Tucson Water
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Diamond Bell System 10-159

2014 Annual Water Quality Report

City of Tucson Water Department
Water Quality and Operations Division

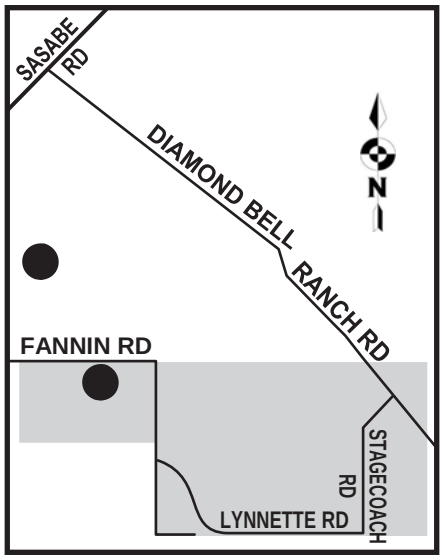
Photo courtesy of the U.S. Geological Survey

During 2014, Tucson Water ensured that your drinking water met all drinking water standards.

This Annual Water Quality Report provides information on your drinking water. The United States Environmental Protection Agency (USEPA) requires that all drinking water suppliers provide a water quality report to their customers on an annual basis. This report also serves as a reference with important information on the quality of water and with contacts and phone numbers you may need from time to time.

Source Water Assessment Program (SWAP)

The Arizona Department of Environmental Quality (ADEQ) has completed a source water assessment of this system which evaluates the risk of contamination from human activities. The water sources for this system are categorized as "low risk of contamination from human activities."



Diamond Bell is a community located south and east of Sasabe Road and Diamond Bell Ranch Road respectively, with about 220 services supplying about 600 persons with water from two wells, F-002A and E-030A. The newer well, E-030A, has been in service since 2003. The most recent upgrades from 2006 include the installation of a new 250,000-gallon storage tank and a variable speed booster station. The new storage tank enhances fire flow protection to the residents when power is interrupted.

Were There Any Contaminants Detected In My Drinking Water?

Tucson Water regularly samples the drinking water that is delivered to you. Much of this testing is required by drinking water regulations.

The Detected Contaminants Table on page 3 lists all contaminants that were detected in the required drinking water monitoring. Monitoring results for the period of January 1, 2014, to December 31, 2014, or from the most recent period, are included in the table. Certain contaminants are monitored less than once a year because the concentrations of these contaminants are not expected to vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. If the risk is low, a waiver will be granted and the effect is a reduction in monitoring frequency. This reduction in monitoring saves public water systems money without affecting public safety.

In most cases, the minimum detectable level of a contaminant is well below the USEPA regulatory limit for that contaminant. To compare the detected amount with the amount allowed by the USEPA, refer to the Maximum Contaminant Level (MCL) column in the table. The vast majority of regulated contaminants were not detectable in drinking water delivered by Tucson Water. The non-detected results were not included in the table. For a complete list of all USEPA regulated contaminants contact the USEPA at 1-800-426-4791 or visit the USEPA website at epa.gov/safewater/mcl.html#mcls.

How is my drinking water treated?

The ground water delivered by Tucson Water meets all drinking water standards without treatment. However, approximately 0.8 to 1.2 parts per million (ppm) of chlorine residual is maintained in the drinking water supply to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap.

Do I need to take special precautions?

While the Safe Drinking Water Act regulations are intended to protect consumers throughout their lifetime, some people may be more vulnerable to infections from drinking water than the general population. These "at-risk" populations include immuno-compromised persons such as persons with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/ AIDS or other immune system disorders, and in some cases, elderly people and infants. These people should seek advice about drinking water from their health care providers. USEPA/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water hotline.

Why Are There Contaminants In My Drinking Water?

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. Tucson's groundwater contains dissolved minerals and organic compounds which have been leached from rocks, sediments, and plant materials through which the water travels. One would expect to find beneficial minerals such as calcium and magnesium, harmless minerals such as chloride, bicarbonate, and sulfate, and metals such as iron, copper, arsenic, and lead, which may be either beneficial or harmless at low concentrations, but harmful at high concentrations. In addition to these naturally-occurring contaminants, groundwater may contain contaminants resulting from human, industrial, or domestic activities. For this reason, water utilities must currently monitor for approximately 90 regulated and 25 unregulated contaminants.

The following language is required by the USEPA to appear in this report, some of which may not be applicable to deep groundwater wells, the source of this water supply:

Contaminants that may be present in a source water can include:

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

In order to ensure that tap water is safe to drink, USEPA regulations 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 that must provide the same protection for public health. Bottled water may come from either a surface water source or groundwater source, and may be treated minimally or extensively. For information on the quality of your bottled water, contact the water bottling company.

Detected Contaminants Table

Contaminant	Analysis Date	Maximum Result	Range	MCL	MCLG	Major Sources of Contaminant
Inorganics						
Arsenic	2013	4.1 ppb	3.2 – 4.1 ppb	10 ppb	None	Natural deposits
Barium	2013	0.024 ppm	0.023 – 0.024 ppm	2 ppm	2 ppm	Natural deposits
Fluoride	2014	0.34 ppm	0.26 – 0.34 ppm	4 ppm	4 ppm	Natural deposits
Nitrate (as N)	2014	1.7 ppm	1.6 – 1.7 ppm	10 ppm	10 ppm	Natural deposits, septic tanks, agriculture, sewage
Sodium	2013	28 ppm	27-28 ppm	None	None	Natural deposits
Radioactive Chemicals						
Adjusted Gross Alpha	2013	0.3 pCi/1	0.3 – 0.3 pCi/1	15 pCi/1	0 pCi/1	Natural deposits
Combined Radium	2013	0.6 pCi/1	0.6 – 0.6 pCi/l	5 pCi/1	0 pCi/1	Natural deposits
Uranium	2013	3.4 ppb	3.4 – 3.4 ppb	30 ppb	None	Natural deposits
Total Haloacetic Acids (HAA5)						
HAA5 Running Annual Average	2014	2.9 ppb	NA	60 ppb	None	By-product of chlorination
Total Trihalomethanes (TTHMs)						
TTHMs Running Annual Average	2014	16.2 ppb	NA	80 ppb	None	By-product of chlorination

Contaminant	Analysis Date	No. of Samples above Action Level	90th Percentile Value	Action Level	MCLG	Major Sources of Contaminant
Lead and Copper in Standing Water Samples						
Lead	2013	None	1.0 ppb	15 ppb	0 ppb	Corrosion of household plumbing systems
Copper	2013	None	0.12 ppm	1.3 ppm	1.3 ppm	Corrosion of household plumbing systems

Disinfectant	Year Sampled	Annual Running Average	Monthly Average Range	MRDL	MCLG	Major Sources of Contaminant
Maximum Residual Disinfection Level (MRDL)						
Chlorine	2014	0.89 ppm	0.64 – 1.02 ppm	4 ppm	4 ppm	Disinfection additive used to control microbes

DRINKING WATER TERMS AND DEFINITIONS

Action level. The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement 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 MCL goal as feasible using the best available treatment technology. If a contaminant is believed to cause health concerns in humans, then the MCL is set as close as practical to zero and at an acceptable level of risk. Generally, the maximum acceptable risk of cancer is 1 in 10,000 with 70 years of exposure.

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 contaminants.

Parts Per Billion (ppb). Some constituents in water are measured in very small units. One ppb equals one microgram per liter. For example, one part per billion equals 2 drops of water in a 15,000 gallon backyard swimming pool, one second of time in 31.7 years, or the first 16 inches of a trip to the moon.

Parts Per Million (ppm). One ppm equals one milligram per liter or 1,000 times more than a ppb. One part per million equals a 1/4 cup of water in a typical 15,000 gallon backyard swimming pool or one second of time in 11.6 days.

Picocurie Per Liter (pCi/l). The quantity of radioactive material in one liter which produces 2.22 nuclear disintegrations per minute.

Detailed Information on Detected Contaminants

Arsenic is a naturally-occurring substance found in groundwater in the southwestern United States. While your drinking water meets the USEPA's standard for arsenic, it does contain low levels of arsenic. The USEPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The USEPA continues to research the health effect of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damages and circulatory problems.

Barium occurs naturally at very low concentrations in our groundwater.

Fluoride is an important naturally-occurring mineral that helps to form healthy teeth and bones. A concentration of 1 ppm is considered optimum. At concentrations above 2 ppm, fluoride can cause mild discoloration of teeth, and exposure at above the MCL of 4 ppm can cause both severe discoloration of teeth and, over many years of exposure, bone disease.

Nitrate is a form of nitrogen and an important plant nutrient. Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Tucson Water performs extra monitoring on wells high in nitrate for extra assurance that action can be taken when approaching the MCL.

Sodium is the sixth most abundant element on Earth and is widely distributed in soils, plants, water, and food. A maximum of 2,300 mg/day dietary sodium has been proposed by several government and health agencies. Drinking water containing between 30 and 60 ppm would contribute only 2.5 % to 5% of the dietary maximum if tap water consumption is 2 L/day. Currently, there is no MCL for sodium in drinking water. The recommended USEPA guidance level for individuals on a low sodium diet (500 mg/ day) is 20 ppm in drinking water.

Adjusted Gross Alpha is a measure of radioactivity due to naturally occurring minerals in ground water. The MCL for gross alpha radioactivity is set at 15 picocuries per liter (pCi/L). This excludes the radioactivity contributed by either radon or uranium.

Radium 226 and 228 are two of the most common radium isotopes. Radium is a naturally occurring radionuclide, formed by the decay of uranium or thorium in the environment. It occurs at low concentrations in virtually all rock, soil, water, plants, and animals.

Uranium is a heavy metal, which is highly toxic and radioactive. The MCL for uranium is 30 ppb.

Haloacetic Acids (HAA5) are a group of chemicals that are formed when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally-occurring organic and inorganic matter in water. The regulated haloacetic acid compounds, known as HAA5, are monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid.

Total Trihalomethanes (TTHMs) are formed when chlorine combines with naturally-occurring material in water. Because the level of organic matter in our groundwater is extremely low, these compounds are found at very low concentrations.

Lead and Copper are naturally-occurring metals which are generally found at very low levels in source waters. 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. Tucson Water is responsible for providing high quality drinking water, but can not 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 30 seconds to 2 minutes 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 Safe Drinking Water Hotline at epa.gov/safewater/lead.

Total Chlorine Residual – Approximately 0.8 to 1.2 ppm of chlorine is maintained in the drinking water supply to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap. Total Chlorine Residual is measured from sample stations where the bacteriological samples are collected monthly. The Total Annual Chlorine Residual is calculated using the monthly average chlorine for the past 12 months.

For More Information

Contact Mohsen Belyani with the Water Quality & Operations Division for more information about this report at (520) 791-2544 or mohsen.belyani@tucsonaz.gov.

Tucson Water Contact Information

Public Information	(520) 791-4331
Water Quality & Operations Division	(520) 791-2544
Customer Service/Billing	(520) 791-3242
24-Hour Emergency	(520) 791-4133
Website	www.tucsonaz.gov/water

USEPA

Safe Drinking Water Hotline	1-800-426-4791
Website	www.epa.gov/safewater

Si usted desea este documento escrito en español, por favor, llame al *(520) 791-4331*

City of Tucson TDD# *(520) 791-2639*