it will allow customers to see periods of high consumption more quickly (in case there are leaks that need to be fixed).

We hope you enjoy the service that we provide, as much as we enjoy providing it!



Mission Statement:

The Bedford Regional Water Authority exists to provide its customers with high quality water and wastewater services at rates that are reasonable and just. The Authority shall anticipate the needs of the greater community by continually maintaining responsive, reliable service and through systematic expansion whenever economically possible.



What to Expect From This Report

This report combines the Consumer Confidence Report ("CCR") with the Annual Report of the Authority for 2016. The desire with this report is not only to dispense the information required by law, but to also give customers a comprehensive look at what the Authority has been doing throughout the past year and what to expect from the organization in 2017.

The Consumer Confidence Reporting section of this document for calendar year 2016 is designed to inform customers about their drinking water quality. The goal is to provide customers with a safe and dependable supply of drinking water, and the Authority wants customers to understand the efforts made daily to protect the water supply. The quality of the drinking water must meet state and federal requirements administered by the Virginia Department of Health ("VDH"). The presence of a particular constituent does not mean that the water is unsafe to drink; however, if something is detected above the maximum level, the PWS must discuss the potential health effects and actions taken to correct the problem.

In the following pages you will see:

- An introduction to our new water treatment plant at Smith Mountain Lake
- Strategic planning goals for 2017
- An overview of the customer population of the Authority
- Information about the quality of your drinking water (CCR information)
- Information about the Board of Directors
- Who to contact with questions
- And much more!



Introducing the NEW Smith Mountain Lake Water Treatment Facility

After many years of planning, it was a giant step when the ground was broken in September 2015 on the project to build a more innovative and higher capacity water treatment plant at Smith Mountain Lake. Since that time, it has been non-stop progress, with the team working over holidays and weekends to finally get to a stage where the water is running from Smith Mountain Lake to Bedford and Forest.

The Authority previously had a 1 million gallon a day capacity plant at Smith Mountain Lake. This plant produced water for customers in the Lake area, including Franklin County with about 300,000 gallons per day being sold to Western Virginia Water Authority for their customers. With a growing customer base, expansion was needed at the Lake along with the need to provide a backup source for the Town of Bedford and Forest.

The Regional Long Range Water Supply Plan, completed in 2010 in conjunction with the Roanoke Valley-Alleghany Regional Commission, recommended expanding the drinking water treatment and distribution system from Smith Mountain Lake to meet the growing water needs within the region by 2060. Additionally, the Town of Bedford's reversion agreement required the Authority to provide a backup source of water to the Town. To this end, the Bedford Regional Water Authority and the Western Virginia Water Authority signed an agreement on May 7, 2014 to work together to develop the new water treatment facility and implement this recommendation. Under the partnership concept, the two water authorities equally share the ownership and the operation of the new Smith Mountain Lake Water Treatment Facility. The new facility will allow for the drinking water needs of current and future customers to be met.

The facility was constructed through a progressive design/build ("DB") agreement with Black & Veatch and Overland Contracting, Inc., with CHA Consulting serving as a local design/build representative for the project. DB was chosen for this project based on the flexibility and fast paced timeline it offered. This project had a tight deadline due to the governing bodies requirement for a backup source of water for the Town of Bedford. Other challenges that DB helped overcome was the limited funding for the project, since it was paid by the ratepayers of a small authority, and having to combine two water authority concepts. Design/build offered the flexibility, speed, and cost control needed for this project. The Authority is proud of the process and product that design/build made achievable. The end result is a state of the art water treatment facility that provides water to customers in Bedford County, Franklin County, and the Town of Bedford.





What is the Bedford Regional Water Authority?

The Bedford Regional Water Authority (“Authority”) was created by the Bedford County Board of Supervisors (“Supervisors”) by a resolution dated November 14, 2012 and the Bedford City Council (“Council”) by resolution dated November 27, 2012. The Bedford Regional Water Authority combined the former Bedford Public Service Authority and the former City of Bedford Water and Sewer Department into a water authority that provides water and wastewater services for the Town of Bedford and Bedford County.

Three of the initial Board of Director members were appointed by the Supervisors on November 14, 2012, and three of the initial members were appointed by the Council on December 11, 2012; the seventh member was recommended by the BRWA, and confirmed by the Council and the Supervisors. The State Corporation Commission approved the Articles of Incorporation on December 13, 2012. The first board meeting was held on December 18, 2012. You can [view the current board of directors on the Authority’s website](http://www.brwa.com) (www.brwa.com).

Currently the Authority has 64 employees and operates 24 hours a day, 7 days a week, 365 days a year to provide customers with high quality water and wastewater services. Authority staff are constantly being trained on new technologies, safety issues, customer service protocol, and other related items to assist in achieving the organization’s goal of providing the highest quality water and the best customer service possible.



Strategic Planning for 2017

Each year management at the Authority sits down to brainstorm, analyze, and think strategically about the coming year. This is a time when any idea is open for discussion and forward thinking is encouraged. As the discussion continues, the team narrows down the strategic goals they see best for the Authority and its customers for the coming year. This information is then presented to the Board of Directors for discussion, evaluation, and approval. Once approved, Authority staff start working towards these goals with their teams.

For 2017, these are the goals that the Authority Board and staff have set out to accomplish:

- ⇒ Begin developing an asset management plan
 - Evaluate, select, and purchase software
 - Begin Data Collection
 - Likely includes changes to the work order system
- ⇒ Implement and start utilizing mobile devices to take advantage of their potential
 - This includes GIS, email, photos, videos, and data management
- ⇒ Create internal quarterly workshops, both staff taught and attended, to create more understanding and education between departments.
 - This may also include a mentoring program.
- ⇒ Implement the expansion of Advanced Metering Infrastructure
 - Install additional meter reading collectors and replace analog meters
 - Evaluate feasibility of more frequent billing schedules
- ⇒ Expand the Capital Improvement Program to expedite the replacement of depreciated or failing infrastructure.



Overview of Facilities

- 6 Water Treatment Plants
- 2 Water Intake Stations & 1 Reservoir
- 2 Water Booster Stations
- 12 Water Storage Tanks
- 3 Wastewater Treatment Plants
- 22 Sewer Lift Stations
- 2 Administrative Office Buildings & 1 Shop



The Environment and Bedford Water

It is a well known fact that there is only so much water on this planet, and that we just keep recycling it year after year. This means it is essential to care for our water and treat it so no harm comes to this valuable resource, the people who need it, or the natural ecosystems that surround us. The Authority recognizes the importance of this essential resource, and we are passionate about treating water in a safe way for both people and the environment. Below is a partial listing of how we play a part in keeping a clean and thriving environment and a healthy community.

- The water we distribute to our customers goes through a filtration and treatment system and a disinfection process that makes the water safe and ready to drink.
- The water that we collect, treat, and put back into streams is required to be below the levels the Department of Environmental Quality sets. These levels ensure that the water is safe for all organisms after it enters back into streams.
- The Authority recognizes the importance of protecting our communities, not only through clean water and eco-friendly processes, but by also providing water to fire hydrants for emergencies as they arise.



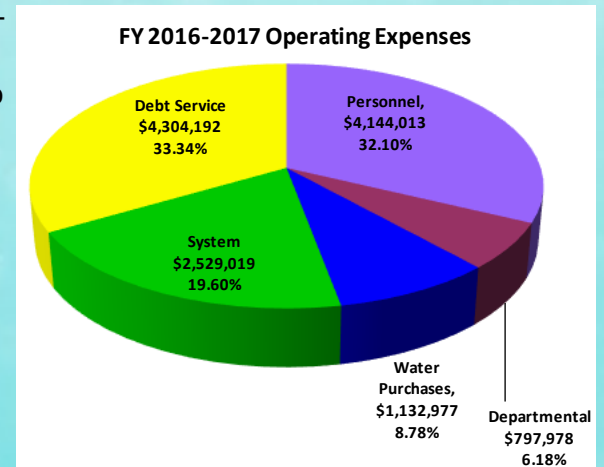
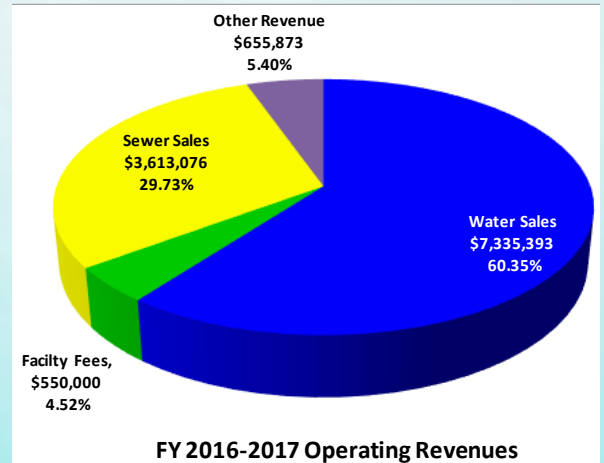


2016 Financial Review

For the fiscal year ended June 30, 2016 the Authority experienced an increase in operating revenues of \$1,081,266, compared to an increase of \$1,262,409 from the previous year. Operating expenses increased by \$1,367,512 compared to an increase of \$245,665 from the previous year. Factors that contributed to the revenue increase were increased facility fees, increased customers, and year four of the rate equalization process. Developer Dedications totaled \$288,690 for FY 2016, compared to \$910,637 in the previous year. Expenses for the water and sewer systems were a large part of the increase in operating expenses due to increased costs of purchasing and producing water and treating wastewater.

The FY 2016-2017 budget included the fourth year of the rate equalization process, and the rates used in this budget were determined through a study that was prepared by Draper Aden Associates in the spring of 2014. The current budget for the Authority again includes the facility fees in operating revenues, which is a practice that will hopefully terminate in the next two to five years as the rate equalization process continues and the Authority is able to set aside funds for capital projects.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Bedford Regional Water Authority for its comprehensive annual financial report (CAFR) for the fiscal year ended June 30, 2016. This is the third year that the Authority has received this prestigious award.



Certificate of Achievement for Excellence in Financial Reporting

The Authority's comprehensive annual financial report (CAFR) for the year ended June 30, 2016, was awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association of the United States and Canada (GFOA). In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we have submitted it to the GFOA to determine its eligibility for another certificate.

This is the fourth year that the BRWA has earned this certificate of achievement; however, the Bedford County Public Service Authority had received the award 17 consecutive years prior to consolidation.



The Authority proudly displays all of its GFOA awards.



Meet the Board of Directors

The Authority board hires the Executive Director, who is responsible for managing the Authority. The Authority is composed of managers and staff specializing in Administration, Customer Service, Engineering, Finance, Human Resources, Information Systems, Maintenance, and Operations.

The times and location of regularly scheduled board meetings are the third Tuesday of every month at 7:00 PM in the Bedford Regional Water Authority Board Meeting Room located at 1723 Falling Creek Road in Bedford.



Mr. Michael Moldenhauer

Term Expires
December 2019



Mr. Tom Segroves

Term Expires:
December 2019



Mr. Elmer Hodge

Term Expires:
December 2020



Mr. Walter Siehien

Term Expires:
December 2018



Mr. Robert Flynn

Term Expires:
December 2020



Mr. Carl Wells

Term Expires:
December 2020



Ms. Cynthia Gunnoe

Term Expires:
December 2020



Contact Us

Hours of Operation:

8:30 a.m. to 5:00 p.m.

Monday through Friday

Customer Service

540-586-7679, Extension 4

customerservice@brwa.com

- Water bills
- Rates and connection fees
- Signing up for service
- Disconnecting well service
- Reporting a leak or pressure problem during operating hours

Administration

540-586-7679, Extension 7

admin@brwa.com

- Board of Directors information
- Board and Committee meeting information

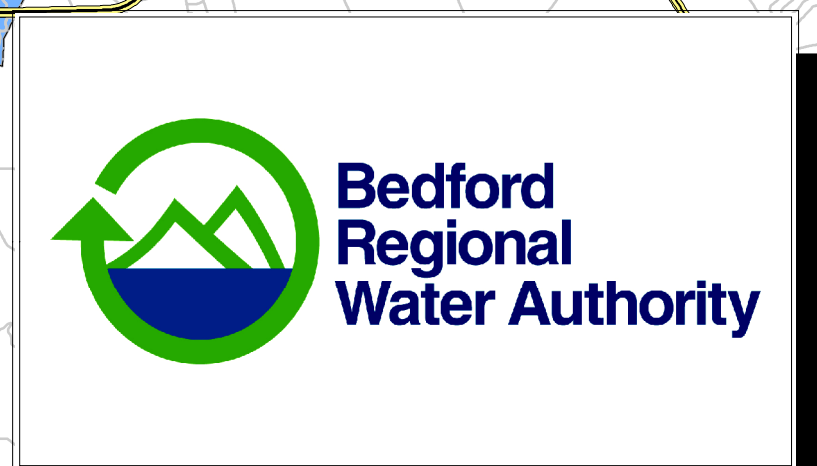
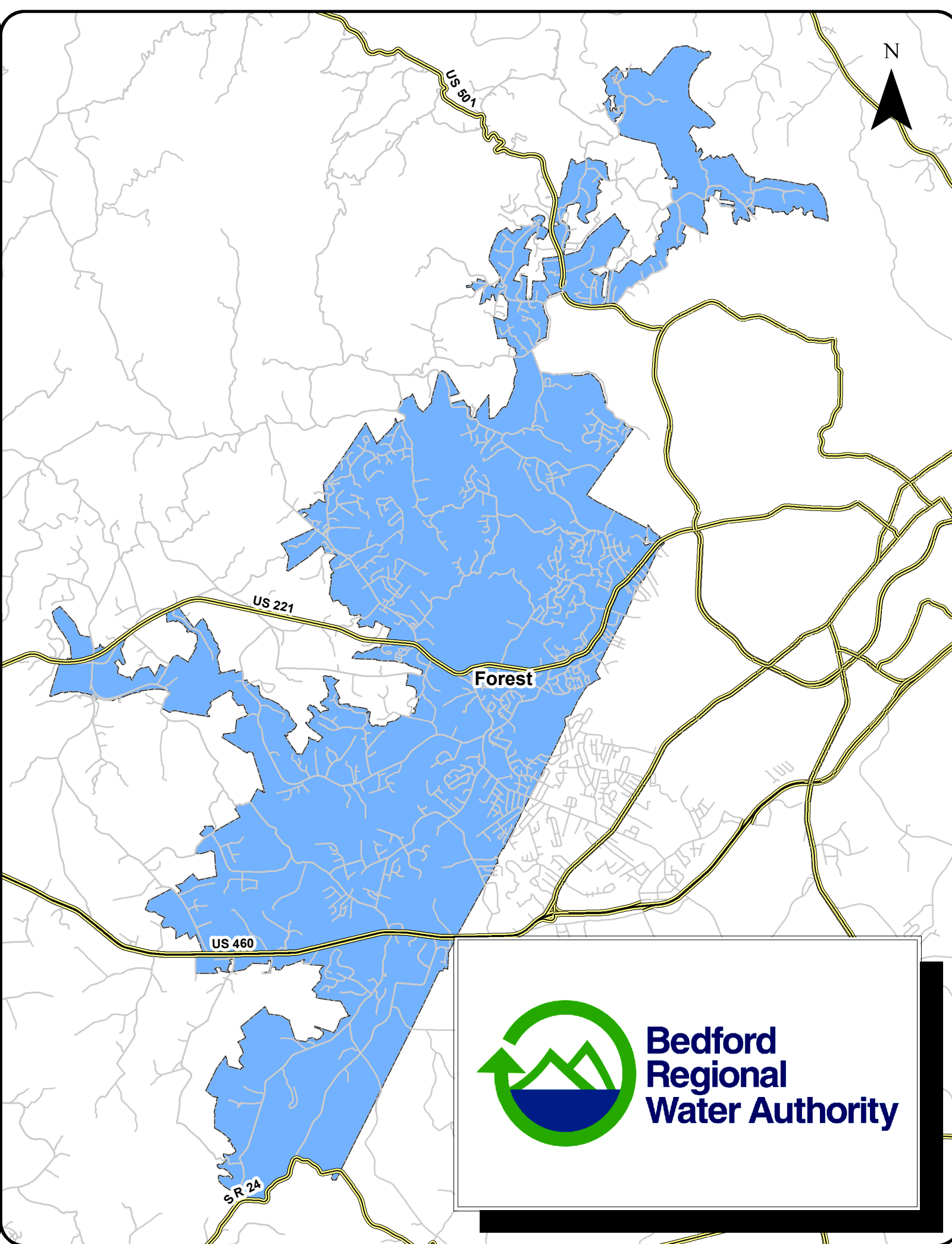
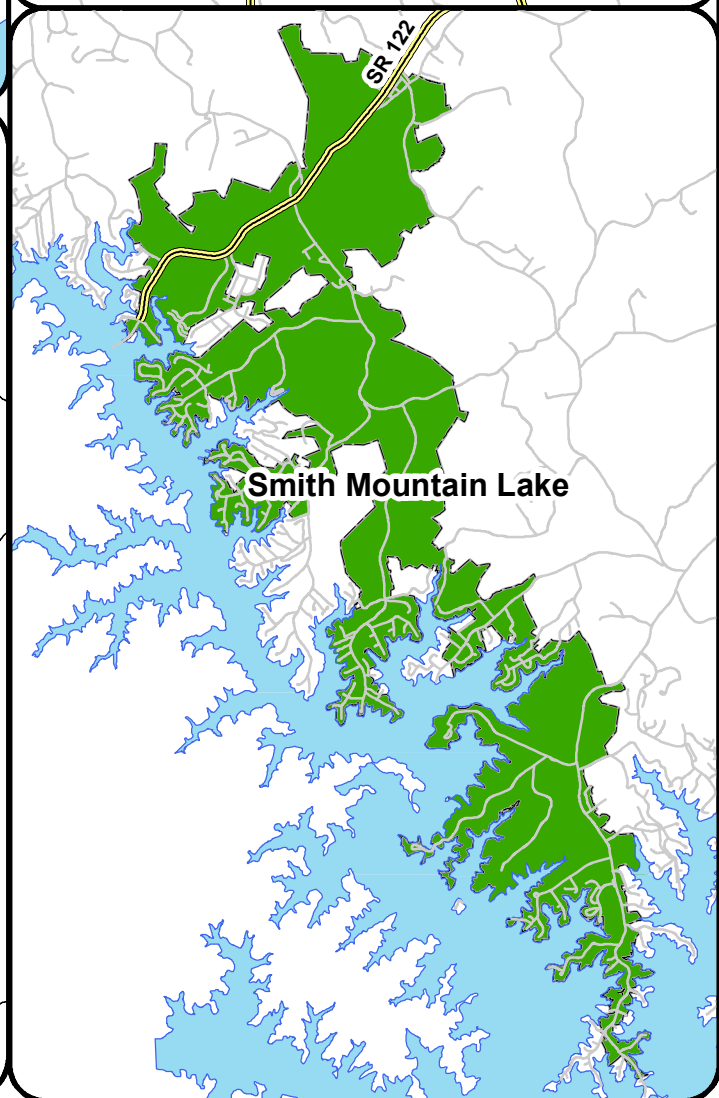
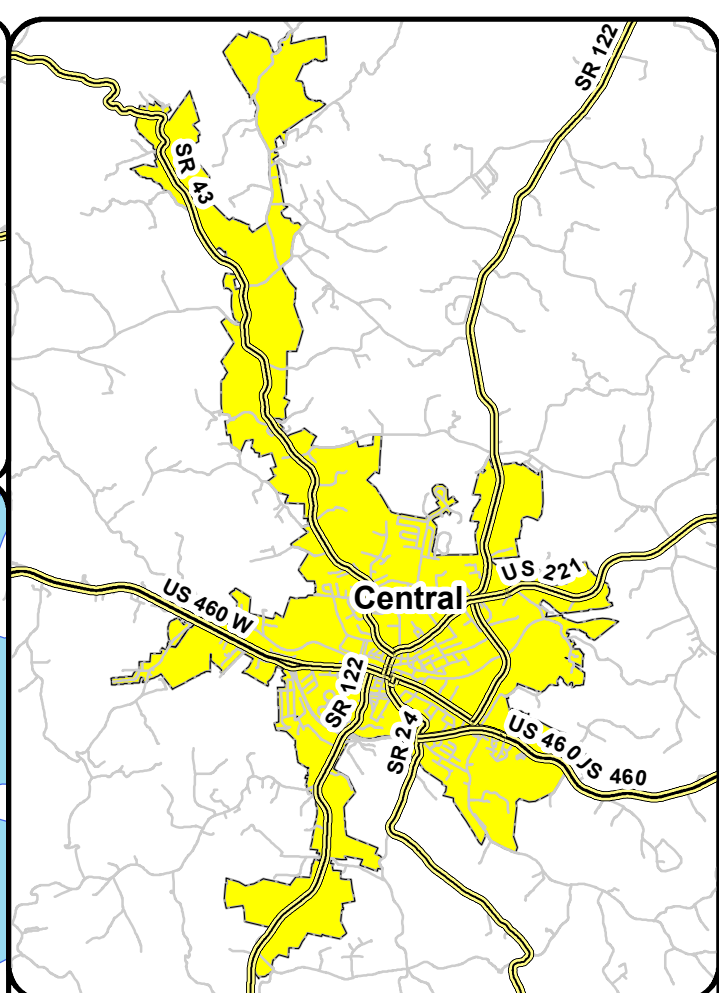
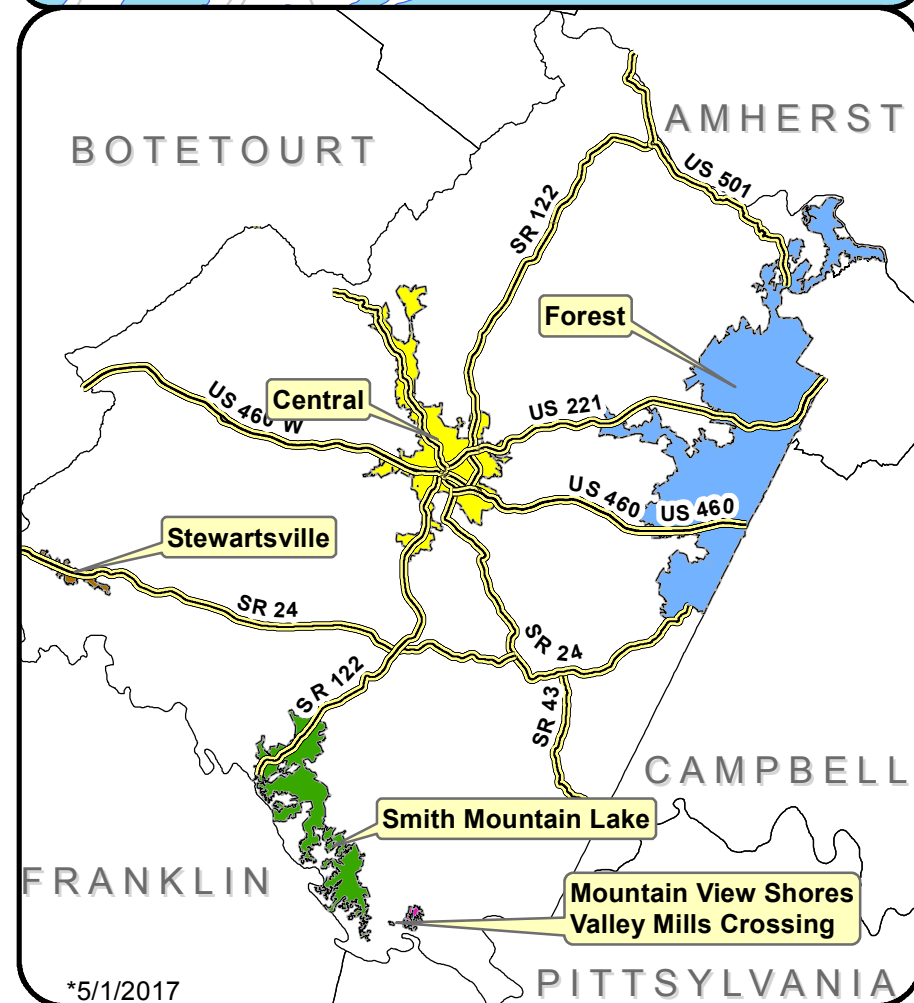
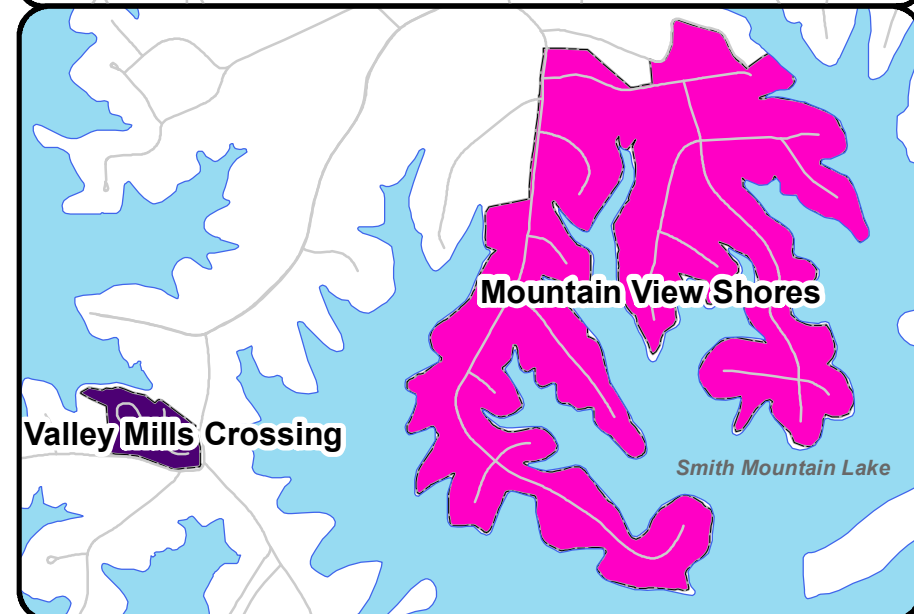
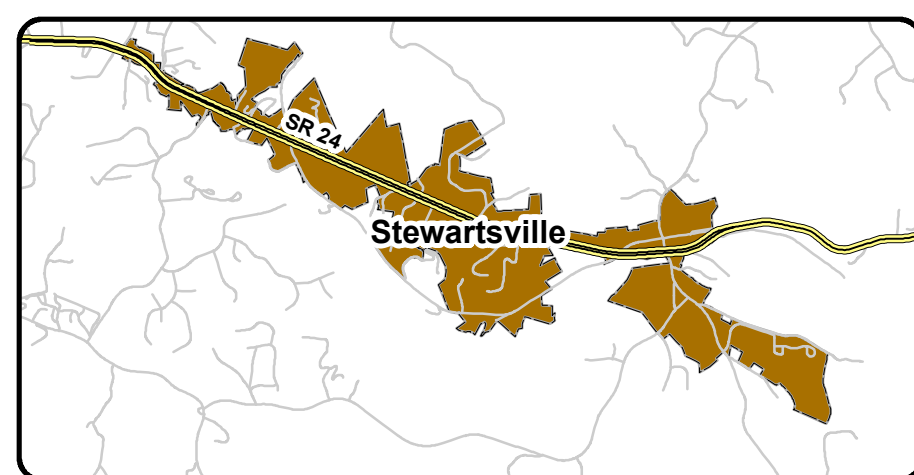
Emergency (Outside of operating hours)

540-586-7679, Extension 9

- Water outages
- Reporting a leak
- Sewer service disruptions

Website: www.brwa.com

If you have questions about this report or need any additional information about any aspect of your drinking water or want to participate in decisions that may affect the quality of your drinking water, please contact the Bedford Regional Water Authority at (540)-586-7679. Any other questions you may have concerning your water quality may be addressed via email at customerservice@brwa.com.





Vulnerable Populations

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).



Important Information About Lead and Copper

Lead (ppb)- Copper (ppm)- 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. Bedford Regional 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 30 seconds to two minutes before using the 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>.



Did You Know that in 2016 the Authority...

- Had 12,957 water customers.
- Had 5,269 sewer customers
- Employed 64 employees
- Produced 1,080,997,411 gallons of water
- Treated 500,682,220 gallons of wastewater
- Added 399 water connections
- Added 147 sewer connections
- Read 82,263 meters
- Installed or changed out 3,125 meters
- Processed 75,193 payment transactions
- Had 352 miles of water lines
- Had 141 miles of sewer lines





Sources of Your Drinking Water

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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or 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 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.

Drinking water, including bottled 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 about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).



About the Sources

A source water assessment was conducted for Mountain View Shores, Forest Central Water System, Smith Mountain Lake Central Water System, Valley Mills Crossing, and the Town of Bedford was performed in 2002 by the Virginia Department of Health. The wells and reservoirs were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program.

Each Source Water 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 5 years. The reports are available by contacting the Authority at the phone number or address given elsewhere in this drinking water quality report.

Mountain View Shores

The water in this subdivision is provided from a groundwater source accessed by three wells. Water from the three wells is filtered using greensand pressure filters and treated with chlorine, soda ash, permanganate, and a blended phosphate product before entering the distribution system.

Forest Central Water System

The Authority purchases the water for the Forest, New London, and Boonsboro areas from the City of Lynchburg. The primary source of water is the 125-acre Pedlar Reservoir (surface water source), located on approximately 500 acres; this water is transmitted to Lynchburg by gravity in a 21-mile pipeline from a mountain location in Amherst. When additional water is needed, it is withdrawn from the James River. The City treats the water at two water treatment plants: the College Hill Filtration Plant and the Abert Filtration Plant. In 2017, the Authority will start supplementing water from Smith Mountain Lake for the Forest Central customers.



About the Sources, Continued



Smith Mountain Lake Central Water System

The source for the Lakes service area is Smith Mountain Lake (picture on left), a reservoir maintained by American Electric Power for generation of hydroelectric power. In calendar year 2016 the water was treated at Highpoint Water Treatment Plant; in the spring of 2017, the treatment will transition over to the new Smith Mountain Lake Water Treatment Facility (see page three for more information). These plants are both some of the few membrane filtration plants in the state designed to treat surface water in accordance with the Safe Drinking Water Act and all other Virginia Department of Health guidelines.

The filtration process requires no chemical addition, with chlorine being added after filtration for disinfection in the distribution system; this means that the process waste consists of only concentrated lake sediment.

Valley Mills Crossing

Valley Mills Crossing is a small subdivision at Smith Mountain Lake. The source of this drinking water is groundwater provided by one well; the water is treated with chlorine before entering the distribution system.

The Town of Bedford

The main water source is the Stoney Creek Reservoir (picture on right) located in Bedford County, which is a surface water source. The Authority has a supplemental source located in Bedford County that is used presently during periods of dry weather. This source is the Big Otter river and five drilled wells near the intake point of the Big Otter river. In 2017 the Authority will start supplementing the water supply to customers in the Town with water from the Smith Mountain Lake Water Treatment Facility.



Stewartsville

The Authority purchases the water for Stewartsville from the Western Virginia Water Authority ("WVWA"). The primary source of the drinking water is provided by 21-acre Falling Creek Reservoir, a surface water source located in Bedford County east of Vinton. It is fed by Beaver Reservoir that covers 69 acres. The treatment process is a conventional sand filter, with a capacity of 1.5 million gallons a day. WVWA can also supply water to the Authority for Stewartsville from their Crystal Springs, Carvins Cove, and Spring Hollow water supplies. Source water assessments ("SWA") have been prepared for all of these supplies; they determined that the WVWA's water sources are susceptible to contamination. This designation does not mean that the source water has been impacted or that it will be impacted. It means that if there is a release of pollutants in the assessment area, the source water could be impacted. The VDH completed a SWA of Spring Hollow Reservoir's water source, the Roanoke River, and determined that the Roanoke River may be susceptible to contamination because it is surface water exposed to a wide array of contaminants at varying concentrations. Also, changing hydrologic, hydraulic, and atmospheric conditions promote migration of contaminants from land use activities of concern into the Roanoke River. The SWA also determined that the wells might be susceptible to contamination because they are located in areas that promote migration of contaminants from land use activities of concern. More specific information about the SWAs may be obtained by contacting the Western Virginia Water Authority's Water Division at 540-853-5700.



Definitions

Contaminants in your drinking water are routinely monitored according to federal and state regulations. In the following tables and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

BDL: Below detection level.

Level 1 Assessment: a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks.

Level 2 Assessment: a very detailed study of the waterworks to identify potential problems and determine, if possible, why an E. coli PMCL violation has occurred and why total coliform bacteria have been found in our waterworks on multiple occasions.

Non-detects (ND): Lab analysis indicates that the contaminant is not detectable, based on the limits of the analytical equipment used.

Parts per million (ppm) or Milligrams per liter (mg/l): One part per million corresponds to one minute in two years or one penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter (mg/l): One part per billion corresponds to one minute in 2,000 years, or one penny in \$10,000,000.

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

Nephelometric Turbidity Unit (NTU): Nephelometric turbidity unit is a measure of the cloudiness of water. Turbidity in excess of 5 NTU is just 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.

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.

Variances and exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Maximum Residual Disinfectant Level Goal (MRDLG): The maximum level of a disinfectant added for water treatment, 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.

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

Secondary Maximum Contaminant Level (SMCL): The highest level recommended for a contaminant in drinking water, based on aesthetic considerations.

Running Annual Average (RAA)—Running annual average based on 4 quarters of analysis results.

The Authority routinely monitors for various contaminants in each water supply to meet all regulatory requirements. Most of the water quality results in the tables are from testing done in 2014. However, the state allows the Authority to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the results, though representative, are more than one year old. The tables list only those contaminants that had some level of detection within the last five years. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

The following information in the charts covers the time period January 2009 through December 2010





Water Quality Results: Forest Central Water System (PWSID # 5019315) (1 of 3)

Constituents/ Unit of Measure	V i o l a t i o n	Level Detected		AL	MCLG	MCL	MDRL	Likely Source of Contamination
		Water from Abert Filtration Plant	Water from College Hill Filtration Plant					
Inorganic Contaminants								
Chlorine, ppm	NO	Range 0.21-1.82 Highest Average 1.18		—	—	—	4	Water additive to control microbes
Fluoride, ppm	NO	Average: 0.75 Range: 0.19-0.99	Average: 0.77 Range: 0.48-1.11	—	4	4	—	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Lead, ppb	NO	90 th percentile value=1		15	0	—	—	Corrosion of household plumbing sys-
Copper, ppm	NO	90 th percentile value=0.06 0 above action limit		1.3	1.3	—	—	Corrosion of household plumbing systems, erosion of natural deposits
Barium, ppm	NO	Abert 0.012	CH 0.011	—	2	2	—	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Microbiological Contaminants								
Total coliform bacteria, Presence or absence	NO	2.5% of monthly samples positive (highest monthly average)		—	0	5% of monthly samples positive	—	Naturally present in the environment
Turbidity, NTU	NO	0.17 (highest level) 100% <0.3	0.11 (highest level) 100% <0.3	—	n/a	TT	—	Soil runoff
No single sample can be greater than 1 NTU. At least 95% of the samples taken every month must be less than 0.3 NTU								
Volatile Organic Contaminants								
Trihalomethanes (TTHM), ppb	NO	13-66 (range) 53(highest average)		—	0	80	—	By-product of drinking water disinfection
Haloacetic Acids (HAA), ppb	NO	11-42 (range) 37 (highest average)		—	0	60	—	By-product of drinking water disinfection
Radioactive Contaminants								
Radium-228,pCi/L	NO	0.6	ND	—	0	5	—	Erosion of natural deposits
Disinfection By-Product Precursors								
Total Organic Carbon (ppm) (TOC) Raw water, ppm	NO	Highest Avg.=1.49 Range=1.06-1.91	Highest Avg.=1.54 Range= 1.11-2.21	—	N/A	TT	—	Naturally present in the environment
Total Organic Carbon (ppm) (TOC) Treated, water ppm	NO	Highest Avg.=0.81 Range=0.63-1.07	Highest Avg.=0.78 Range=0.57-0.99	—	N/A	TT	—	Naturally present in the environment
Secondary Contaminants								
Secondary Maximum Contaminant Levels (SMCL) are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.								
Contaminant	SMCL	Abert	CH	Likely Sources				
Sodium, ppm	NA	5.7	5.8	Naturally present in the environment; addition of water treatment substances				
Sulfate, ppm	250	10.3	8.4	Naturally present in the environment; addition of water treatment substances				

Cryptosporidium:

In 2015, the City of Lynchburg analyzed six samples of source water for cryptosporidium. These water samples were collected before any treatment had been applied at our water filtration plant. One of these samples contained a very small amount of cryptosporidium (0.1 oocyst/Liter). Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. The City of Lynchburg utilizes filtration to treat drinking water which removes cryptosporidium, but filtration methods cannot guarantee 100 percent removal. The City of Lynchburg, Department of Water resources works diligently to optimize the filtration process in order to ensure the greatest cryptosporidium removal.



Water Quality Results: Forest Central Water System (PWSID # 5019315) (2 of 3)

Constituents (Unit of measure)	Violation	Level Found (range)	AL	MCLG	MCL	Date of Sample	Likely Source of Contamination
The following data was collected by the Bedford Regional Water Authority							
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomethanes	NO	51 highest quarterly average 9.2-74	—	NA	80	Quarterly 2016	By-product of drinking water chlorination disinfection
HAA5 (ppb) Haloacetic Acids	NO	39 highest quarterly average 15-46	—	NA	60	Quarterly 2016	By-product of drinking water chlorination disinfection
Chlorine (ppm)	NO	.8 Average .2-1.4	—	MRDLG-4	MRDL=4	Monthly	Water additive used to control microbes
Lead and Copper							
Lead (ppb)	NO	90th percentile value = 1.3 Of 31 samples none above AL	15	0	—	August 2014	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	NO	90th percentile value =0.038 of 31 samples one above AL	1.3	1.3	—	August 2014	Corrosion of household plumbing systems; erosion of natural deposits

In 2014, the Authority participated in the third Unregulated Contaminant Monitoring Rule (UCMR3) monitoring. Unregulated contaminants are those that don't yet have a drinking water standard set by EPA. The purpose for these contaminants is to help USEPA decide whether the Contaminants should have a standard. As such, there is no MCLG or MCL established for the following unregulated contaminants.

Unregulated Contaminants							
Vanadium , ppb	N/A	0.3 Range .02-.6	—	N/A	N/A	February— August 2015 at entry point and distribution	Naturally present in the environment
Strontium, ppb	NA	20 Range 17-27	—	N/A	N/A	February— August 2015 at entry point and distribution	Naturally present in the environment
Chromium-6, ppb	NA	0.16 Range .03-.5	—	N/A	N/A	February— August 2015 at entry point and distribution	Naturally present in the environment
Chlorate, ppb	NA	420 Range 290-640	—	N/A	N/A	February— August 2015 at entry point and distribution	Naturally present in the environment



Presence of Coliforms

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found.

Activity Associated with a Level 1 Assessment

During the past year, we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. In addition, we were required to take one corrective action and we completed one of these actions.



Stoney Creek Reservoir



Water Quality Results: Mountain View Shores (PWSID #5019685)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Lead and Copper							
Copper (ppm)	1.3	AL = 1.3	0.8 (90th percentile)	Range: 0.02-0.93 Of ten samples collected none were above AL	No	March-June 2015	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	0	AL = 15	0.8 90th percentile	Range: 0.3-0.9 Of ten samples collected none were above AL	No	March-June 2015	Corrosion of household plumbing systems; erosion of natural deposits
Inorganic Contaminants							
Fluoride (ppm)	4	4	0.09	NA	No	July 2016	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and alumi- num factories
Barium (ppm)	2	2	0.0174	NA	No	July 2016	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nitrite/-Nitrate (ppm)	10	10	.03	NA	No	July 2016	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Radioactive Contaminants							
Alpha emitters (pCi/L)	0	15	3.6	Range:ND-3.6	No	February 2012	Erosion of natural deposits
Combined Radium (pCi/L)	0	5	0.46	Range:0.04-0.46	No	February 2012	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomethanes	0	80	6.2	NA	No	October 2016	By-product of drinking water disinfection.
HAA5 (ppb) Haloacetic acids	0	60	2.0	NA	No	October 2016	By-product of drinking water disinfection.
Chlorine (ppm)	MRDLG=4	MRDL=4	.8	0.4-1.9	No	Monthly 2016	Water additive used to control microbes
Unregulated Contaminants							
Hardness (ppm)	n/a	n/a	75	21-122	No	Monthly	Measurement of naturally occur- ring hardness metals
pH (pH units)	n/a	6.5-8.5	7.0	5.1-8.8	No	Daily	Acidity or basicity of water
A sample collected in July 2016 indicated the sodium in the treated water is 61mg/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.							



Water Quality Results: Smith Mountain Lake Central Water System (PWSID #5019400)

Contaminant (Unit of Measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of
Microbiological Contaminants							
Turbidity (NTU)	n/a	TT	0.069 100% < 0.5	n/a	No	Continuously monitored	Soil runoff
Disinfection By- Products, Precursors, and Residuals							
TTHM (ppb) Trihalomethanes	NA	80	78	59-78	No	Quarterly	By-product of drinking water disinfection
HAA5 (ppb) Haloacetic Acid	NA	60	64-Exceeded 1st quarter 61- Exceeded 2nd Quarter	41-64	Yes	Quarterly	By-product of drinking water disinfection
Chlorine (ppm)	MRDLG=4	MRDL=4	.8	.1-2.0	No	Monthly 2016	Water additive used to control
Radioactive Contaminants							
Gross Alpha	0	15 pCi/L	.28	n/a	No	July 2015	Erosion of Natural Deposits
Combined Radium	0	5 pCi/L	.58	n/a	No	July 2015	Erosion of Natural Deposits
Inorganic Contaminants							
Lead (ppb)	0	AL=15	3 (90th percentile) Of ten none exceeded the action level	<0.2-3.5	No	June-Sept. 2016	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	1.3	AL=1.3	.56 (90th percentile) Of ten none exceeded the action level	.021-.946	No	June-Sept. 2016	Corrosion of household plumbing systems; erosion of natural deposits
Nitrate (ppm)	10	10	0.42	n/a	No	July 2016	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	2	2	.03	n/a	No	July 2016	Discharge of drilling waste; Discharge from metal refineries; Erosion of natural deposits
Fluoride	4	4	0.1	n/a	No	July 2016	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Unregulated Contaminants							
pH (pH units)	n/a	SMCL 6.5-8.5, as shown on the Hill-	7.7 average	6.7-8.8	No	Daily	Acidity or basicity of water
Hardness (ppm)	n/a	n/a	100 average	70-189	No	Daily	Measurement of naturally occurring hardness metals
Iron (ppm)	n/a	SMCL 0.3	.01	0-.09	No	Daily	Rusty color, sediment, metallic taste, reddish or orange staining.
Alkalinity (ppm)	n/a	n/a	91	60-152	No	Daily	
Manganese (ppm)	n/a	SMCL 0.05	0.008	0-.026	No	Daily	Black to brown color, black staining, bitter metallic taste



Water Quality Results: Smith Mountain Lake Central Water System (PWSID #5019400)

Our water system recently violated a drinking water monitoring requirement. Even though this was not an emergency, you, as our customer, have a right to know what happened and what we did to correct this situation.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. Testing results for the first quarter (January—March) of 2016 show that our system exceeded the standard or Primary Maximum Contaminant Level (PMCL) for haloacetic acids (HAA5). The standard for HAA5 is 0.060 mg/L based on a four-quarter locational running annual average. The average concentration for HAA5 based on the four calendar quarters is 0.064mg/L.

What should consumers do?

There is nothing you need to do at this time. You do not need to use an alternative water supply, such as bottled water. However, if you have specific health concerns, consult your doctor or Bedford County Health Department at (540) 586-7952.

What does this mean?

This is not an immediate health risk. If it had been, you would have been notified immediately. However, some people who drink water containing haloacetic acids in excess of the PMCL over many years may have an increased risk of cancer and may experience problems with their liver, kidneys, or central nervous system.

What happened? What is being done?

HAA5, along with other disinfection byproducts (DBPs), are formed when trace amounts of naturally occurring organic compounds in the raw water source combine with chlorine that is used to disinfect the treated water. Because of the nature of the formation of these compounds in the presence of chlorine can result in higher levels in this water supply. All locations within the distribution system do not have the same levels of HAA5's. The levels that are present depend on such factors as demand/residence time of water in the system, levels of chlorine present and temperature of the water.

We are working with the Virginia Department of Health officials resolve this issue.

In the future, this water system will assure that all required samples are collected and that all results are received prior to the end of each compliance period.

For more information, please contact the Bedford Regional Water Authority at (540) 586-7679 or email brwa@brwa.com.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

State Water Systems IS # 5019400

Date Distributed: April 14, 2016





Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (1 of 3)

	Spring Hollow				Carvins Cove				Falling Creek				Crystal Spring		
Paramater	Min	Max	AVG		Min	Max	AVG		Min	Max	AVG		Min	Max	AVG
Coliform Total		4				3									
Coliform Fecal															
pH	7.5	7.7	7.6		7.3	7.8	7.5		7.2	7.5	7.4		7.5	7.7	7.6
Alkalinity Total ppm			125		30	39	34		10	18	18				126
Chlorate ppm	0.000	0.410	0.058		0.032	0.083	0.054								
Chloride ppm			9.98				3.3				4.07				7.34
Chlorine ppm	1.1	1.2	1.2		1.0	1.4	1.2		1.3	1.6	1.5		1.1	1.1	1.1
Chlorite ppm	0.000	0.070	0.013		0.000	0.034	0.011								
Color, TRUE pcu			ND				ND				5				ND
Conductance umhos/cm			284				101				63.6				254
Corrosion Index(Langelier)			-0.19				-1.54				-2.7				-0.39
Fluoride ppm	0.68	0.74	0.7		0.06	0.7	0.5		0.6	0.7	0.63		0.6	0.7	0.7
Hardness, Calcium ppm			86				28				8				70
Hardness Total ppm			144		39	49	44		10	18	18		136	137	137
Ortho Phosphate as P, ppm			ND		0.19	0.31	0.29		ND	0.24	0.22				0.6
Sulfate ppm			16				12.8				5				5.03
Turbidity ntu	0.06	0.13	0.1		0.09	0.11	0.14		0.06	0.18	0.12		0.01	0.08	0.02
TDS ppm			191				70				61				154
TOC ppm	0.97	1.44	1.15		1.46	2.54	1.86		0.84	1.38	1.11				
Nitrate/Nitrite		0.31				ND				0.02				0.66	
0=NON DETECT															
Cyanide ppm			ND				0.008				ND				ND
Aluminum ppm			0.00213				0.00287				0.00674				0.00086
Antimony ppm			ND				ND				ND				ND
Arsenic ppm			ND				ND				ND				ND
Barium ppm			0.0324				0.0479				0.0153				0.037
Beryllium ppm			ND				ND				ND				ND
Cadmium ppm			ND				ND				ND				ND
Chromium ppm			0.00025				ND				ND				0.00044
Copper ppm			0.00207				0.0022				0.00253				0.00171
Iron ppm			ND		ND	0.045	0.02		ND	0.025	0.012				ND
Lead ppm			ND				ND				ND				0.0001
Manganese ppm			0.00035		0.002	0.03	0.01		0.002	0.02	0.007				ND
Mercury ppm			ND				ND				ND				ND
Nickel ppm			0.00029				0.00078				ND				ND
Selenium ppm			ND				ND				ND				ND
Silver ppm			ND				ND				ND				ND
Sodium ppm			5.16				6.02				10.3				3.54
Thallium ppm			0.00001				0.00001				ND				ND
Zinc ppm			ND				0.00242				0.0656				ND
Gross Alpha	<0.9				-0.78				<0.5				1		
Gross Beta	2.4				1.5				1.8				7.7		
Radium 226					0.03										
Radium 228	<0.6				0.79				<0.6				0.7		
Gross Alpha + Radon& U															
TTHM ppb	(20-88 site) 30-60 LRAA (Greenfield/Ridge rd 59-129)														
HAA5 ppb	(12-80 site) 14-53 LRAA (Greenfield/Ridge Rd 2-60)														
SOC	ND				ND				ND				ND		
Pesticides & PCB's															
Herbicides															
CRYPTO oocysts/L (raw water)					0.1 (JAN 2016) - 0.1 (FEB 2016)										
GIARDIA cysts/L (raw water)									0.2 (MAR 2016)						
VOC'S ppm			ND				ND				ND		ND		
Lead ppb	51 SAMPLES, 90th percentile 2.7 ppb, 1 sample exceeded AL														
Copper ppm	51 SAMPLES, 90th percentile 0.46 ppm, 0 samples exceeded AL														



Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (2 of 3)

Constituents (Unit of measure)	Violation	Level Found (range)	MCLG	MCL	Date of Sample	Typical Source of Contamination
The following data was collected by the Bedford County Public Service Authority/ Bedford Regional Water Authority.						
Disinfection By-Products Precursors and Residuals						
HAA5 (ppb) Haloacetic Acids	no	22 highest quarterly average Range: 4-13	NA	60	Quarterly 2016	By-product of drinking water chlorination disinfection
TTHM (ppb) Trihalomethanes	Yes	80 highest quarterly average Range: 38-100	NA	80	Quarterly 2016	By-product of drinking water chlorination disinfection
Chlorine (ppm)	no	0.43 average Range: 0.2-.9	MRDLG= 4	MRDL=4	Monthly	Water additive used to control microbes
Lead and Copper						
Copper (ppm)	no	90th percentile value = 0.017 Of five samples collected none exceeded AL	1.3	AL=1.3	August 2014	Corrosion of household plumbing sys- tems; erosion of natural deposits

Smith Mountain Lake





Water Quality Results: Valley Mills Crossing (PWSID #5019875)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Lead and Copper							
Copper (ppm)	1.3	AL=1.3	0.57 (90th percentile)	Range: 0.07-1.3 Of ten samples collected none exceeded the AL	No	August– September 2014	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	0	AL=15	12 (90th percentile)	Range: 1.4-28.7 Of ten samples collected one exceeded the AL	No	August– September 2014	Corrosion of household plumbing systems; erosion of natural deposits
Inorganic Contaminants							
Nitrate (ppm)	10	10	.05	—	No	October 2016	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	2	2	0.0115	N/A	No	April 2015	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Radioactive Contaminants							
Alpha emitters (pCi/L)	0	15	.55	n/a	No	April 2011	Erosion of natural deposits
Combined radium (pCi/L)	0	5	.76	n/a	No	April 2011	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
TTHM (ppb) Trihalomeanes	NA	80	2.0	N/A	No	August 2016	By-product of drinking water disinfection
HAA5 (ppb) Haloacetic	NA	60	5.08	n/a	No	August 2016	By-product of drinking water disinfection
Chlorine (ppm)	MRDLG=4	MRDL=4	.9	.4-1.6	No	Monthly 2016	Water additive used to control microbes
Volatile Organic Contaminants							
Xylene (ppm)	10	10	2.82	N/A	No	October 2016	Discharge from petroleum factories ;Discharge from chemical factories
Un regulated Contaminants							
pH (pH Units)	n/a	6.5-8.5 SMCL	6.4 average	5.5-7.6 range	No	Daily	Acidity or basicity of water
Hardness (ppm)	n/a	n/a	49 average	50-112 range	No	Monthly	Measurement of naturally occurring hardness metals



Water Quality Results: Town Central PWSID#5515050 (Page 1 of 2)

TEST RESULTS

Contaminant / unit of measurement	Violation Y/N	Level Detected/Range	Sample Date	MCL G	MCL	Likely Source of Contamination
Microbiological Contaminants (ND)						
Total Coliform Bacteria	N	Sept , Oct, Dec, one positive sample collected	Monthly at eight sample sites	0	Presence of coliform in no more than 1 sample per month	Naturally present in the environment and are used as an indicator that other potentially-harmful, bacteria that may be present.
Turbidity / NTU	N	0.35(highest level) 100 % < 0.3	Daily	NA	Max TT 0.3 in 95 % of monthly samples	Soil runoff
Inorganic Contaminants						
Copper (ppm)	N	0.039 (90 th percentile) Range=0.0107- 0.0736 Of the 20 samples collected none exceeded the AL	2014	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	N	1.2 (90 th percentile) Range = ND – 3.9 Of the 20 samples collected none exceeded the AL	2014	0	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride (ppm)	N	Average= 0.72 Range = 0.31– .93	Daily	4	4	Water additive which promotes strong teeth
Nitrate – Nitrite (ppm)	N	ND	2016	10	10	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium (ppm)	N	0.009	2016	2	2	Discharge of drilling waste. Discharge from metal refineries; Erosion of natural deposits
Radioactive Contaminants						
Gross Alpha pCi/L	N	0.60	March 2014	0	15	Erosion of natural deposits
Combined Radium pCi/l	N	0.97	March 2014	0	5	Erosion of natural deposits
Disinfection Byproducts						
Chlorine (ppm)	N	Average=.8 Range: 0.1-1.8	Monthly at eight sample sites	MRDL G=4	MRDL=4.0	Chlorine is added to insure that water is disinfected
TTHM [Total Trihalomethanes] (ppb)	N	64 highest quarterly average Range: 23-110	Quarterly 2016	N/A	80	By-product of drinking water chlorination
HAA5 [Haloacetic Acids] (ppb)	N	68 highest quarterly average Range: 29-123	Quarterly 2016	N/A	60	By-product of drinking water chlorination
Stage 2 started in 4th quarter of 2014 additional sampling locations were added for TTHM and HAA5 to meet regulatory compliance.						
TOC Removal ratio Total Organic Carbon	Y	Ave. Ratio: .77 Range: .4-1.0	Oct.. 2016- Failure to Collect	NA	TT- TOC Removal Ratio greater than or equal to 1	Naturally present in the source water

Physical and Mineral Characteristics for calendar year 2016

Constituent (w/unit of measurement)	Frequency	Annual Average
pH, standard units	Every 4 hours	7.4
Alkalinity, ppm	Every 4 hours	21
Total Hardness, ppm	Once per day	29
Calcium Hardness, ppm	Once per day	26
CO2, ppm	Once per day	4
Iron, ppm	Once per day	0.01
Manganese, ppm	Once per day	0.08
Temperature, Celsius	Every 4 hours	14
Free Chlorine, ppm	Continuous monitor in addition to every 4 hours	1.6



Water Quality Results: Town Central PWSID#5515050 (Page 2 of 2)

Our water system recently violated a drinking water monitoring requirement. Even though this was not an emergency, you, as our customer, have a right to know what happened and what we did to correct this situation.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During October 2016, we did not monitor for paired raw/finished Total Organic Carbon (TOC) and therefore cannot be sure of the quality of our drinking water during that time. However, we have done sampling for this time period and verified that the water is safe and meets all the health requirements.

What should consumers do?

There is nothing you need to do at this time. The table below lists the contaminant we did not properly test for, how often we are supposed to sample for the contaminant, how many samples we are supposed to take, how many samples we took, when samples should have been taken and the date on which follow-up samples were taken.

Contaminant	Required Sampling Frequency	Number of Samples Taken	When all samples should have been taken	When samples were taken
Raw/Final TOC	One per month	None	October 2016	November 2016

Steps We Are Taking

In the future, this water system will assure that all required samples are collected and that all results are received prior to the end of each compliance period.

For more information, please contact the Bedford Regional Water Authority at (540) 586-7679 or email brwa@brwa.com.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

State Water Systems IS # 5515050

Date Distributed: May and June 2017

Presence of Coliforms

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found.

Activity Associated with a Level 1 Assessment

During the past year, we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. In addition, we were required to take one corrective action and we completed one of these actions.

Fluoridation

As of February 1, 2017, the Authority stopped treating the water at the Town of Bedford water treatment plant with fluoride. This decision was made to be consistent with our other water treatment facility practices along with many customer requests to stop the addition of fluoride in the treatment process. More information can be found at www.brwa.com.



Bedford Regional Water Authority

1723 Falling Creek Road

Bedford, VA 24523



www.brwa.com