175 East 200 North
St. George, UT 84770

2010 Drinking Water Quality Report
City of St. George

Spanish (Espanol)

Este informe contiene informacion muy importante sobre la calidad de su agua potable. Por favor lea este informe o communiqués con alguien que pueda traducir la informacion.

We are once again pleased to present to you our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2010. Over the years, we have dedicated ourselves to producing drinking water that meets 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 Barry Barnum, Water Services Director, or Shari McTiver, Water Services Engineer 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. Meetings are scheduled monthly at 7 PM at their new office building located at 533 East Waterworks Drive (just off East Red Hills Parkway) in St. George. The schedule is available at http://wcwcd.state.ut.us/Board.htm or you can 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 times 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, then turn off all water taps and water using appliances. Check the meter again after 15 minutes and if the reading changed, you have a leak that needs to be repaired.

Source Protection: Several of the Drinking Water Source Protection Plans (DWSPPs) for the City of St. George were updated this year and 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. 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/waterservices or at the St. George Water Department office located at 811 East Red Hills Parkway during normal business hours. Please contact us if you have questions or concerns about our source protection plan.

The Washington County Water Conservancy District (WCWCD) maintains the Watershed Protection Plans for the portion of the Virgin River basin from which they draw, store and treat surface water. Additional information on their source protection plans can be obtained by calling (435) 673-3617.

Water Hardness: Most of the water sources in Southern Utah are said to be "hard" and that's because they contain high amounts of nontoxic 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 will find that settings between ***13 to 22 grains per gallon*** will provide the most effective treatment.

Use caution with whole-house systems that remove the chlorine used by our water utility for water disinfection. Without a disinfectant in your home piping, you could unknowingly allow microbial contaminants to grow in your home piping thay may cause illnesses for immuno-compromised family members.

Water Quality Test Results: The City of St. George routinely monitors for constituents in our drinking water in accordance with the Federal and Utah State laws. 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 2010 calendar year. You may find terms and abbreviations in table below that you may not be familiar with, and we've provided definitions on the facing page.

CITY OF ST. GEORGE – 2010 WATER QUALITY DATA
Table of Test Results

Contaminant	Violation Y/N	City Groundwater & WCWCD Surface Sources		Tolman – Ledges Area Groundwater Source		Unit of Measure	MCLG	MCL	Likely Source of Contamination
		Level Detected ND/Low-High	Last Sample Date	Level Detected ND/Value	Last Sample Date				
Microbiological Contaminants									
Total Coliform Bacteria	N	ND	2010	ND	2010	N/A	0	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
Fecal Coliform & E. Coli	N	ND	2010	ND	2010	N/A	0	If a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
Turbidity, Ground Water	N	0 - 3	2010	0	4/28/2008	NTU	N/A	5	Soil runoff
Disinfectants & Disinfection Byproducts - There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.									
Chlorine (as Cl_2)	N	150 – 760	2010	510	2010	µg/L	4,000	4,000	Water additive used to control microbes
Total Haloacetic Acids [HAA5]	N	ND - 13	2010	ND	2010	µg/L	0	60	Byproduct of drinking water disinfection
Total Trihalomethanes [TTHM]	N	ND-62	2010	3	2010	µg/L	0	80	Byproduct of drinking water disinfection
Inorganic Contaminants									
Alkalinity, Total	N	155	2009	NS		mg/L		TT	Naturally occurring soluble mineral salts
Arsenic	Y	ND – 18	12/21/2009	3	4/28/2008	µg/L	0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium	N	ND - 222	11/29/2010	15	4/28/2008	µg/L	2,000	2,000	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Carbon, Total Organic	N	1	2010		NA	mg/L	NA	TT	Naturally present in the environment
Chromium	N	ND – 4	11/29/2010	1	4/28/2008	µg/L	100,000	100,000	Discharge from steel and pulp mills; erosion of natural deposits
Copper a. 90% results b. # of sites exceeding the AL	N	a. 76 b. 0	9/18/2009	8	4/28/2008	µg/L	1,300	AL=1,300	Corrosion of household plumbing systems; erosion of natural deposits
Fluoride	N	ND - 600	11/29/2010	1,400	4/28/2008	µg/L	4,000	4,000	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Lead c. 90% results d. # of sites exceeding the AL	N	a. ND b. 0	9/18/2009	ND	4/28/2008	µg/L	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
Nickel, Total	N	ND – 6	11/29/2010	5	4/28/2008	µg/L	100	100	Erosion of natural deposits, discharge from mines, electroplating & metal refineries.
Nitrate (as Nitrogen)	N	ND – 2,800	11/30/2010	400	12/14/2010	µg/L	10,000	10,000	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium, Total	N	ND - 11	11/29/2010	1	4/28/2008	µg/L	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Sodium, Total	NA	4 - 106	5/7/2008	131	4/28/2008	mg/L	None set by EPA	None set by EPA	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills.
Sulfate	N	ND - 299	11/29/2010	381	4/28/2008	mg/L	1,000*	1,000*	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills, runoff from cropland
Total Dissolved Solids	N	93 - 668	11/29/2010	751	4/28/2008	mg/L	2,000**	2,000**	Erosion of natural deposits

*If the sulfate level of a public water system is greater than 500 ppm, the supplier must satisfactorily demonstrate that: a) no better water is available, and b) the water shall not be available for human consumption from commercial establishments. In no case shall water having a level above 1000 ppm be used.

**If TDS is greater than 1000 ppm the supplier shall demonstrate to the Utah Drinking Water Board that no better water is available. The Board shall not allow the use of an inferior source of water if a better source is available.

CITY OF ST. GEORGE – 2010 WATER QUALITY DATA
Table of Test Results

Contaminant	Violation Y/N	City Groundwater & WCWCD Surface Sources: Level Detected ND/Low-High	City Groundwater & WCWCD Surface Sources: Last Sample Date	Tolman – Ledges Area Groundwater Source: Level Detected ND/Value	Tolman – Ledges Area Groundwater Source: Last Sample Date	Unit of Measure	MCLG	MCL	Likely Source of Contamination
Radioactive Contaminants									
Gross Alpha	N	3 - 8	11/30/2010	2	3/18/2008	pCi/L	0	15	Erosion of natural deposits
Gross Beta	N	3 – 12	11/30/2010	14	3/18/2008	pCi/L	0	4 mRem/yr	Decay of natural & man-made deposits
Radium 226	N	ND - 1	11/30/2010		NA	pCi/L	0	5	Erosion of natural deposits
Radium 228	N	ND - 1	11/30/2010	1	3/18/2008	pCi/L	0	5	Erosion of natural deposits
Combined Radium 226+228	N	0 - 2	11/30/2010		NA	pCi/L	0	5	Erosion of natural deposits
Radon 222	NA	153 - 249	12/21/2009		NA	pCi/L	None set by EPA***	None set by EPA***	Naturally occuring gas in groundwater

***Radon was detected in groundwater supplies in 2 out of 2 sources tested. There are no State or federal regulations for radon levels in drinking water. However, due to these results, ongoing radon monitoring will be conducted for all spring and groundwater sources.

Unit Descriptions

Units of Measure	Definition
ng/L	**Micrograms per Liter** – The number of nanograms of a substance in one liter of water. Also known as one part per trillion (ppt) 100,000 nanograms (ng) = 1000 micrograms (µg) = 1 milligram (mg), and 1000 milligrams (mg) = 1 gram (g)
µg/L	**Micrograms per Liter** – The number of micrograms of a substance in one liter of water. Also known as one part per billion (ppb) 1000 micrograms (µg) = 1 milligram (mg), and 1000 milligrams (mg) = 1 gram (g)
mg/L	**Milligrams per Liter** – The number of milligrams of a substance in one liter of water. Also known as one part per million (ppm)
ppb	**Parts per Billion** - The number of parts of a substance in one billion parts of water. Also known as 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.
pCi/L	**Picocuries per Liter** – A measure of the radioactivity in a liter of water.
NTU	**Nephelometric Turbidity Units** - 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. Turbidity in excess of 5 NTU is just noticeable to the average person.
positive samples	The number of positive samples taken this year.
% positive samples/month	The percentage of samples taken monthly that were positive.
NA	Not Applicable
ND	**Not Detected** – The contaminant was not detected in the water sample during laboratory analysis.
ND or Low - High	For water systems like St. George with multiple water sources, the Utah Division of Drinking Water allows the option of listing the test results of the constituents in one table, instead of multiple tables. To accomplish this, the lowest and highest values detected in the multiple sources are recorded in the same space in the report table. As noted above, most customers receive a mixture of water from the City's groundwater wells and surface water purchased from the WCWCD that is treated at QCWTP. The ranges for these these analytical values are shown in the columns indicated.
NR	**Not Required** – Monitoring not required, but recommended.
W	**Waiver** - Because some chemicals are not used or stored in areas around drinking water sources, some water systems have been given waivers that exempt them from having to take certain chemical samples these waivers are also tied to Drinking Water Source Protection Plans.

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 out-dated.
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

Arsenic: Effective in 2006, the EPA established a maximum contaminant level (MCL) of 10 parts per billion (ppb) for arsenic in drinking water. The City of St. George has some wells with naturally occurring arsenic concentrations that exceed the MCL.

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 risk of getting cancer. 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.

The City is working under a Bilateral Compliance Agreement with the Utah Division of Drinking Water to meet this standard with a combination of restricting high arsenic sources and blending treatment. Blending involves mixing water containing lower arsenic levels with unrestricted wells so that the blended water meets the new arsenic standard. Treatment proposals were approved by the State and detailed performance tests were initiated in 2010 for the Gunlock and Snow Canyon sources. Our formal performance period will run through November 2011.

Point-of-use treatment devices, such as reverse osmosis and distillation units can be effective in removing arsenic. However, they can be expensive, their effectiveness varies, and they must be properly maintained. If a treatment device is installed, set up an effective and practical maintenance and monitoring program to be sure the system is maintained as recommended by the manufacturer. This is the best way to be certain that your device is doing the job intended.

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 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 microbiological contaminants are available from the EPA's Safe Drinking Water Hotline (800-426-4791).

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 taps 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.

Lead & Copper Testing: The age of your home is an indicator of what type of plumbing materials you may have. Homes built through the early 1900s commonly used lead pipes for plumbing. Until the 1940s, lead piping was often used for the service lines that join homes to the street water mains. In the 1930s, copper or galvanized piping 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.

The City conducts lead and copper testing every 3 years at 30 homes. Older homes with lead, galvanized steel or copper plumbing components receive higher priority selection for this testing program. If you would like to be placed in a pool of homes eligible for free lead & copper testing, please contact Shari McTiver at (435) 627-4858.

FAQ: Growths 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.

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

Substances That Could Be in Water: 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. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. 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. The EPA has determined that your water IS SAFE at these levels. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

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 though 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 can 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.

Cross-connections: Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment, systems containing chemicals, or water sources of questionable quality. Examples are boilers, air conditioning systems, fire sprinkler systems, or irrigation systems. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line. In this situation, the equipment creates backpressure on the drinking water line.. Contamination can also occur when the pressure in the drinking water line drops due to occurrences causing backsiphonage. Examples are main breaks or heavy water demand. Backsiphonage allows contaminants to be sucked out from the equipment and into the drinking water line. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination in homes and in commercial operations. Commercial operators should never use a garden hose to fill a chemical tank that is not equipped with an ***air gap assembly***. All outside water taps or hose bibs should be equipped with ***hose bib vacuum breakers*** to provide backsiphonage protection for garden hoses. Garden hoses that are left lying on the ground, attached to a chemical sprayer, or submerged in a swimming pool can allow contaminants to be backsiphoned into your home's drinking water lines, and into the City's distribution system.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. For more information, review the Cross-Connection Control Manual from the U.S. EPA's Web site at www.epa.gov/safewater/crossconnection.html. You can also call Marie Kesler, Backflow Protection Administrator at (435) 627-4800.