2021 ANNUAL
Water Quality Report
THUNDERHEAD RANCH
Tucson Water’s story proves how powerful a shared purpose can be.

Our story began in 1879 when Tucson’s growth required a more sophisticated water system to reliably deliver quality water to customers. More than 100 years later, Tucson had become the largest community in North America entirely dependent on groundwater.

Today, Tucson Water proudly serves 239,000 households and businesses in the Tucson metropolitan area with renewable water sourced primarily from the Colorado River.

Providing fresh, responsibly sourced, quality water has been the vision and commitment of Tucson’s Mayor and City Council and City staff over many decades. It is a tradition that the City of Tucson carries forward. We will continue to meet or exceed federal regulatory guidelines for water quality for all our customers. We will continue to proactively monitor and manage for the highest quality water with vigilance, investment, and wise use of technology.

Our community’s primary water source is Colorado River water delivered by the Central Arizona Project. Tucson Water recharges this water into local aquifers, which act as a natural filter before the water is pumped out via wells and served to customers. We monitor water quality at hundreds of locations across our system—from our wells to your homes and businesses—and conduct tens of thousands of water quality tests every year. We go far beyond what is required by federal and state regulations: Most of the water quality tests we conduct are entirely voluntary. This is our commitment to providing safe, clean water here in our desert home.

Today, we are preparing for the next century through our One Water 2100 master planning process; and we invite you to learn more and get involved at https://www.OneWaterTucson.com. Our water quality relies on robust capital investment projects to address pressing challenges such as climate change and sustainability in addition to delivering high-quality water efficiently and safely. Our employees take pride in serving the Tucson community and ensuring quality water is delivered directly to you daily.

John P. Kmiec, CPA, MPA
Director
Where Does My Water Come From?

Thunderhead Ranch

Thunderhead Ranch is a small community water system that serves 59 households with a population of 165 residents. The water source is local groundwater delivered from two active wells. An aeration system to elevate pH, and thus control corrosion, was designed, installed, and has been in operation since 2005.

TUCSON ONE WATER

Careful management of our water resources is critical to Tucson’s long-term sustainability. One Water 2100 Master Plan is a new approach for managing water resources for long-term resilience and sustainability, meeting both community and ecosystem needs. One Water will guide the utility in how to best manage its water resources under ever changing conditions. This approach treats all of Tucson’s water resources as equally important: surface water, groundwater, recycled water, and rain and stormwater harvesting.

Get Involved!

Public participation is essential to ensuring communities and stakeholders have a say in how our water resources are managed. To provide feedback or subscribe to receive One Water news and updates, or for a list of One Water events and engagement opportunities, visit https://www.tucsononewater.com/get-involved.
Protection Starts at the Source

How We Treat Your Drinking Water

CHLORINE DISINFECTION

Chlorine disinfectants are added to source water to kill harmful pathogens. It is quite effective because a “residual” amount of chlorine remains after the initial application that continues to protect against germs and contamination. Chlorine residual disinfection is maintained throughout the distribution system. Approximately 1 part per million (equivalent of about a cup of water in a swimming pool) of chlorine is added to the drinking water supply at well sites, reservoirs, and other facilities to keep drinking water free of microbiological contamination. Tucson’s water meets microbiological drinking water standards from the from the time the groundwater is treated until it reaches the customer’s tap.

An excess of chlorine residual may potentially cause illness or discomfort to people consuming or using the water. Side effects may include eye and nose irritation, stomach discomfort, or anemia. Tucson Water measures chlorine residual disinfectant levels to ensure they do not exceed the maximum residual disinfectant limit. Samples are collected monthly from 247 sample stations across all our systems.

WHAT’S IN YOUR WATER

Drinking water sources include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the land surface or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from animal presence or human activity. Different kinds of contaminants will appear in your drinking water, sometimes naturally, and in varying levels. Some contaminants are harmless, whereas others may be dangerous if consumed in large quantities. Our water quality specialists work continually to make sure the water we deliver to you is fresh, clean, and safe to use. We currently monitor for approximately 90 regulated and 31 unregulated contaminants.

WHAT WE LOOK FOR

**Contaminants that may be present in source water before we treat it:**

- **Microbial contaminants**, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

- **Inorganic contaminants**, such as salts and metals that 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**, from agriculture, urban storm water runoff, and residential uses that may come from a variety of sources.

**Organic chemical contaminants**, such as synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and also may come from gas stations, urban storm water runoff, and septic systems.

**Radioactive contaminants** that can occur naturally or result from oil and gas production and mining activities.
TESTING FOR PFAS

Per- and polyfluoroalkyl substances (PFAS) are synthetic chemicals used in a wide range of products, from fire fighting foam, to nonstick cookware, to waterproof clothing, to food packaging, to shampoo and more. PFAS are a contaminant of concern because they could potentially pose a risk to public health and because they do not degrade. In other words, if they reach the environment, they will be there forever and could affect groundwater and drinking water.

Annually, Tucson Water conducts more than 1,500 rigorous tests for PFAS across our system. Tucson Water has delivered and will continue to deliver water that exceeds the U.S. Environmental Protection Agency’s (EPA's) health advisory level. In fact, we go above and beyond federal guidelines by also removing wells that have detectable amounts of PFOA or PFOS from service.

Testing to date shows that PFAS are found in specific areas but are not present in the majority of Tucson’s water groundwater supply.

The Arizona Department of Environmental Quality (ADEQ) is working with Tucson Water to eliminate the threat to our drinking water supply from PFAS. This includes plans to install new groundwater monitoring wells and design and construct preventative measures to stop PFAS-contaminated groundwater from migrating. New technologies and innovations are being used to remove PFAS from groundwater and limit its movement to other groundwater sources.

Visit [http://www.azdeq.gov/WQARF](http://www.azdeq.gov/WQARF) for more information.

BACKFLOW PREVENTION

A cross-connection is a point in a plumbing system where the potable (drinking) water supply is connected to a nonpotable source. Contamination may occur when water flows through a cross-connection from a non-potable source, such as a sprinkler system or heating and cooling unit, into the potable water system. This can happen through a process known as backflow.

Tucson Water’s Backflow Prevention Program is designed to protect the public drinking water supply from pollutants and contaminants that could infiltrate the Tucson Water system from private properties through backflow.

All commercial and multifamily customers and some single-family customers are required to install backflow prevention assemblies on their Tucson Water service connections. These assemblies prevent nonpotable water from being drawn into the public drinking water system and must be tested annually.

For more information: [https://www.tucsonaz.gov/water/backflow-prevention](https://www.tucsonaz.gov/water/backflow-prevention) or phone 520-791-2650.
Going Above and Beyond

*Tucson Water does a lot more than merely complying with the minimum EPA standards.*

We perform extra monitoring to give staff and customers additional water quality information. Here’s how we did it:

**UNREGULATED CONTAMINANT MONITORING RULE**

Unregulated contaminants are those for which the EPA has not established drinking water standards. A compound’s presence in water does not necessarily mean there is a health risk; its concentration is a far more important factor in determining whether there are health implications. Tucson Water carefully tracks the concentrations of these compounds and EPA health studies and will keep you informed of any developments.

**SENTRY PROGRAM**

Tucson Water’s Sentry Program is an additional, voluntary monitoring component of our routine water quality management strategy. The Sentry Program proactively identifies contaminants of emerging concern (such as PFAS, industrial chemicals, personal care products, pesticides, and pharmaceuticals) so they can be addressed early. Annual results are summarized here: [https://www.tucsonaz.gov/water/CEC](https://www.tucsonaz.gov/water/CEC).
MONITORING

Every year, Tucson Water tests thousands of water samples collected from drinking water wells and permanent taps located throughout our water distribution system. Some tests are required by federal and state regulations (for example, the Safe Drinking Water Act or EPA standards), but we proactively perform hundreds of additional tests to confirm that only the cleanest and safest drinking water reaches your home. Test results and data are compiled and available at https://www.tucsonaz.gov/water/about-your-water-quality and include charts, tables, and maps of water quality information.

Help protect our water sources

- Maintain your septic system
- Limit pesticide and fertilizer use
- Properly dispose of household hazardous waste
- Properly dispose of medications
- Volunteer in your community


About your system

- 59 NUMBER OF HOUSEHOLDS
- 1 BOOSTER
- 2 STORAGE FACILITIES
- 2 POTABLE WELLS
- 1.5 TOTAL MILES OF PIPE
- 2 WATER QUALITY SAMPLING POINTS

Sampling

- 24 REQUIRED SAMPLES
- 24 REQUIRED TESTS
- 75 VOLUNTARY SAMPLES
- 151 VOLUNTARY TESTS
Customer Zone

*Tucson Water is responsible for maintaining and replacing watermains throughout its service area, including service lines up to the water meter.*

Property owners are responsible for the service lines from the water meter to their service address or property. It is the homeowner’s responsibility to maintain the water line and keep it in good repair.
GET THE LEAD OUT PROGRAM

Lead water service lines are a key source of lead in tap water. Since 1999, Tucson Water has identified, located, removed, and replaced lead water service lines from its water system. In 2016, in view of the water crisis in Flint, Michigan, Tucson Water launched the “Get the Lead Out” (GTLO) program to proactively identify, locate, and replace any remaining lead water service lines and replace them with copper. To date, 142 lead water service lines have been removed from the main system.

Tucson Water is expanding the GTLO program: we will be well-positioned to meet the revised lead and copper rule requirements and our own water quality management goals. The expanded program will include community participation where we will work with customers and stakeholders to identify water service line material at homes and businesses. More information about the expanded GTLO program and how you can help identify the water service line at your home or business will be provided as the program unfolds. Visit https://www.tucsonaz.gov/water/lead-and-copper for details.

WHAT’S NEW WITH THE LEAD AND COPPER RULE?

In 2021, EPA revised the Lead and Copper Rule to improve public health protection by reducing exposure to lead and copper in drinking water. Tucson Water will be providing the following information to regulators to comply with the revised rule:

- Lead water service line inventory
- Lead and galvanized steel service line replacement plan
- List of childcare facilities and elementary schools within the water service area
- Updated compliance sampling plan
- Updated communications plan on the revised lead and copper rule

ABOUT LEAD

Tucson Water follows EPA’s Lead and Copper Rule, a regulatory requirement for public drinking water systems to protect customers and the public. We sample for lead and copper at over 100 locations on a regular basis throughout our water service area. Lead and copper monitoring is an important function of our water quality management program and our public health goals.

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 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 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. For a list of licensed labs in Arizona that can analyze your water for lead and copper, see the Arizona Department of Health Services Licensed Environmental Laboratories https://app.azdhs.gov/bfs/labs/elbis/drinkingwatertestinglabs/drinkingwatersearchcontentpage.aspx. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline by calling 1-800-426-4791 or by visiting https://www.epa.gov/safewater/lead.

Frequently Asked Questions

What is a water service line?

A water service line is the pipe that delivers water from the watermain to your meter and the pipe that delivers water from your meter to the first outside water tap at your residence or business.

Who owns and maintains a water service line?

The property owner owns and maintains the water service line from your water meter to the first outside tap at your home or business. Tucson Water owns and maintains the water service line from the watermain to your water meter.

What is a lead water service line?

A lead water service line is a portion of pipe made of lead that connects the watermain to the water meter and the water meter to the home’s or building’s outside tap.

Do I have lead plumbing in my home or business?

If your home or building was built after 1990, it is likely that the plumbing materials do not contain lead. Buildings built in 1945 or earlier pose the greatest risk of having lead-containing plumbing materials and lead water service lines.
Your Water Quality

Did you know?

The results are in! Our water quality specialists continuously monitor and test your drinking water to keep you and your family safe and healthy. Did you know you can check the test results for your own community with our easy-to-use Water Quality Map? Enter your address at https://www.tucsonaz.gov/water/mywaterquality/ and view the results for your sample area. You can even compare the results against the maximum limits set out by the Environmental Protection Agency.

VULNERABLE POPULATIONS

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 water poses a health risk. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immunocompromised 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.

For more information about contaminants and potential health effects, or to receive a copy of the EPA and the U.S. Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants, call the EPA Safe Drinking Water Hotline at 1-800-426-4791.
Water quality statistics: It's all about quality

SOURCE WATER ASSESSMENT PROGRAM

The ADEQ completes annual source water assessments for Tucson Water drinking water wells. The assessments review the adjacent land uses that may pose a potential risk to the water sources. It classified the Tucson Water Thunderhead Ranch Public Water System wells as Low Risk.

A Low Risk designation indicates that most source water protection measures are either already implemented, or the hydrogeology is such that the source water protection measures will have little impact on protection.

ADEQ source water assessments are available for public review. Contact the Arizona Source Water Coordinators at 602-771-4597 or 602-771-4298 to request a copy.

DETECTED CONTAMINANTS

Tucson Water routinely monitors for contaminants in your drinking water as specified in the National Primary Drinking Water Standards. Monitoring results for the period of January 1 to December 31, 2021, 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.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Action Level</th>
<th>MCL</th>
<th>MCLG</th>
<th>Units</th>
<th>Sample Results</th>
<th>Range</th>
<th>Year</th>
<th>MCL Violation (Y/N)</th>
<th>Major Source of Contaminant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disinfection Byproducts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Trihalomethanes (TTHM) ²</td>
<td></td>
<td>80</td>
<td>N/A</td>
<td>ppb</td>
<td>2.3</td>
<td>2.3</td>
<td>2020</td>
<td>N</td>
<td>Byproduct of drinking water disinfection</td>
</tr>
<tr>
<td><strong>Inorganics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>2</td>
<td>2</td>
<td>ppm</td>
<td>0.033</td>
<td>0.033</td>
<td>0.17</td>
<td>2019</td>
<td>N</td>
<td>Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits</td>
</tr>
<tr>
<td>Fluoride</td>
<td>4</td>
<td>4</td>
<td>ppm</td>
<td>0.17</td>
<td>0.17</td>
<td>1.1</td>
<td>2021</td>
<td>N</td>
<td>Erosion of natural deposits, water additive that promotes strong teeth, discharge from fertilizer and aluminum factories</td>
</tr>
<tr>
<td>Nitrate (as N)</td>
<td>10</td>
<td>10</td>
<td>ppm</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
<td>2019</td>
<td>N</td>
<td>Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits</td>
</tr>
<tr>
<td>Sodium</td>
<td>N/A</td>
<td>N/A</td>
<td>ppm</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>2019</td>
<td>N</td>
<td>Erosion of natural deposits</td>
</tr>
<tr>
<td><strong>Contaminant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>15</td>
<td>0</td>
<td>ppb</td>
<td>0</td>
<td>1.81</td>
<td>0</td>
<td>2019</td>
<td>N</td>
<td>Corrosion of household plumbing systems, erosion of natural deposits</td>
</tr>
<tr>
<td>Copper</td>
<td>1.3</td>
<td>1.3</td>
<td>ppm</td>
<td>0</td>
<td>0.088</td>
<td>0</td>
<td>2019</td>
<td>N</td>
<td>Corrosion of household plumbing systems, erosion of natural deposits</td>
</tr>
</tbody>
</table>
Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than 6 months of age. High nitrate levels in drinking water can cause “blue baby syndrome.” Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, and detected nitrate levels are above 5 ppm, you should ask your health care provider for advice.

DEFINITIONS

<table>
<thead>
<tr>
<th>Disinfectant</th>
<th>MRDL</th>
<th>MRDLG</th>
<th>Units</th>
<th>Annual Average</th>
<th>Monthly Average Range</th>
<th>Year</th>
<th>MCL Violation (Y/N)</th>
<th>Major Source of Contaminant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine</td>
<td>4</td>
<td>4</td>
<td>ppm</td>
<td>0.73</td>
<td>0.14 – 1.16</td>
<td>2021</td>
<td>N</td>
<td>Disinfection additive used to control microbes</td>
</tr>
</tbody>
</table>

Notes:

a. TTHM MCLG: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 ppm); chloroform (0.07 ppm).
Frequently Asked Questions

HOW DO I KNOW MY WATER IS SAFE TO DRINK?

Tucson Water provides safe drinking water that complies with all federal, state, and local drinking water regulations. Our staff work together to monitor drinking water quality at more than 200 wells, 61 reservoirs, 266 sampling stations, and 125 selected homes across all our systems.

HOW IS TUCSON'S DRINKING WATER TREATED?

Tucson Water uses chlorination to disinfect against organisms, such as bacteria and viruses. We strive to maintain a chlorine residual between 0.80 mg/L to 1.2 mg/L throughout the distribution system.

WHY IS MY WATER MILKY/CLOUDY?

Water with a cloudy or milky white appearance may be caused by millions of tiny air bubbles present in the water. They’re harmless and not a health concern, and they will not damage your plumbing or appliances. Fill a clean, clear glass with water and let it stand for a few minutes. As air escapes, the water will clear from the bottom of the glass up to the top. Note, a faucet aerator that requires cleaning or replacing can also cause milky water. Remove the aerator and soak it in vinegar or replace it.

WHY DOES MY WATER PRESSURE SEEM LOW (OR HIGH)?

Water pressure can vary greatly from one area of the water system to another, even from house to house. Here are some factors that may affect your home’s water pressure:

- Elevation of your home relative to the reservoir or booster station serving your area
- An area water outage
- A leak inside the Customer Zone
- A home water treatment system that needs maintenance

- A malfunctioning shut-off valve to the house
- A pressure regulating valve (PRV) that needs adjustment or replacement.

PRVs are required if your domestic water pressure exceeds 80 psi. PRVs are common in many homes and have been required by Pima County on all newly constructed homes since 2005.

WHY DOES MY WATER SMELL LIKE ROTTEN EGGS?

Rotten egg, musty, or sewer smell is most commonly caused by bacteria growing in a sink drain or water heater. These bacteria may flourish because water faucets haven’t been turned on, hot water hasn’t been used or has been turned off for a while, or the water heater thermostat is set too low. Go to the sink where you believe the odor originates. Check cold water versus hot water. Fill a clean glass with cold water, step away from the sink, and smell the water. If there is no odor, the origin may be the sink’s drain or garbage disposal.

WHY IS MY WATER DISCOLORED?

Discolored or dirty water can be related to older, galvanized pipes, plumbing or a water softener in the Customer Zone or to recent activity in your neighborhood, such as construction, break repairs, or flushing fire hydrants. Visit https://tucsonaz.gov/water/outages for any notices about your location.

Get a white bucket and go to the outside faucet closest to your water meter or to the main faucet where water enters the house. Remove the garden hose if attached to the faucet. Run the water from the spigot into the bucket until the bucket is full. Repeat 2 or 3 times.

If bucket water is clear, the issue is most likely in the Customer Zone. Contact a plumber to inspect plumbing and pipes.

Contact Us

To report water quality and pressure issues, please contact Tucson Water’s Water Quality Customer Support Unit at 520-791-5945 or email CustomerSupportUnit@tucsonaz.gov.
Conservation and Drought Planning

Did You Know?

Tucson Water delivers the same amount of water today that it supplied in 1985 despite a 20% increase in population.

TUCSON WATER CONSERVATION PROGRAM

For decades, Tucson Water has promoted water conservation, providing community education, resources, and rebates for our customers. Our efforts have paid off, with individual water use decreasing 30% as a result. Today, Tucson Water delivers the same amount of water we did in the late 1980s while serving over 200,000 more customers. The Conservation Program is currently funded by a conservation fee of 10 cents per one hundred cubic feet (ccf) (1 ccf = 748 gallons) assessed on all potable water sales and operates out of a separate fund within the Tucson Water Department. The fund was established in 2008 through the adoption of Ordinance 10555.

The Conservation Program offers a suite of conservation services and customer incentives, including low-income assistance, education programming for K12 students and landscape professionals, one-on-one water audits, community outreach, and conservation resources and tools.

Through these services, the Conservation Program has achieved the following:

**CONSERVED** MORE THAN 3.9 billion gallons
(11,914 acre-feet) of water

**INVESTED** MORE THAN $14.9 million
in rebates and incentives

**INSTALLED** MORE THAN 68,000 high-efficiency
toilets and urinals,
including over 7,800 free toilets for low-income customers

**INSTALLED** MORE THAN 3,000 rainwater
harvesting and gray water systems,
including **262 subsidized systems**
for low-income customers

**ENGAGED** WITH NEARLY 600,000 students
and community members

**CONDUCTED** NEARLY 9,000 water audits
over the last five years
CONSERVATION AND DROUGHT

To prepare for ongoing drought within the Colorado River Basin, the City of Tucson updated its Drought Preparedness and Response Plan in 2020 to align with current Colorado River indicators. The City’s drought plan tiers correspond directly to the shortage tiers on the Colorado River and will change in accordance with the Bureau of Reclamation’s declaration for the upcoming year. Conservation staff are preparing tools and measures to respond to the current drought status, as well as future drought tiers. The infographic illustrates the conservation measures being developed for each stage of drought. In 2021, the City of Tucson had a Tier 0 drought status and moved to a Tier 1 drought status as of January 1, 2022. Tucson Water is working to empower customers with water use guidelines to determine how much water they use relative to other similar customers. Then, in each progressive stage of drought, customers who exceed their water use guideline will be instructed to take additional measures to conserve water. Concurrently, the City is examining its own facilities to identify and implement efficiency opportunities.

Contact Us

https://www.tucsonaz.gov/water
CustomerSupportUnit@tucsonaz.gov