

# WATER QUALITY REPORT 2016



WASHINGTON COUNTY SERVICE AUTHORITY

This Annual Drinking Water Quality Report for calendar year 2016 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 2016 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. 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.
- **Cole, Widener and Jones Springs 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 sequestering 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 2001-2002 by WCSA, the Virginia Department of Health and a private consulting agency. Assessments of the Saltville and Mendota water systems were conducted in 2002 by the Virginia Department of Health. 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. The studies concluded that WCSA's surface and ground water sources are highly

susceptible to contamination. For more information about the Source Water Assessment please contact WCSA.

## 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 of 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](http://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 2016, the average *Cryptosporidium* concentration in the raw water at the Middle Fork Holston River water treatment plant was 0.33 oocysts per liter for the 3 samples collected. During 2016, no *Cryptosporidium* were detected in the 3 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.

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.

## 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.

			<b>MAIN SYSTEM</b> (Middle Fork Holston River; South Fork Holston River; Cole, Widener, Jones & Reservation Springs)				<b>HAYTERS GAP</b> (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	0.83	No	0.09 - 0.83	2016	1.5	No	0.2 – 1.5	2016	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.65	No	ND – 0.65	2016	0.96	No	0.88 – 0.96	2016	Water additive which promotes strong teeth
Barium (ppm)	2	2	0.033	No	0.026 – 0.033	2016	0.12	No	0.077 – 0.12	2016	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	2.5	No	2.0 - 2.5	2014	Erosion of Natural Deposits
Combined Radium (pCi/l)	0	5	ND	No	-	2014	2.7	No	0.99 - 2.7	2014	Erosion of Natural Deposits
Chlorine (ppm)	MRDLG = 4	MRDL = 4	1.46	No	0.10 – 2.10	2016	0.96	No	0.40 – 1.40	2016	Water additive used to control microbes
Total Organic Carbon	NA	TT, met when ≥ 1	1.04	No	1.00 – 1.16	2016	NA	NA	NA	NA	Naturally present in the environment
Haloacetic Acids (ppb)	NA	60	51	No	14 – 56	2016	8.2	No	-	2014	By-product of drinking water disinfection
TTHMs (Total Trihalomethanes) (ppb)	NA	80	59	No	21 - 92	2016	30	No	-	2014	By-product of drinking water disinfection
Turbidity (NTU)	NA	TT, 1 NTU Max	0.06	No	0.02 – 0.06	2016	NA	NA	NA	NA	Soil Runoff
		TT, ≤ 0.3 NTU 95% of the time	100%	No	NA						
Substance (units)	MCLG	Action Level	90 <sup>th</sup> Percentile	Date of Sampling	# of Sampling Sites Exceeding Action Level	90 <sup>th</sup> Percentile	Date of Sampling	# of Sampling Sites Exceeding Action Level	Typical Source of Substance		
Lead (ppb)	0	AL=15	3	2015	0	1.1	9/23/2014	0	Corrosion of household plumbing systems; Erosion of natural deposits		
Copper (ppm)	1.3	AL=1.3	0.14	2015	0	0.0.54	9/23/2014	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives		

## YOUR WATER QUALITY

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The tables on pages 2 and 3 show the results of our monitoring for the period of January 1<sup>st</sup> to December 31<sup>st</sup>, 2016 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.

## 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 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.

			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	0.085	No	-	2016	1.37	No	ND - 1.37	2016	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	NA	No	NA	NA	1.	No	0.22– 1	2016	Water additive which promotes strong teeth
Barium (ppm)	2	2	0.053	No	6	2016	0.084	No	0.02– 0.084	2016	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	NA	No	NA	NA	NA	No	NA	NA	Erosion of Natural Deposits
Chlorine (ppm)	MRDLG = 4	MRDL = 4	0.73	No	0.30 – 1.40	2016	1.33	No	0.40 – 2.40	2016	Water additive used to control microbes
Total Organic Carbon	NA	TT, met when $\geq 1$	1.00	No	—	2016	NA	NA	NA	NA	Naturally present in the environment
Haloacetic Acids (ppb)	NA	60	76	No	40 — 76	2016	12	No	ND– 9.5	2016	By-product of drinking water disinfection
TTHMs (Total Trihalomethanes) (ppb)	NA	80	110	No	63 - 110	2016	40	No	2.1– 56	2016	By-product of drinking water disinfection
Turbidity (NTU)	NA	TT, 1 NTU Max	0.08	No	0.03 – 0.08	2016	0.14	No	0.04 - 0.14	2015	Soil Runoff
		TT, $\leq 0.3$ NTU 95% of the time	100%	No	NA		100%	No	NA		
Substance (units)	MCLG	Action Level	90 <sup>th</sup> Percentile	Date of Sampling	# of Sampling Sites Exceeding Action Level	90 <sup>th</sup> Percentile	Date of Sampling	# of Sampling Sites Exceeding Action Level	Typical Source of Substance		
Lead (ppb)	0	AL=15	2.6	2016	0	ND	2014	0	Corrosion of household plumbing systems; Erosion of natural deposits		
Copper (ppm)	1.3	AL=1.3	0.082	2016	0	0.051	9/23/2014	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives		