2017 Drinking Water Quality Report
City of St. George

Spanish (Español)
Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

We are once again pleased to present to you our annual water quality report. This edition covers all testing completed through December 31, 2017. The Water Services Department is dedicated to producing drinking water that meets or exceeds all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all our water users. Please share your thoughts with us about the information in this report, as well informed customers are our best allies.

How can I learn more? If you want to learn more about this report, or have questions relating to your drinking water provided by St. George, please call Scott Taylor, Water Services Director or Kerry Benson at (435) 627-4800.

If you want to get involved in water resources, you can attend any of the regularly scheduled meetings of the Washington County Water Conservancy District (WCWCD). Meetings are held at 533 East Waterworks Drive (just off East Red Hills Parkway) in St. George. The schedule is available at http://www.wcwcd.org/about-us/management/board-of-trustees-meeting-schedule/ or call (435) 673-3617.

Where does my water come from? Our water sources are from both groundwater and surface water sources. Our multiple spring and groundwater sources draw from consolidated rock aquifers of the Navajo Sandstone and Kayenta Formation, which lie within the Virgin River basin. We purchase our surface water from the Washington County Water Conservancy District. Their surface water is drawn from the Virgin River, stored at Quail Lake and Sand Hollow Reservoirs and treated at the Quail Creek Water Treatment Plant before transmission to our City boundaries and distribution to our customers. With some exceptions, all water customers within the City receive a mixture of water from groundwater and surface water sources during some of the year. Customers located along State Highway 18 as far north as the Ledges Subdivision are served exclusively by groundwater from our Tolman-Ledges wells.

Water Conservation Tip - Repair a dripping faucet and you can save 15 to 20 gallons per day or 6,000 gallons of water each year.  

Water Conservation Tip - Use your water meter to detect hidden leaks. Check the meter reading, and then turn off all water faucets and water using appliances. Check the meter again after 15 minutes of no water use. If the reading changed, you have a leak that needs to be repaired.

Source Protection: Drinking Water Source Protection Plans (DWSPPs) for the City of St. George are available for your review. They contain information about source protection zones, potential contamination sources, and management strategies to protect drinking water that originates from City-owned groundwater wells and springs. Most of our groundwater sources are located in remote and protected areas and have a low level of susceptibility to potential contamination sources. We have also developed management strategies to further protect our sources from contamination. Our plans are available for review on the City’s web site at www.sgcity.org/utilities/waterdepartment or during normal business hours from the St. George Water Department office located at 811 East Red Hills Parkway. Please contact us if you have questions or concerns about our source protection plan.

Water Conservation Tip - Check toilets for leaks by putting a few drops of food coloring in the rear tank. Check the bowl after a few minutes to see if the color appears. If it does, you can easily repair the leak and save up to 30,000 gallons of water per year.

Water Hardness: Most of the water sources in Southern Utah are said to be “hard” and that’s because they contain high amounts of non-toxic calcium or magnesium minerals. Hard water does not dissolve soap readily, so making lather for washing and cleaning is difficult. Many customers use treatment devices, such as water softeners, to remove the calcium and magnesium from tap water to produce soft water for household use. Customers with water softeners may find that softener settings between 13 to 22 grains per gallon will provide the most effective treatment.
Water Quality Test Results:

The City of St. George routinely monitors for constituents in our drinking water in accordance with Federal and State law. Some contaminants are sampled less frequently because they do not change frequently. Unless otherwise noted, the following table lists all of the drinking water contaminants that we detected in our water through analytical monitoring during the 2017 calendar year, or during the last sample event. You may find terms and abbreviations in the table below that you may not be familiar with. We have provided definitions on the facing page.

When reviewing this table, please recognize that all sources of drinking water are subject to potential contamination by constituents that are naturally occurring or man-made. Those constituents can be microbes, organic or inorganic chemicals, or radioactive materials. All 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 the water poses a health risk. To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Please note that all contaminants listed in this table were found to be present in concentrations below the maximum contaminant levels established by EPA. The EPA has determined that your water IS SAFE at these levels.

More information about contaminants and potential health effects may be obtained by calling the Environmental Protection Agency’s Safe Drinking Water Hotline at 1-800-426-4791.

<table>
<thead>
<tr>
<th>CITY OF ST. GEORGE - 2017 WATER QUALITY DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Test Results</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Violation</th>
<th>MCL Goal</th>
<th>MCL Limit</th>
<th>Likely Source of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microbiological Contaminants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Coliform Bacteria</td>
<td>N</td>
<td></td>
<td>0</td>
<td>Presence of total coliform bacteria in 5% of monthly samples. Naturally present in the environment.</td>
</tr>
<tr>
<td>Fecal Coliform &amp; E. Coli</td>
<td>N</td>
<td></td>
<td>0</td>
<td>If routine &amp; repeat samples are total coliform positive, and one is also fecal coliform or E. coli positive. Human and animal fecal waste.</td>
</tr>
<tr>
<td>Turbidity, Ground Water</td>
<td>N</td>
<td></td>
<td>5.0</td>
<td>Soil runoff.</td>
</tr>
<tr>
<td>Turbidity, Surface Water</td>
<td>N</td>
<td></td>
<td>NTU</td>
<td>Soil runoff.</td>
</tr>
<tr>
<td><strong>Inorganic Contaminants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>N</td>
<td>ND – 0.28</td>
<td>0.2</td>
<td>Erosion of natural deposits.</td>
</tr>
<tr>
<td>Fluoride</td>
<td>N</td>
<td>ND – 2.30</td>
<td>0.3</td>
<td>Erosion of natural deposits.</td>
</tr>
<tr>
<td>Nitrate (as Nitrogen)</td>
<td>N</td>
<td>ND – 0.74</td>
<td>2.4</td>
<td>Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.</td>
</tr>
<tr>
<td>Selenium</td>
<td>N</td>
<td>ND – 0.87</td>
<td>3</td>
<td>Erosion of natural deposits.</td>
</tr>
<tr>
<td>Sodium</td>
<td>N</td>
<td>4.5 – 170</td>
<td>55</td>
<td>Erosion of natural deposits; runoff from landfills.</td>
</tr>
<tr>
<td>Sulfate</td>
<td>N</td>
<td>ND – 480</td>
<td>185</td>
<td>Erosion of natural deposits; runoff from landfills; runoff from cropland.</td>
</tr>
<tr>
<td>Thallium</td>
<td>N</td>
<td>ND – 0.3</td>
<td>0.5</td>
<td>Discharge from electronics, glass, ore-processing sites; drug factories.</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>N</td>
<td>92 – 930</td>
<td>440</td>
<td>Erosion of natural deposits.</td>
</tr>
<tr>
<td><strong>Copper &amp; Lead</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>a. 90% results</td>
<td>0.053</td>
<td>1.3</td>
<td>Erosion of household plumbing systems, erosion of natural deposits.</td>
</tr>
<tr>
<td>Lead</td>
<td>b. 90% results</td>
<td>0</td>
<td>AL=1.3</td>
<td>Corrosion of household plumbing systems, erosion of natural deposits.</td>
</tr>
</tbody>
</table>

*Although the EPA has not established an MCL for sulfate and TDS, the Utah Division of Water Quality requires a sulfate concentration of less than 500 ppm and a total dissolved solids concentration of less than 1,000 ppm unless the water system has no other water sources available. In no case is the Sulfate concentration to exceed 1,000 ppm or the total dissolved solids concentration to exceed 2,000 ppm.

**CITY OF ST. GEORGE - 2017 WATER QUALITY DATA**

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Level Detected</th>
<th>Last Sample Date</th>
<th>Unit of Measure</th>
<th>MCL Goal</th>
<th>MCL Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City of St. George Groundwater &amp; WCWCD Surface Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quail Creek WTP</td>
<td>NA</td>
<td>2017</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand Hollow Wells</td>
<td>NA</td>
<td>2017</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Washington County Water Conservancy District Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well A</td>
<td>NA</td>
<td>2017</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well B</td>
<td>NA</td>
<td>2017</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well C</td>
<td>NA</td>
<td>2017</td>
<td>ppm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<th>MCL Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>RAA = 9.58</td>
<td>2017</td>
<td>ppm</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Barium</td>
<td>ND – 0.28</td>
<td>2017</td>
<td>ppm</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Fluoride</td>
<td>ND – 2.30</td>
<td>2017</td>
<td>ppm</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Nitrate (as Nitrogen)</td>
<td>RAA = 0.2</td>
<td>2017</td>
<td>ppm</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Selenium</td>
<td>ND – 0.87</td>
<td>2017</td>
<td>ppm</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Sodium</td>
<td>4.5 – 170</td>
<td>2017</td>
<td>ppm</td>
<td>500</td>
<td>NE</td>
</tr>
<tr>
<td>Sulfate</td>
<td>ND – 480</td>
<td>2017</td>
<td>ppm</td>
<td>NE 500*</td>
<td>500*</td>
</tr>
<tr>
<td>Thallium</td>
<td>ND – 0.3</td>
<td>2017</td>
<td>ppm</td>
<td>NE 1,000*</td>
<td>1,000*</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>92 – 930</td>
<td>2017</td>
<td>ppm</td>
<td>NE</td>
<td>NE 1,000*</td>
</tr>
</tbody>
</table>

**Microbiological Contaminants**

- Total Coliform Bacteria: 1 positive sample count in 2017.
- Fecal Coliform & E. Coli: 0 positive sample counts in 2017.
- Turbidity, Ground Water: 5.0 in 2017.

**Inorganic Contaminants**

- Barium: ND – 0.28 in 2017.
- Nitrate (as Nitrogen): RAA = 0.2 in 2017.
- Selenium: ND – 0.87 in 2017.
- Thallium: ND – 0.3 in 2017.

**Copper & Lead** - Sampled at 31 residences throughout the distribution system.
### Disinfectants & Disinfection Byproducts
- **Chlorine (as Cl\textsubscript{2})**  
  - 2017: NA, NA, NA, ppm, 4.0, 4.0  
  - Water additive used to control microbes

- **Haloacetic Acids [HAA5]**  
  - ND – 27.9  
  - 2017: NA, NA, NA, ppb, 0, 60  
  - Byproduct of drinking water disinfection

- **Total Trihalomethanes THM\textsubscript{N}**  
  - ND – 74.8  
  - 2017: NA, NA, NA, ppb, 0, 80  
  - Byproduct of drinking water disinfection

### Organic Contaminants
- **Carbon, Total Organic**  
  - ND – 1.62  
  - 2015: RAA=1.6, NA, 2017, ppm, NE, TT  
  - Erosion of natural deposits

### Radioactive Contaminants
- **Gross Alpha**  
  - N 1.1 – 7.6  
  - 2017: 1, 5.2, 2016, pCi/L, 0, 15  
  - Erosion of natural deposits

- **Gross Beta**  
  - N 3 – 21  
  - 2016: 3, 5, 2016, pCi/L, 0, 50  
  - Decay of natural & man-made deposits

- **Radium 226**  
  - N 0.12 – 1.4  
  - 2017: NA, NA, NA, pCi/L, 0, -  
  - Erosion of natural deposits

- **Radium 228**  
  - N 0.02 – 2.8  
  - 2017: 0.5, 0.5, 2016, pCi/L, 0, 5  
  - Erosion of natural deposits

- **Combined Radium 226/228**  
  - N 0.47 - 3.7  
  - 2017: NA, NA, NA, pCi/L, 0, 5  
  - Erosion of natural deposits

- **Uranium**  
  - N 0.33 – 1.2  
  - 2016: NA, NA, NA, pCi/L, 0, 20.1  
  - Erosion of natural deposits

- **Radon**  
  - N 13.1 -59.3  
  - 2015: NA, NA, NA, pCi/L, 0, MNR  
  - Erosion of natural deposits

### Synthetic Organic Contaminants Including Pesticides and Herbicides
- **Di (2-ethylhexyl) phthalate**  
  - N ND – 2.2  
  - 2017: NA, NA, NA, ppb, 0, 6  
  - Discharge from rubber and chemical factories

- **Lindane**  
  - N ND – 0.013  
  - 2017: NA, NA, NA, ppb, 0.20, 0.20  
  - Runoff / leaching from insecticides used on cattle, lumber, gardens

### Unit of Measure Descriptions
<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>µg/L</td>
<td>Micrograms per Liter – The number of micrograms of a substance in one liter of water. Also known as one part per billion (ppb), or 1 part contaminant in 1,000,000,000 parts water.</td>
</tr>
<tr>
<td>mg/L</td>
<td>Milligrams per Liter – The number of milligrams of a substance in one liter of water. Also known as one part per million (ppm), or 1 part contaminant in 1,000,000 parts water.</td>
</tr>
<tr>
<td>ppb</td>
<td>Parts per Billion - The number of parts of a substance in one billion parts of water. Also known as micrograms per liter (µg/L).</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts per Million - The number of parts of a substance in one million parts of water. Also known as milligrams per liter (mg/L).</td>
</tr>
<tr>
<td>pCi/L</td>
<td>Picocuries per Liter – A measure of the radioactivity in a liter of water.</td>
</tr>
<tr>
<td>NTU</td>
<td>Nephelometric Turbidity Unit - Turbidity is a measure of the cloudiness of the water. Turbidity is monitored it because it is a good indicator of the effectiveness of the filtration system at the Quail Creek Water Treatment Plant (QCWTP). Turbidity in excess of 5 NTU is just noticeable to the average person.</td>
</tr>
</tbody>
</table>

### Definitions of Important Drinking Water Terms & Acronyms
- **AL**  
  - Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

- **Last Sample Date**  
  - Date - Because of required sampling time frames i.e. yearly, 3 years, 6 years and 9 years, sampling dates may seem outdated.

- **MCLG**  
  - Maximum Contaminant Level Goal - The “Goal” (MCLG) is 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.

- **MCL**  
  - Maximum Contaminant Level (MCL) - The “Maximum Allowed” (MCL) is 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.

- **TT**  
  - Treatment Technique - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

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

- **Variances & Exceptions**  
  - Variances or Exceptions - State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

- **MRDLG**  
  - Maximum Residual Disinfectant Level Goal - 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 contaminants.

- **MRDL**  
  - Maximum Residual Disinfectant Level - 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.

- **MNR**  
  - Monitored Not Regulated

- **MPL**  
  - Maximum Permissible Level – State assigned
Substances That Could Be in Water: Sources of drinking water (both bottled and tap) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it can dissolve naturally occurring materials, and can pick up a wide variety of substances:

- **Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or 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 by-products of industrial processes and petroleum production, and which may also come from urban stormwater runoff, gas stations and septic systems,
- **Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA’s Safe Drinking Water Hotline at (800) 426-4791, or their web site at www.epa.gov/safewater.

**Water Conservation Tip** – Irrigate during the evening, night or early morning hours to reduce water lost to evaporation.

**Arsenic**: Some water sources in our system have arsenic concentrations that exceed the EPA standard (10 ppb); however all water delivered to customers this year met the standard. The City meets the MCL by combining sources to blend water so that the EPA’s standard for arsenic is met. Our blending treatment proposals were approved by the Utah Division of Drinking Water & detailed performance testing concluded in 2011. The City was able to demonstrate that our blending treatment process can meet the arsenic MCL for our affected sources.

Some people who drink water containing arsenic that is in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased cancer risk. It is important to note that EPA’s arsenic MCL balances the current understanding of arsenic’s possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of chronic exposure to low levels of arsenic (see table for arsenic levels).

Point-of-use treatment devices (i.e., reverse osmosis or distillation) can be effective in removing arsenic. However, their effectiveness varies, they can be expensive, and they must be properly maintained. Customers who choose to install water treatment devices are advised to monitor system performance with routine testing and ensure the system is maintained as recommended by the manufacturer.

**Health Info on Microbiological Contaminants**: Some people may be more vulnerable to microbiological 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 microbiological contaminants are available from the EPA’s Safe Drinking Water Hotline (800-426-4791).

**In Home Filtration Systems**: Customers are advised to exercise caution with whole-house filtration systems that remove the chlorine used by our water utility for water disinfection. By unknowingly removing the residual chlorine concentration in your home piping network, you could allow microbes to multiply. These microbes may cause illnesses, especially for immuno-compromised family members. These types of filters are best limited to point of use such as the kitchen faucet.

**Answer to Common Concern**: Growth in bathrooms or pet bowls that are pink or black in color come from various types of mold in the air—not your tap water. Wash those surfaces frequently and keep fresh water in pet bowls.

**Fluoride**: The fluoride present in our drinking water is from natural deposits. St. George City does not add fluoride to our water (see table for fluoride concentrations).

**Lead**: 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. We are responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. All customers can minimize their potential for exposure to lead by flushing faucets for 30 seconds to 2 minutes before using the water for drinking or cooking. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at www.epa.gov/safewater/lead.

The age of your home is an indicator of what type of plumbing materials you may have. Homes built through the early 1900s used lead pipes for plumbing. Until the 1940s, lead piping was often used for the service lines connecting meters to the water mains. In the 1950s, copper or galvanized piped replaced lead piping in many homes. Until the mid-1980s, copper piping was installed with solder and fluxes containing lead. If your home fits any of these categories, your plumbing may contain lead that can leach into your drinking water, especially when it has not been used for several hours (see table for lead levels).

**Free Lead & Copper Testing**: The City conducts lead and copper testing every 3 years at 30 homes. Our next scheduled sampling will be conducted in summer 2018. First priority for this program is single-family homes constructed from 1981-1986 with lead piping or copper piping with lead solder.

If you would like to be placed in a pool of homes eligible for free lead & copper testing, please contact Kerry Benson at (435) 627-4858, or water@sgcity.org.

**Cross-connections**: Cross-connections to drinking water system lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment containing chemicals, or water sources of questionable quality. Examples are boilers, air conditioning systems, fire sprinkler systems, irrigation systems, etc. Whenever equipment pressure rises above the pressure in the drinking water system line, contamination can occur. Backpressure from the equipment allows contamination to pass into the drinking water line. Contamination by backsiphonage occurs when the pressure in the drinking water line drops below that in the equipment. This can happen under normal operating scenarios when demand is heavy, or when a main breaks. Backsiphonage draws contaminants out of the equipment & into the drinking water line.

Customers can help protect water supplies from cross-connections by watching for potential cross-connections and installing & maintaining proper backflow prevention assemblies. Exterior water faucets tend to be the most common sources of cross-connection contamination. All exterior faucets should be equipped with hose bib vacuum breakers to provide backsiphonage protection. Garden hoses attached to chemical sprayers, submerged in a swimming pool, etc., can allow contaminants to be backsiphoned into the City’s distribution system. Commercial operators should ensure that chemical tanks are fitted with air gap devices.

The mission of the City of St. George, Water Services Department is to provide our community with clean, healthy, and reliable drinking water at a reasonable price. We hope that this information brings you a better understanding of how we are meeting this vital objective.