CITY OF WINCHESTER
2018 DRINKING WATER QUALITY REPORT

The City of Winchester, Public Utilities Department is pleased to present its 2018 Annual Water Supply and Quality Report. This report was prepared in accordance with the Virginia Health Department Rules and Regulations and the National Primary Drinking Water Regulations of the United States Environmental Protection Agency (EPA), which require every drinking water supplier to provide the public with an annual statement describing the water supply and the quality of its water.

Introduction

This Annual Drinking Water Quality Report for calendar year 2018 is designed to provide you with valuable information about your drinking water quality. The City of Winchester is committed to providing you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water meets all state and federal requirements administered by the Virginia Department of Health (VDH).

If you have questions about this report, want additional information about any aspect of your drinking water, or want to know how to participate in decisions that may affect the quality of your drinking water, please contact:

Don Riggleman, City of Winchester, at (540) 667-2161

Spanish Notice:

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

It is safe
Our tap water, provided by Winchester Public Utilities, is safe to drink and is of higher quality than required by all state and federal standards for drinking water. This same water is in compliance with all required water quality monitoring and reporting. The Safe Drinking Water Act (SDWA) has been the primary regulation to ensure that public health and safety is protected in drinking water supplies. Although this information has been available to anyone requesting it, this water quality report, part of the provisions of the Safe Water Drinking Act Amendments of 1996, is intended to share with you how well we are doing.

It is reliable
Your drinking water is surface water obtained from the North Fork of the Shenandoah River. This river supplies the City of Winchester with its daily water requirement, of an average of 6.46 million gallons per day or 2.36 billion gallons per year for 2018. The treatment plant has been in operation since 1954 and has been upgraded as required to meet new regulations and water demands. The water goes through a six-step process before it becomes finished water and is pumped through 125 miles of pipe to you, our customer.

Winchester Public Utilities operates the Percy D. Miller Water Treatment Facility, 24 hours per day, seven days per week to produce a reliable supply of superior quality drinking water, as well as to ensure sufficient water quantity, customer satisfaction and environmental integrity of our source water. Should you have any questions or concerns please contact us at 540-667-2161.
Source Water Assessment

Source water assessments for the City of Winchester were completed by the Virginia Department of Health (VDH). These assessments determined that the city’s primary water source, North Fork Shenandoah River, may be susceptible to contamination because it is a surface water exposed to varying concentrations and changing hydrologic, hydraulic, and atmospheric conditions that promote migration of contaminants from land use activities of concern within its assessment area. More specific information may be obtained by contacting 540-667-2161.

Drinking Water & Your Health

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.

Cryptosporidium is a microbial pathogen found in surface waters throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection characterized by nausea, diarrhea, and abdominal cramps. Cryptosporidium may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks; however immuno-compromised people are at risk of developing a potentially life-threatening illness. In April 2006, the City of Winchester Public Utilities began a voluntary, two year, 48 sample study to determine the occurrence of Cryptosporidium in the raw water source for the Percy D. Miller water treatment plant. Results of monitoring during this time period have shown no presence of Cryptosporidium in the source water. Public Utilities will continue to make every effort to optimize the filtration and disinfection unit processes at the Percy D. Miller water treatment plant to ensure the greatest degree of Cryptosporidium removal/inactivation should any be detected. EP/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).

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:

1. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
2. 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.
3. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
4. 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.
5. Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.
Quality of Your Drinking Water
Your drinking water is routinely monitored according to Federal and State Regulations for a variety of contaminants. The table on the next page shows the results of our monitoring for the period of January 1, to December 31, 2018.

Most of the results in the table are from testing done in 2018. However, the state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though accurate, is more than one year old.

Definitions
In the table 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:

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

Level 1 Assessment: A Level 1 Assessment is 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 Level 2 Assessment is a very detailed study of the water system to identify potential problems and determine, if possible, why an E-coli MCL violation has occurred and / or why total coliform bacteria have been found in our water system on multiple occasions.

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.

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 (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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a 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 contamination.

Nephelometric Turbidity Unit (NTU) - A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Non-detects (ND): Lab analysis indicates that the contaminant is not present.

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 two years or a single penny in $10,000.

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

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
**Water Quality Results**

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The tables list only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

Maximum Contaminant Levels (MCL’s) are set at very stringent levels by the U.S. Environmental Protection Agency. 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 MCL's 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.

### Turbidity

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Highest Level Found</th>
<th>Lowest Monthly % &lt;0.3 NTU</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity NTU</td>
<td>NA</td>
<td>T≤2</td>
<td>0.1</td>
<td>100%</td>
<td>No</td>
<td>2018</td>
<td>Soil Runoff</td>
</tr>
</tbody>
</table>

### Microbiological

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Found</th>
<th>MCL</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Coliform Presence or absence</td>
<td>0</td>
<td>0</td>
<td>Presence of coliform bacteria in &gt;1 sample per month</td>
<td>No</td>
<td>2018</td>
<td>Naturally present in the environment</td>
<td></td>
</tr>
</tbody>
</table>

### Inorganic Contaminants

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Found (Range)</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium ppm</td>
<td>2</td>
<td>2</td>
<td>0.032</td>
<td>No</td>
<td>2/2018</td>
<td>Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits</td>
</tr>
<tr>
<td>Fluoride ppm</td>
<td>4</td>
<td>4</td>
<td>0.64 (0.5 – 0.73)</td>
<td>No</td>
<td>2018</td>
<td>Erosion of natural deposits; Discharge from fertilizer and aluminum factories; Water additive which promotes strong teeth</td>
</tr>
<tr>
<td>Nitrate ppm</td>
<td>10</td>
<td>10</td>
<td>1.02</td>
<td>No</td>
<td>2/2018</td>
<td>Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits</td>
</tr>
</tbody>
</table>

### Radiological Contaminants

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Found (Range)</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha Emitter pCi/L</td>
<td>0</td>
<td>15</td>
<td>&lt;0.36</td>
<td>No</td>
<td>2/2018</td>
<td>Erosion of Natural Deposits</td>
</tr>
<tr>
<td>Beta Emitter pCi/L</td>
<td>0</td>
<td>50</td>
<td>3.9</td>
<td>No</td>
<td>2/2018</td>
<td>Decay of natural and man-made deposits</td>
</tr>
<tr>
<td>Combined Radium pCi/L</td>
<td>0</td>
<td>5</td>
<td>&lt;0.45</td>
<td>No</td>
<td>2/2018</td>
<td>Erosion of Natural Deposits</td>
</tr>
</tbody>
</table>

### Lead and Copper

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>90th Percentile; # Samples &gt; AL</th>
<th>Exceedance</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead ppb</td>
<td>0</td>
<td>AL=15</td>
<td>2.7</td>
<td>One sample exceeded the AL</td>
<td>No</td>
<td>6/2018</td>
</tr>
<tr>
<td>Copper ppm</td>
<td>1.3</td>
<td>AL=1.3</td>
<td>0.23</td>
<td>No samples exceeded the AL</td>
<td>No</td>
<td>6/2018</td>
</tr>
</tbody>
</table>

### Total Organic Carbon

<table>
<thead>
<tr>
<th>Contaminant / Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Average Removal Ratio (Range)</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Organic Carbon</td>
<td>NA</td>
<td>TT</td>
<td>1.13 (0.9 – 1.54)</td>
<td>No</td>
<td>2018</td>
<td>Naturally present in the environment</td>
</tr>
</tbody>
</table>
### Disinfection Byproducts

<table>
<thead>
<tr>
<th>Contaminant/Unit of Measurement</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Found (Range)</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloacetic Acids ppb ppb(HAA5)</td>
<td>NA</td>
<td>60</td>
<td>38 (13 - 65)</td>
<td>No</td>
<td>2018</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>Total Trihalomethanes (TTHM) ppb</td>
<td>NA</td>
<td>80</td>
<td>47 (12 - 85)</td>
<td>No</td>
<td>2018</td>
<td>By-product of drinking water disinfection</td>
</tr>
</tbody>
</table>

### Disinfection Residual

<table>
<thead>
<tr>
<th>Contaminant/Unit of Measurement</th>
<th>MRDLG</th>
<th>MRDL</th>
<th>Level Found (Range)</th>
<th>Violation</th>
<th>Date of Sample</th>
<th>Typical Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine ppm</td>
<td>4</td>
<td>4</td>
<td>2.1 (0.7 – 3.7)</td>
<td>No</td>
<td>2018</td>
<td>By-product of drinking water chlorination</td>
</tr>
</tbody>
</table>

#### No Coliform Bacteria Found

A minimum of thirty different system samples from twenty different locations throughout the collection system were analyzed for Fecal Coliform and E. coli bacteria each month. The results of these analyses found NO presence of either type of bacteria in any sample collected.

#### Lead and Copper

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Winchester Public Utilities is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the United States Environmental Protection Agency’s Safe Drinking Water Hotline at (800) 426-4791 or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead)

#### What are we doing?

**Meter Replacements** – In 2018, Public Utilities will began a four-year project to replace approximately 90% of the water meters in the system. These meters have been in the system for over 20 years and have reached the end of their useful life. During this replacement project we will be improving our ability to read water meters and provide better customer service.

**Water and Sewer Main Replacements** – The City operates the third oldest water distribution system in the U.S. and some existing water mains are over 180 years old. The City will continue to replace several old water and sewer mains during the next five years to help ensure the reliability of the overall system.

**New Water Storage Tank** – It is imperative that the City have adequate treated water storage in the event of a large fire or other emergency. To provide an adequate volume of storage, the old Strothers Lane tank will be demolished, and a new water storage tank will be constructed in its place at on the north end of the City. Bids for this project have been received and construction will begin this summer.

**Sewer Pump Station Replacements** – The City operates nine sewage pump stations. These pump stations have reached the end of their useful life and all of them will be replaced in the next 6 to 8 years.
Frequently Asked Questions

At times, my drinking water looks “milky” when first taken from a faucet, but then clears up. Why?

Air becomes trapped in the water as it makes its long trip from the treatment plant and storage reservoirs to the customer. As a result, bubbles of air can sometimes cause water to appear cloudy or milky. This condition is not a public health concern. The cloudiness is temporary and clears quickly after water is drawn from the tap and the excess air is released.

At times I can detect chlorine odors in tap water. What can I do about it?

Chlorine odors may be more noticeable when the weather is warmer. Chlorine is a disinfectant and is added to the water to kill germs. The following are ways you can remove the chlorine and its odor from your drinking water:
• Fill a pitcher and let it stand in the refrigerator overnight. (This is the most effective way to address a chlorine odor in drinking water.)
• Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
• Pour water from one container to another about 10 times.
• Heat the water to about 100 degrees Fahrenheit.
• Once you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

Sometimes my water is a rusty brown color. What causes this?

Brown water is commonly associated with plumbing corrosion problems inside buildings and from rusting hot water heaters. If you have an ongoing problem with brown water, it is probably due to rusty pipes. It is recommended that you run your cold water for 2 - 3 minutes, if it has not been used for an extended period of time. This will flush the line. You can avoid wasting water by catching your “flush” water in a container and using it to water plants or for other purposes. Brown water can also result from street construction or water main work being done in your area. Any disturbance to the main, including the opening of a fire hydrant, can cause pipe sediment to shift, resulting in brown water. The settling time will vary, depending on the size of the water main.

Should I buy bottled water?

You do not need to buy bottled water for health reasons in the City of Winchester since our water meets all federal and State health department-based drinking water standards. In addition, bottled water costs up to 1,000 times more per year than Winchester’s drinking water.