Red Hill
2020 Annual Drinking Water Report
Includes Testing for 2019
Dear Customer,

This year, perhaps more than any other because of the impacts of COVID-19, the safety of your drinking water has never been more important. The people of the Albemarle County Service Authority (ACSA) work hard to ensure you drink safe, dependable water by conducting thousands of water quality tests annually to assure that it is always of the highest quality. Your drinking water again met or exceeded all regulatory requirements in 2019.

The ACSA and the Rivanna Water and Sewer Authority (RWSA), in partnership with the Virginia Department of Health (VDH), work cooperatively to ensure that you receive a safe and reliable supply of drinking water. The RWSA collects, stores and treats the water, while the ACSA purchases the treated water and delivers it to you through our distribution system.

The ACSA is committed to providing you, the customer, with this information since informed customers are indeed our best allies. We encourage you to contact us and tell us what you think of this report; your suggestions are always welcomed. If you wish to receive a “hard-copy” of the report, please contact Tim Brown at 977-4511, Ext. 119, or at tbrown@serviceauthority.org.

Thank you,

Gary B. O’Connell
Executive Director
Albemarle County Service Authority

Our Customer Service representatives are available Monday-Friday from 8am to 5pm to assist you in person, via email, or by phone. Information is also available on our website, www.serviceauthority.org.

168 Spotnap Road
Charlottesville, Virginia 22911
(434) 977-4511
custserv@serviceauthority.org
Important Information about Your Water

ACSA Board of Directors

Clarence Roberts, Chair - Rivanna District
Jennifer Sulzberger, Vice Chair - Samuel Miller District
John Parcells - White Hall District
Charles Tolbert - Jack Jouett District
Nathan Moore - Rio District
Richard Armstrong - Scottsville District

The ACSA Board of Directors holds meetings on the third Thursday of each month at 9am at 168 Spotnap Road. Call (434) 977-4511 or visit www.serviceauthority.org for more information.

The Rivanna Water & Sewer Authority (RWSA) Board of Directors holds meetings on the fourth Tuesday of each month at 2pm at 695 Moore's Creek Lane. Call (434) 977-2970 or visit www.rivanna.org for more information.

Your Water Supply & Treatment

The Red Hill Waterworks is supplied by groundwater from a well located within the community. The well extends to a depth of 500 feet, is cased to a depth of 63 feet, and has a tested yield of 29 gallons per minute, far in excess of the water supply needs of your community. The waterworks is permitted by the VDH for a design capacity of 6,800 gallons per day, based upon the estimated usage by the elementary school and the residents. A reserve is maintained in a 10,000-gallon storage tank.

A calcite contactor was added to the treatment of the water in July 2019 to raise the pH of the somewhat acidic well water. Disinfection of the water is achieved by chlorination with sodium hypochlorite, and corrosion control involves the use of a blended orthophosphate/polyphosphate solution. Each of the treatments is injected directly into the well discharge line and prior to the storage tank. Fluoride was not added to the water in 2019 but began being added on February 24, 2020.

Your water is an extremely "soft," low mineral content supply with no detectable iron or manganese, the latter situation being unusual for groundwater in the Central Piedmont of Virginia. The nitrate concentration indicates minimal impact from the agricultural use of fertilizers in the vicinity.

Radioactive compounds, and disinfection byproducts (called TTHMs and HAAs) from the use of chlorine, are well below the regulated maximum contaminant levels. Two volatile organic compounds (VOCs) are apparently originating from the inner coating of the water storage tank and were detectable at trace levels only in the summer sample. They continue to slowly decline. No VOCs were detectable in the raw (untreated) water.

More specific information may be obtained by contacting Tim Brown at (434) 937-4511, ext. 119.

Water Treatment for Corrosion Control

It is standard practice that a phosphate chemical be added to drinking water supplies during treatment in order to reduce corrosion of the metal pipes in the distribution system and in customer plumbing. The chemical forms a protective layer on the inside of the pipes, reducing corrosion and the possibility of mainly lead and copper from entering the water.

An orthophosphate product for corrosion control has been used in the Red Hill treated water since the system came online in 2009, and it has proven to be very effective in keeping lead and copper out of customer water supplies. At one household, there has been a significant reduction in the concentration of copper in the water that was first observed in 2009.
Important Information about Your Water

Water Quality Standards

The information provided in this report has been collected and reported in accordance with the drinking water standards established by the USEPA and the VDH. During 2019, the RWSA collected weekly, monthly, semi-annual, and annual samples to ensure the quality of your water. Sample sources included the raw (untreated) well water, the finished (treated) well water, and several locations in the distribution system.

The source of your water is a deep well. As water travels through the ground, it dissolves naturally-occurring minerals, and in some cases radioactive material, as well as substances resulting from the presence of animals, and human activities.

Drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of these contaminants, however, does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline (800-426-4791) or by visiting their website (www.epa.gov/safewater). See also the discussion of Cryptosporidium contained in this report.

Internal Issues of Mold

The most common water-related complaint we have received from our residential customers over the years is the occasional appearance of a black growth on toilets, in fixtures like faucets and shower heads, and on other surfaces that stay constantly moist.

This is a harmless form of mold; the water is completely safe to drink. The mold is not coming into your home through our water pipes. Instead, the mold is the result of airborne spores and there not being enough chlorine in the water to prevent its growth. The spores come from hardwood forests, construction sites, and mulch piles. In particular, we have seen a very clear link between mold and mulch supplies for several years.

Testing in 2018 and 2019 identified the mold as very common types. More information, including tips on control, can be obtained by visiting our website at www.serviceauthority.org/watersupplyfaq.html.

Lead in Drinking Water

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 internal plumbing. RWSA and the ACSA are responsible for providing high-quality drinking water; it is non-corrosive, has a corrosion inhibitor added to the water to coat the pipes, and is delivered to you in pipes that are free of lead.

However, we cannot control the variety of materials used in the plumbing components of houses and businesses. 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 drinking or cooking. If you are concerned about lead in your water you may wish to have your water tested. The periodic lead and copper testing at select, high-risk households and the elementary school last occurred in the summer of 2018, and is next scheduled for the summer of 2021. No lead was detected in any sample. (See the data chart.)

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or www.epa.gov/safewater/lead.
Important Information about Your Water

What if I Am Immuno-compromised?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as those with cancer undergoing chemotherapy; people who have undergone organ transplants; persons with HIV/AIDS or other immune system disorders; and some elderly and infants who can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA and CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from EPA’s Safe Drinking Water Hotline (800-426-4791) or by visiting their website – www.epa.gov/safewater.

2019 Water Quality Test Results

<table>
<thead>
<tr>
<th>Primary Standards/Potential Health Risks</th>
<th>MCLG</th>
<th>MCL</th>
<th>Red Hill Water Result</th>
<th># of Samples &gt; AL</th>
<th>Range of Detections</th>
<th>Violation?</th>
<th>Typical Source of Contaminant</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICROBIOLOGICAL ORGANISMS; RELATED MEASUREMENTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Coliform Bacteria (1)</td>
<td>0</td>
<td>Presence in monthly sample</td>
<td>0 (2)</td>
<td>N/A</td>
<td>0 per month</td>
<td>No (2)</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Fecal Coliform Bacteria (as E. coli) (2)</td>
<td>0</td>
<td>See footnote (3)</td>
<td>0 (2)</td>
<td>N/A</td>
<td>0 per month</td>
<td>No (2)</td>
<td>Human and animal fecal waste</td>
</tr>
<tr>
<td>RADIOACTIVE COMPOUNDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radium-228 (4)</td>
<td>0 pCi/l</td>
<td>5 pCi/l</td>
<td>1.2 pCi/l</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Erosion of natural deposits</td>
</tr>
<tr>
<td>Gross Alpha (4)</td>
<td>0 pCi/l</td>
<td>15 pCi/l</td>
<td>≤0.26 pCi/l</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Decay of natural deposits</td>
</tr>
<tr>
<td>Gross Beta (4,5)</td>
<td>0 pCi/l</td>
<td>50 pCi/l</td>
<td>2.5 pCi/l</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Erosion of natural deposits</td>
</tr>
<tr>
<td>INORGANIC COMPOUNDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead (6)</td>
<td>0 ppb</td>
<td>15 ppb (AL)</td>
<td>≤2.00 ppb (7)</td>
<td>0</td>
<td>All ≤2.00 ppb</td>
<td>No</td>
<td>Corrosion of household plumbing</td>
</tr>
<tr>
<td>Copper (6)</td>
<td>1.3 ppm</td>
<td>1.3 ppm (AL)</td>
<td>0.039 ppm (7)</td>
<td>0</td>
<td>&lt;0.020-0.057 ppm</td>
<td>No</td>
<td>Corrosion of household plumbing; erosion of natural deposits</td>
</tr>
<tr>
<td>Barium</td>
<td>2 ppm</td>
<td>2 ppm</td>
<td>0.019 ppm (11)</td>
<td>0</td>
<td>N/A</td>
<td>No</td>
<td>Erosion of natural deposits; drilling waste discharges</td>
</tr>
<tr>
<td>Fluoride</td>
<td>4 ppm</td>
<td>4 ppm</td>
<td>≤0.20 ppm</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Water additive that promotes strong teeth</td>
</tr>
<tr>
<td>Nitrates</td>
<td>10 ppm</td>
<td>10 ppm</td>
<td>1.06 ppm</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Fertilizer runoff</td>
</tr>
</tbody>
</table>
## Important Information about Your Water

### 2019 Water Quality Test Results

#### Primary Standards/Potential Health Risks

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<tr>
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</thead>
<tbody>
<tr>
<td>VOLATILE ORGANIC COMPOUNDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylenes, Total</td>
<td>10,000 ppb</td>
<td>10,000 ppb</td>
<td>4.6 ppb (8)</td>
<td>N/A</td>
<td>&lt;0.5-4.6 ppb (8)</td>
<td>No</td>
<td>Paints and protective coatings; adhesives; petroleum products and refineries</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>700 ppb</td>
<td>700 ppb</td>
<td>0.6 ppb (8)</td>
<td>N/A</td>
<td>&lt;0.5-0.6 ppb (8)</td>
<td>No</td>
<td>Paints and protective coatings; adhesives; petroleum products and refineries</td>
</tr>
</tbody>
</table>

#### DISINFECTION & DISINFECTION BYPRODUCT CONTAMINANTS

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<tr>
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</thead>
<tbody>
<tr>
<td>Free Residual Chlorine</td>
<td>MRDL=4 ppm</td>
<td>MRDLG=4 ppm</td>
<td>1.01 ppm (9)</td>
<td>N/A</td>
<td>0.09-2.02 ppm</td>
<td>No</td>
<td>Water additive to control microbes (disinfectant)</td>
</tr>
<tr>
<td>Total Trihalomethanes (TTHMs) (10)</td>
<td>0</td>
<td>80 ppb</td>
<td>50 ppb</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Disinfection byproduct</td>
</tr>
<tr>
<td>Haloacetic Acids (HAAs) (10)</td>
<td>0</td>
<td>60 ppb</td>
<td>13 ppb</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Disinfection byproduct</td>
</tr>
</tbody>
</table>

#### Secondary Standards/Aesthetic Factors

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>N/A</td>
<td>250 ppm</td>
<td>&lt;5.0 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>Iron</td>
<td>N/A</td>
<td>0.3 ppm</td>
<td>&lt;0.05 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>Manganese</td>
<td>N/A</td>
<td>0.05 ppm</td>
<td>&lt;0.01 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
<td>6.5-8.5 (daily)</td>
<td>5.98-7.55 (Jan.-July) 7.10-7.47 (Aug.-Dec.)</td>
<td>N/A</td>
<td>5.98-7.55</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>Sulfate</td>
<td>N/A</td>
<td>250 ppm</td>
<td>&lt;5.0 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>N/A</td>
<td>500 ppm</td>
<td>47 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
</tbody>
</table>

#### OTHER PARAMETERS OF INTEREST

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Alkalinity</td>
<td>N/A</td>
<td>N/A</td>
<td>18.3 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Runoff/leaching of limestone minerals</td>
</tr>
<tr>
<td>Conductivity</td>
<td>N/A</td>
<td>N/A</td>
<td>57 micromhos/cm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
<tr>
<td>Hardness</td>
<td>N/A</td>
<td>N/A</td>
<td>11 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Runoff/leaching of limestone minerals</td>
</tr>
<tr>
<td>Sulfate</td>
<td>N/A</td>
<td>N/A</td>
<td>5.71 ppm (11)</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Runoff/leaching of natural deposits</td>
</tr>
</tbody>
</table>

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(1) Unit of measurement for total and fecal coliform bacteria is the presence or absence of bacteria in a 100 ml sample.

(2) No monthly sample collected within the distribution system indicated the presence of coliform bacteria of any kind.

(3) Fecal coliform MCL: A routine sample and a repeat sample are total coliform positive, and at least one is also fecal coliform positive.
Important Information about Your Water

2019 Water Quality Test Results (continued)

(4) Last sampled in September 2016. To be sampled again in 2022.

(5) The EPA considers 50 pCi/l to be the level of concern for beta particles.

(6) Sampled in September 2018 from four residences and the elementary school. To be sampled again in 2021.

(7) The value reported is the 90th percentile for all data collected (5 samples).

(8) Volatile organic compounds (VOCs) were sampled in January and June 2019, and tested by the State Laboratory (DCLS). These VOCs are apparently being leached from the inner coating of the water storage tank. They were absent from the raw (untreated) well water.

(9) The value reported is the highest quarterly, system-wide average.

(10) TTHM and HAAs were sampled in 2018 at the connection most distant from the well house; this is assumed to be the point of highest concentration. To be sampled again in 2021.

(11) Sampled in September 2018. To be sampled again in 2021. For pH, a calcite contactor was added to treatment in mid-July 2019 to raise the pH of the well water.

What Do All the Numbers Mean?

First, they show your drinking water met or exceeded all regulatory requirements during 2019. We are fortunate to have a reliable source for your drinking water needs, and well-operated treatment facilities. The information provides you with details on each potentially harmful contaminant or compound detected in your drinking water.

Definitions

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected health risk. 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 as close to the MCLGs as possible using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. The 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 public health.

ppb: Parts per billion or micrograms per liter (µg/l). One part substance per billion parts of a solution.

ppm: Parts per million or milligrams per liter (mg/l). One part substance per million parts of a solution.

pCi/l: Picocuries per liter. This is a measure of radioactivity.

Action Level (AL): The concentration of a contaminant, which, if exceeded, trigger treatment of other actions by the water provider. This term is typically limited to discussions of lead and copper concentrations.

N/A: Not applicable. <: Less than.
Important Information about Your Water

The Potential Health Risks Associated with These Contaminants

**Total and Fecal Coliform Bacteria.** Not detected in 2019. Coliforms are a large group of bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Fecal coliform bacteria and E. coli, in particular, indicate a likely contamination from human or animal wastes. These microorganisms can result in short-term effects such as nausea, headache, cramps and diarrhea, and they pose a special health risk for infants, young children, the aged, and those with severely compromised immune systems.

**Combined Radium, Gross Alpha and Gross Beta.** These are naturally-occurring forms of radiation, resulting from certain minerals that are radioactive. When these minerals are eroded into the source water, radiation in the water may result. Some people who drink water containing radium, or alpha or beta emitters, over many years may have an increased risk of getting cancer.

**Lead and Copper.** The USEPA Lead and Copper Rule mandates a household testing program for these metals, and the values reported in the chart are from samples that were collected from select households. Infants and children who drink water containing lead in excess of the Action Level could experience delays in physical or mental development. Children could show deficits in attention span and learning abilities.

Adults who drink this water over many years could possibly develop kidney problems or high blood pressure. See the box for additional information on lead. Copper is an essential nutrient, but some who drink water containing copper in excess of the Action Level could experience gastrointestinal distress in a relatively short period of time. Some who drink this water over many years could develop kidney or liver damage. Individuals with Wilson’s disease should consult their doctor.

**Nitrate** is a form of nitrogen found primarily in fertilizers, sewage, and runoff from natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL could develop “blue baby syndrome” in which there is a bluish coloration of the skin and shortness of breath. The infant can become seriously ill and, if untreated, may die.

**Xylenes and Ethylbenzene** are two compounds in a large class of chemicals referred to as volatile organic compounds, or VOCs. These compounds, which include both naturally-occurring and man-made chemicals, are numerous in type and are present throughout the environment. The majority of the biologically-derived VOCs are generated in vegetation. They are a component of fuels and other petroleum products. A large majority of the numerous synthetic VOCs are solvents used in paints and other protective coatings, adhesives, thinners, cleaning agents, degreasers, refrigerants, pharmaceuticals, cosmetics and other personal care items, and in many other industrial and commercial products. Some people who drink water containing xylenes in excess of the MCL over many years may experience damage to the nervous system. Some people who drink water containing ethylbenzene in excess of the MCL over many years may experience problems with their liver or kidneys.

**Chlorine** is added at the treatment plant to inactivate disease-causing microbes. Some people who use water containing chlorine in excess of the MRDL could experience irritation of the eyes, nose and skin. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

**Trihalomethanes and Haloacetic Acids** are compounds formed by the interaction of chlorine with naturally-occurring organic matter, and they are sometimes referred to as disinfection by-products. Chlorine is added at the treatment plant to inactivate disease-causing microbes, and some organic matter is naturally present in the groundwater from leaves and decaying plants. Some people who drink water containing these compounds in excess of the MCL over many years may experience problems with their liver, kidneys or central nervous system, and may have an increased risk of getting cancer.