WATER QUALITY REPORT 2018

WASHINGTON COUNTY SERVICE AUTHORITY

25122 REGAL DRIVE

ABINGDON VA 24211

WWW.WCSA-WATER.COM

(276) 628-7151

(276) 669-7153

(276) 783-7159

This Annual Drinking Water Quality Report for calendar year 2018 is designed to inform you about your drinking water quality and the efforts the Washington County Service Authority (WCSA) takes to protect your water supply. During 2018 WCSA met all water quality requirements as well as all reporting and monitoring requirements of the Virginia Department of Health and the US Environmental Protection Agency (EPA). If you have questions about this report or if you want additional information about any aspect of your drinking water, please call our office at (276) 628-7151.

As a valued customer, you are encouraged to participate in decisions that may affect the quality of your drinking water. The WCSA Board of Commissioners typically meets at 6:00 PM on the fourth Monday of each month in the E.W. Potts Board Room at 25122 Regal Dr, Abingdon, VA 24211. For a schedule of meeting times, please call our office or visit our website.

YOUR WATER SOURCES

Your water comes from one or more of the following sources:

- **Middle Fork Holston River and South Fork Holston River (Main System)** — surface water sources treated by chemical and physical means including conventional coagulation, sedimentation, and filtration to remove particulate matter; chlorination for disinfection; and fluoridation for the promotion of dental health.
- **Mill Creek Spring, Cole Spring, and Widener Spring at Mill Creek (Main System)** — ground water sources under the direct influence of surface water; treated by membrane filtration to remove particulate matter, chlorination for disinfection, and fluoridation for the promotion of dental health.
- **Reservation Spring (Main System)** — a ground water source treated by chlorination for disinfection and fluoridation for the promotion of dental health.
- **Mendota Well (Mendota)** — a ground water source disinfected with chlorine. A small amount of sequestrating agent is also added to the water to help control the oxidation of iron and manganese. Iron and manganese are naturally present in water; however, when iron and manganese oxidize, water may appear reddish in color or cause a taste in brewed beverages like coffee and tea. Fluoride is also added for the promotion of dental health.
- **Big Moccasin Gap Creek (Mendota)** – a surface water source purchased from the Scott County Public Service Authority treated by chemical and physical means including filtration to remove particulate matter, chlorination for disinfection and fluoridation for the promotion of dental health. This source is treated at the Moccasin Gap treatment plant.
- **Cardwell Town Well (Hayter's Gap)** — a ground water source treated and purchased from the Town of Saltville. The well is approximately 450 feet deep and draws water from the Tonoloway Limestone aquifer. Water from this source is treated with chlorine for disinfection and fluoridation for the promotion of dental health.
- **Saltville No. 10 Well (Hayter's Gap)** — a ground water source treated and purchased from the Town of Saltville. The well is approximately 1,050 feet deep and draws water from the Honaker Formation aquifer. Water from this source is treated with chlorine for disinfection and fluoridation for the promotion of dental health.
- **Big Cedar Creek (Hidden Valley)**— a surface water source purchased from the Russell County Public Service Authority treated by chemical and physical means including filtration to remove particulate matter, chlorination for disinfection and fluoridation for the promotion of dental health. This source is treated at the Lebanon Water Treatment Plant.

SOURCE WATER ASSESSMENT

A *Source Water Assessment* of the WCSA water system was conducted in 2001 and 2002 by WCSA, the Virginia Department of Health and a private consulting agency. The Reservation Spring, Widener Spring, Jones Spring, Middle Fork Holston River, and South Fork Holston River were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The Source Water Assessment is a study and report that provides information about where WCSA's drinking water comes from and what could pose a threat to the drinking water quality. For more information about the Source Water Assessment please contact WCSA at (276) 628-7151.

In 2002 the Virginia Department of Health also conducted source water assessments of the Town of Lebanon system, the Moccasin Gap –Scott County PSA system, and the Town of Saltville system. The Big Cedar Creek, (Lebanon system), the Big Moccasin Creek (Scott County system), and the Cardwell Town Well and Well No. 10 (Saltville system) were all determined to be highly susceptible 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. To obtain a copy of the report for these areas please contact the appropriate agency for each system. The Town of Lebanon can be contacted at 276-889-7200 or P O Drawer 309, Lebanon VA 24266. The Scott County PSA can be contacted at 276-386-6337 or 156 Legion St, Weber City, VA 24290. The Town of Saltville can be contacted at 276-496-5342 or at P O Box 730, Saltville, VA 24370.

CONTAMINANTS IN DRINKING WATER

The sources of drinking water (both tap water 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 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 or sources such as agricultural and urban storm -water 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 storm-water runoff, and septic systems.
- **Radioactive Contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

EPA REGULATIONS

In order to ensure that tap water is safe to drink, the EPA prescribes regulations which 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 contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information can be obtained from the EPA's Safe Drinking Water Hotline (800-426-4791) or the EPA's website (www.epa.gov/your-drinking-water).

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer who are 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 microbial contaminants are available from the EPA's Safe Drinking Water Hotline (800-426-4791).

In 2016, WCSA began monitoring for Cryptosporidium in the source water (before treatment) as required by the EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). Cryptosporidium is a microscopic parasite found in surface water throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Under the LT2ESWTR, the average Cryptosporidium concentration determines if additional treatment measures are needed. 24 samples are required for analysis over a two-year period. During 2018, the average Cryptosporidium concentration in the raw water at the Middle Fork Holston River water treatment plant was 0.033 oocysts per liter for the 9 samples collected. During 2018, no Cryptosporidium were detected in the 9 raw water samples collected at the Chilhowie/WCSA Regional Water Treatment Plant. While our monitoring indicates the presence of these organisms in our source water (before treatment), the current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Based on the Cryptosporidium monitoring results so far and the current performance of the treatment plant, we anticipate meeting the future treatment requirements of the LT2ESWTR.

In 2017, the Town of Lebanon began monitoring for Cryptosporidium in the source water (before treatment) as required by EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). Cryptosporidium is a microscopic parasite found in surface water throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Under the LT2ESWTR, the average Cryptosporidium concentration determines if additional treatment measures are needed. Twenty-four samples are required for analysis over a two-year period. During 2018, the average Cryptosporidium concentration was 0.0167 oocysts per liter for the 12 samples collected. While our monitoring indicates the presence of these organisms in our source water (before treatment), the current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Based on the Cryptosporidium monitoring results so far and the current performance of the treatment plant, we anticipate meeting the future treatment requirements of the LT2ESWTR.

The sodium concentration of 37.6 ppm found in the water sample collected on January 14, 2016 at the Mendota waterworks exceeds the 20 ppm concentration set for people on a strict sodium diet. The water produced by our Mendota well should likely be considered appropriate for drinking by persons on a moderately restrictive sodium diet. We recommend you consult your physician if you are on a sodium restricted diet so that he can decide whether you should use the water for drinking.

LEAD IN DRINKING WATER

If present, elevated levels of lead can cause serious health problems, especially for expectant mothers and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. WCSA is responsible for providing high quality drinking water, but cannot control the variety of materials used in consumers' 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 EPA's Safe Drinking Water Hotline (800-426-4791) or online at http://www.epa.gov/safewater/lead.

VIOLATION INFORMATION

The **Hayter's Gap, Mendota, Hidden Valley, and Washington County Service Authority Systems** did not have any PMCL, TT, monitoring, reporting, or other violations during the year.

YOUR WATER QUALITY

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The tables on pages 3 and 4 show the results of our monitoring for the period of January 1st to December 31st, 2018 unless otherwise noted. 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 data, though representative, are more than one year old. We tested for many more constituents than are included in the tables. We only report on detected constituents.

DEFINITIONS

The following definitions will help you better understand the terms used in this report.

- **Action Level (AL)** — the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Maximum Contaminant Level (MCL)** — the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. MCLs are set at very stringent levels by the US EPA. 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-a-million chance of having the described health effect for other contaminants.
- **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 Disinfectant 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.

- **Maximum Residual Disinfectant level (MRDL)** — 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.
- **Nephelometric Turbidity Unit (NTU)** — a measure of the clarity, or cloudiness, of water. Turbidity in excess of 5 NTU is scarcely noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of our filtration system.
- **Treatment Technique (TT)** — a required process intended to reduce the level of a contaminant in drinking water.
- **NA** — not applicable.
- **Non-detects (ND)** — not detectable at testing limits.
- **Parts per billion (ppb) or Micrograms per Liter (µg/L)** — one part per billion, corresponds to one minute in 2,000 years or a single penny in $10,000,000 .
- **Parts per million (ppm) or Milligrams per Liter (mg/L)** — one part per million, corresponds to one minute in 2 years or a single penny in $10,000.
- **Picocuries per Liter (pCi/L)** — a measure of radioactivity in water.
- **Level 1 Assessment** — a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
- **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 /or why total coliform bacteria have been found in our water system on multiple occasions.

Regulated Constituents

Regulated Constituents			MAIN SYSTEM (Middle Fork Holston River; South Fork Holston River; Cole, Widener, Jones & Reservation Springs)				HAYTERS GAP (Cardwell Town Well and Saltville No. 10 Well)				
Substance (units)	**MCLG**	**MCL**	**Level Detected**	**Violation (Yes/No)**	**Range**	**Date of Sample**	**Level Detected**	**Violation (Yes/No)**	**Range**	**Date of Sample**	**Typical Source of Substance**
Nitrate (ppm)	10	10	0.96	No	0.58 –0.96	2018	1.8	No	0.29—1.8	2018	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.76	No	ND – 0.76	2018	0.96	No	0.88– 0.96	2016 & 2017	Water additive which promotes strong teeth
Barium (ppm)	2	2	0.041	No	0.027 – 0.041	2018	0.12	No	0.077—0.12	2016 & 2017	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Alpha Emitters (pCi/l)	0	15	1.4	No	ND – 1.4	2014	1.9	No	ND—1.9	2014 & 2017	Erosion of Natural Deposits
Combined Radium (pCi/l)	0	5	1.4	No	0.5 – 0.8	2014	1.45	No	0.72—1.45	2014 & 2017	Erosion of Natural Deposits
Chlorine (ppm)	MRDLG = 4	MRDL = 4	2.20	No	0.10 – 2.20	2018	0.74	No	0.30—1.60	2018	Water additive used to control microbes
Total Organic Carbon	NA	TT, met when ≥ 1	1.00	No	—	2018	1.04	No	1.00—1.10	2017	Naturally present in the environment
Haloacetic Acids (ppb)	NA	60	42	No	11 — 64	2018	5	No	3.6– 7.2	2018	By-product of drinking water disinfection
TTHMs (Total Trihalomethanes) (ppb)	NA	80	55	No	17 - 82	2018	37	No	11—34	2018	By-product of drinking water disinfection
Turbidity (NTU)	NA	TT, 1 NTU Max	0.14	No	0.01 – 0.14	2018	0.096	No	0.01—0.096	2017	Soil Runoff
		TT, ≤ 0.3 NTU 95% of the time	100%	No	NA		100%	No	NA		
Substance (units)	**MCLG**	**Action Level**	**90th Percentile**	**Date of Sampling**	**# of Sampling Sites Exceeding Action Level**		**90th Percentile**	**Date of Sampling**	**# of Sampling Sites Exceeding Action Level**		**Typical Source of Substance**
Lead (ppb)	0	AL=15	3.1	2018	0		ND	8/03/17	0		Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	AL=1.3	0.0868	2018	0		0.56	8/31/2017	0		Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Unregulated Contaminant Monitoring**

Name	Reported Level	Range	
		Low	High
Aggregate Organic Compounds Total Organic Carbon (ppb)	2100	ND	2100
Manganese (ppb)	57	ND	57
Bromochloroacetic Acid (ppb)	4.2	1.5	4.2
Bromodichloroacetic Acid (ppb)	3.0	1.5	3.0
Monobromoacetic Acid (ppb)	0.38	ND	0.38
Dichloroacetic Acid (ppb)	39	4.5	39
Monochloroacetic Acid (ppb)	2.7	ND	2.7
Trichloroacetic Acid (ppb)	31	5.9	31

** Unregulated contaminants monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.

25122 Regal Drive • Abingdon, Virginia 24211 • www.wcsa-water.com • Abingdon (276) 628-7151 • Bristol (276) 669-7153 • Smyth Co. (276) 783-7159

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- **Maximum Residual Disinfectant level (MRDL)** — 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.
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			HIDDEN VALLEY (Big Cedar Creek)				**MENDOTA** (Mendota Well and Big Moccasin Gap Creek)				
Substance (units)	**MCLG**	**MCL**	**Level Detected**	**Violation (Yes/No)**	**Range**	**Date of Sample**	**Level Detected**	**Violation (Yes/No)**	**Range**	**Date of Sample**	**Typical Source of Substance**
Nitrate (ppm)	10	10	2.21	No	-	2018	1.09	No	ND - 1.09	2018	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	NA	No	NA	NA	0.54	No	0.22– 0.54	2018	Water additive which promotes strong teeth
Barium (ppm)	2	2	0.028	No	_	2018	0.084	No	0.024– 0.084	2018	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Alpha Emitters (pCi/l)	0	15	0.4	No	–	2015	NA	No	NA	NA	Erosion of Natural Deposits
Combined Radium (pCi/l)	0	5	0.4	No	NA	2015	0.6	No	0.3—0.6	2018	Erosion of Natural Deposits
Chlorine (ppm)	MRDLG = 4	MRDL = 4	1.08	No	0.20– 1.70	2018	1.27	No	0.8– 1.80	2018	Water additive used to control microbes
Total Organic Carbon	NA	TT, met when ≥ 1	2.11	No	1.00—5.44	2018	1.00	NA	1.00 - 1.49	2018	Naturally present in the environment
Haloacetic Acids (ppb)	NA	60	50	No	19— 44	2018	9.7	No	–	2018	By-product of drinking water disinfection
TTHMs (Total Trihalomethanes) (ppb)	NA	80	57	No	19 - 83	2018	44	No	–	2018	By-product of drinking water disinfection
Turbidity (NTU)	NA	TT, 1 NTU Max	0.05	No	0.02 – 0.05	2018	0.24	No	0.07 - 0.24	2018	Soil Runoff
		TT, ≤ 0.3 NTU 95% of the time	100%	No	NA		100%	No	NA		
Substance (units)	**MCLG**	**Action Level**	**90th Percentile**	**Date of Sampling**	**# of Sampling Sites Exceeding Action Level**		**90th Percentile**	**Date of Sampling**	**# of Sampling Sites Exceeding Action Level**		**Typical Source of Substance**
Lead (ppb)	0	AL=15	4.98	2018	0		ND	2014	0		Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	AL=1.3	0.19	2018	0		0.060	2017	0		Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives