2020 Consumer Confidence Report

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The Environmental Protection Agency's (EPA) Safe Drinking Water Act (SDWA) requires community water systems to deliver an annual Consumer Confidence Report (CCR), also known as a water quality report, to their customers. Tempe's CCR for calendar year 2020, is now available. The purpose of this report is to familiarize water customers with Tempe's daily efforts to meet water quality standards, quantity demands and provide a comprehensive understanding of the water utility's operations.

The CCR contains information on the origin of Tempe's water supply, operations of the utility, constituents in the potable water and how the concentrations of those constituents compare to EPA standards. In 2020, Tempe maintained compliance with all SDWA Maximum Contaminant Levels.

This year, the CCR was modified to include information on all facets of the water utility operation. The CCR now includes information regarding the water treatment process, operations and maintenance of the water distribution, wastewater collection, stormwater conveyance and flood irrigation systems, compliance and process control sampling and monitoring, water resources, operating budget, Capital Improvement Program and more.

In order to reach as many water customers as possible, the CCR is available online at tempe.gov/ccr. Paper copies will be mailed upon request and be available at community centers throughout the city. Residents with an email address in the City's billing system will receive an email copy of the CCR; those that do not will receive an informational postcard in the mail. Availability of the CCR will be advertised in the Arizona Republic and Tempe Today, as well as on Tempe Water bill messages and social media.

2020
Consumer Confidence Report

Tempe

This report is also available at
tempe.gov/ccr

The Water Utilities Division of Tempe's Municipal Utilities Department supports public health, quality of life and economic vitality by providing superior customer service and reliably delivering high quality water and wastewater services to all Tempe water users. These services are accomplished through the effective management, operation and maintenance of numerous complex infrastructure systems, rigorous testing and compliance with environmental regulations, maintaining a robust water resources portfolio and ensuring the financial health of Tempe's water and wastewater utilities.

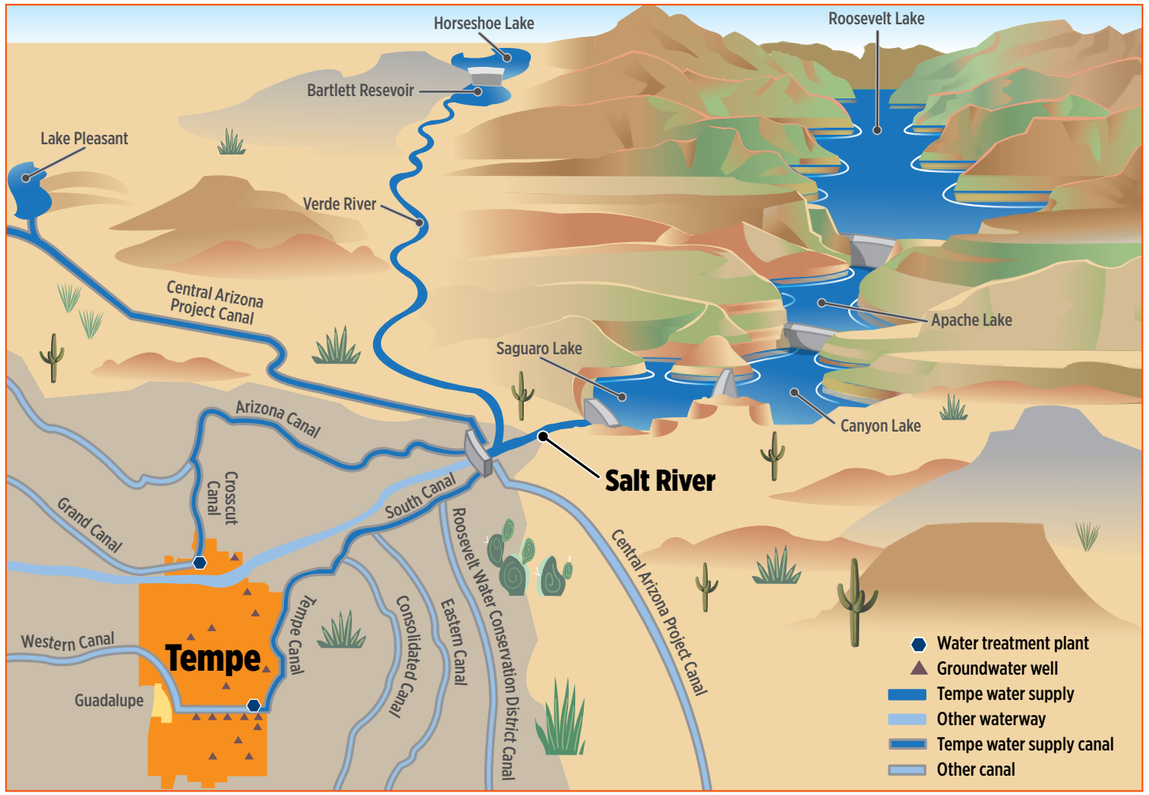
Cover Photo: Alex Harris

Each year, the City of Tempe produces an annual Consumer Confidence Report that contains information regarding the quality of potable water provided by the City of Tempe. Information includes the origin of Tempe's water supply, constituents in the water and how the concentration of those constituents in the potable water compares to the standards set by the Environmental Protection Agency (EPA) under the Safe Drinking Water Act (SDWA).

The purpose of this report is to familiarize water customers with Tempe's daily efforts to meet water quality standards, quantity demands and provide a comprehensive understanding of the water utility's operations.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradùzcalo o hable con alguien que lo entienda bien. Pongase en contacto con el Departamento de Comunicaciones de la Ciudad de Tempe al 480-350-4311.

If you are responsible for providing water to others at your facility, such as tenants, residents, patients, students or employees, post this report in a conspicuous location or provide it to them through direct, hand delivery, mail or email.



In 2020, the City of Tempe distributed 16 billion gallons of potable water to Tempe and Guadalupe customers, averaging approximately 43.9 million gallons per day. In addition to required sampling and monitoring, the results of which are provided in this report, potable water is routinely monitored for additional constituents to ensure Tempe's potable water is safe and of the highest quality.

Water Sources

Tempe's water supply comes from several sources:

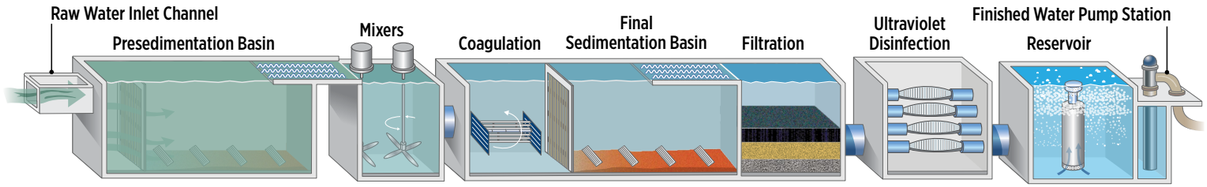
Salt River Project (SRP) – Surface water is collected from the Salt and Verde River watersheds, stored in six SRP reservoirs and diverted into SRP canals at the Granite Reef Dam in Mesa, Arizona. Tempe's allocation of SRP water varies year to year as it depends on the amount of runoff from the watershed and the amount stored in SRP reservoirs. SRP supplements their surface water supply through groundwater wells. In 2020, the SRP groundwater supplied to Tempe was nominal. Tempe's SRP water use for 2020 was 10.3 billion gallons, an average of 28.2 million gallons per day, accounting for 63.8% of water used.

Groundwater – In 2020, Tempe used 10 groundwater wells to supplement surface water supplies. Tempe pumped approximately 4.9 billion gallons of water from wells in 2020, for an average of 13.4 million gallons per day. This source provided 30.3% of water used in Tempe in 2020.

Central Arizona Project (CAP) – Colorado River water is delivered through the CAP water transmission and delivery system to central Arizona, including the Phoenix and Tucson areas. In 2020, Tempe used 0.95 billion gallons, or approximately 2.6 million gallons per day, of Colorado River water delivered by CAP for potable municipal use. This source provided 5.9% of the water used in Tempe in 2020.

Surface Water Treatment Process

In 2020, the majority of Tempe's potable water was produced at two conventional surface water treatment plants, Johnny G. Martinez Water Treatment Plant (JGMWTP) and South Tempe Water Treatment Plant (STWTP). Each plant can produce up to 50 million gallons of potable water per day. The plants are staffed 24 hours a day and one or both plants are in operation every day of the year. Tempe utilizes a conventional water treatment process consisting of screening, pre-sedimentation, enhanced coagulation/flocculation, sedimentation, filtration and ultraviolet and chlorine disinfection.



Water Distribution, Wastewater Collection, Stormwater Conveyance and Flood Irrigation

Once treated, water leaves the plant and enters the distribution system to be delivered to the customer. The water distribution system extends throughout Tempe and Guadalupe and includes 866 miles of potable water distribution mains, 44,028 water meters, 9,361 fire hydrants and 28,609 water valves, which must be frequently exercised and maintained to ensure the safe and reliable delivery of potable water.

Tempe's wastewater collection system collects and transports wastewater to the Multi-cities 91st Avenue Wastewater Treatment Plant in Phoenix, Arizona, co-owned by the City of Tempe and several other local municipalities, for treatment. Tempe's wastewater collection system includes 481 miles of collection mains, 10,717 manholes and 36,164 service connections.

Tempe's stormwater conveyance system includes 184 miles of stormwater mains, 6,788 catch basins and 1,721 stormwater manholes.

The flood irrigation system consists of 40 miles of irrigation mains, 1,096 irrigation valves and 289 standboxes and standpipes

The operations and maintenance of the water distribution, wastewater collection and stormwater conveyance systems, flood irrigation and all respective appurtenances, is performed by highly-skilled Tempe employees. The work these employees perform ensures the safe and reliable transport and delivery of these waters, while protecting the safety of customers, residents and employees, 24 hours a day, 365 days a year.

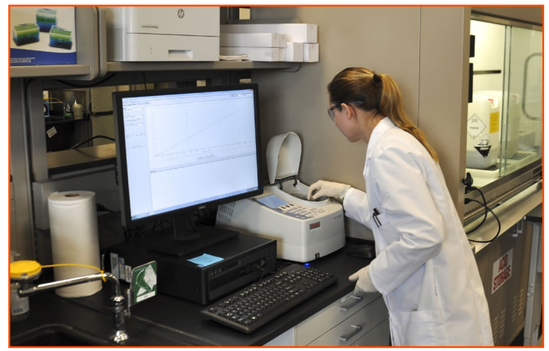
Environmental Services Section

The Environmental Services Section manages programs required under the Safe Drinking Water Act, Clean Water Act, Clean Air Act and many other federal, state and local environmental laws and regulations. Environmental Services operations include a state-certified water quality laboratory, programs to manage regulatory compliance, inspections, backflow prevention and sampling requirements and water quality planning initiatives.

Compliance and Process Control Testing

Tempe operates a state-certified water quality laboratory that conducts analysis on potable and non-potable water for regulated and unregulated constituents. Water samples are collected from the surface water plants, groundwater wells, water distribution system and water storage tanks, then analyzed to ensure compliance with water quality regulations.

Tempe routinely conducts process control sampling and analysis to allow for continued optimization throughout the system to ensure high water quality and to strategically implement projects for the capital improvement program.



Water Resources

Tempe's water resources portfolio consists primarily of renewable resources. These can include surface water, safe-yield groundwater and surface water stored in groundwater aquifers.

The Water Conservation and Efficiency Program supports efforts to ensure that water use in Tempe is as efficient and effective as possible. This program provides customers with access to valuable information, tools and assistance that can help reduce water waste and increase water efficiency. These resources can be found on tempe.gov/conservation.

Conservation and efficiency investments increases Tempe's resiliency. Using water wisely helps maintain low water rates and reduces the potential need for supplemental water supplies.

Contaminants in Drinking Water

In order to ensure that potable water is safe to drink, the United States Environmental Protection Agency (EPA) prescribes regulations that 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. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The levels of contaminants in Tempe's potable water are largely determined by the source water, which can vary from year-to-year depending on watershed conditions, reservoir storage and the volume of groundwater pumped. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants in tap water, and potential health effects, can be obtained by visiting the EPA website epa.gov/SafeWater. Information on bottled water can be obtained from the FDA by calling 888-INFO FDA (888-463-6332).

Sources of raw water, for both tap and bottled, include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels, it can dissolve naturally occurring minerals and accumulate substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- microbial contaminants such as viruses and bacteria that may be from wastewater or septic systems, agricultural livestock operations or wildlife;
- inorganic contaminants such as salts and metals that occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses;
- organic chemical contaminants including synthetic and volatile organics that are by-products of industrial processes and petroleum production from gas stations, urban stormwater runoff and septic systems; and
- radioactive contaminants that can be naturally- occurring or can be the result of oil and gas production and mining activities.

Drinking Water Quality

The following tables contain regulated contaminants that were required to be monitored and were detected in Tempe's drinking water in 2020. The tables contain the name of each contaminant detected, the highest concentration or level allowed by regulation, the ideal goals for public health, the amount detected in Tempe's water and major sources of such contamination. Certain contaminants require monitoring less than one time per year, because concentrations of these contaminants are not expected to vary significantly from year to year. For contaminants that were not required to be tested in 2020, this report depicts results from the most recent required testing and the year the testing occurred. In 2020, Tempe maintained compliance with all SDWA Maximum Contaminant Levels (MCLs).

Definitions and Acronyms:

Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a public water system shall follow.

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 Contaminant Level (MCL): 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.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. Addition of a disinfectant is necessary to control 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.

Non-Detect (ND): Not detected in samples.

Not Applicable (N/A): Does not apply.

Parts per million (ppm) or milligrams per liter (mg/L): Units used to measure the concentration of a constituent found in water. One ppm is approximately equal to one half gallon of water in an Olympic size swimming pool.

Parts per billion (ppb) or micrograms per liter (µg/L): Units used to measure the concentration of a constituent found in water. One ppb is one thousand times less than one ppm. One ppb is approximately equal to one drop of water in an Olympic size swimming pool.

Picocuries per liter (pCi/L): A measure of radioactivity.

Running Annual Average (RAA): The average of analytical results for samples taken during the previous four calendar quarters.

Locational Running Annual Average (LRAA): RAA for a specified location.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Variances and Exemptions: State or EPA permission to not meet a MCL or a treatment technique under certain conditions.

2020 Regulated Detected Contaminants

Constituent	Unit	MCL	MCLG	Range	Violation (Yes or No)	Major Sources
Arsenic	ppb	10	0	ND - 5.6	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronic production waste.
Barium	ppm	2	2	0.063 - 0.110	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chlorine	ppm	4 (MRDL)	4 (MRDLG)	0.02 - 1.18	No	Disinfectant added to control microbial contaminants.
Chromium (Total)	ppb	100	100	ND - 9.2	No	Erosion of natural deposits.
Fluoride	ppm	4	4	0.15 - 0.86	No	Erosion of natural deposits; water additive which promotes strong teeth.
Adjusted Gross Alpha (2018)	pCi/L	15	0	1.0 - 1.6	No	Erosion of natural deposits.
Nitrate	ppm	10	10	ND - 7.1	No	Runoff from fertilizer use.
Selenium	ppb	50	50	ND - 1.8	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
Tetrachloroethylene	ppb	5	0	ND - 0.63	No	Discharge from factories and dry cleaners.
Trichloroethylene	ppb	5	0	ND - 0.68	No	Discharge from metal degreasing sites and other factories.
Total Organic Carbon	ppm	TT	N/A	0.9 - 3.5	No	Naturally present in the environment.
Uranium (2018)	ppb	30	0	0.9 - 1.8	No	Erosion of natural deposits.

Arsenic - While Tempe's drinking water meets EPA's standard for arsenic, it does contain low levels of this element. EPA's standard balances the current understanding of arsenic's possible health effects against the cost to remove arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a metal known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Nitrate - Nitrate in drinking water at levels above 10 ppm is a health risk for infants less than six months of age. High nitrate levels in drinking water can cause cyanotic newborn or "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, ask for advice from your healthcare provider.

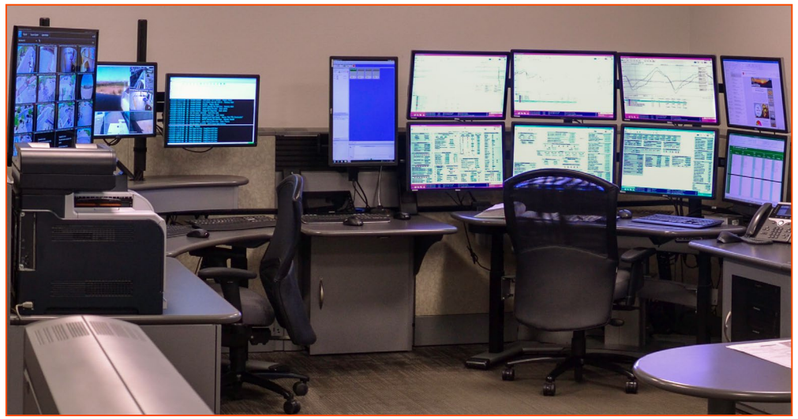
Fluoride - In addition to compliance sampling, fluoride levels are monitored daily at both treatment plants and reported to the Arizona Department of Health Services, monthly, for oral health monitoring. The ranges reported in the table above are combined results from the daily treatment plant and system monitoring.

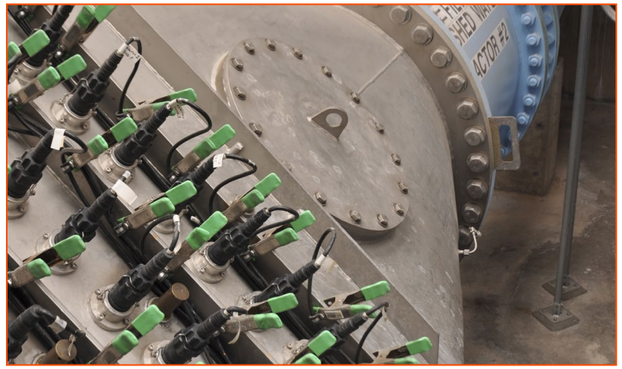
Constituent	Unit	MCL	Highest Value	Lowest monthly % meeting limit	Violation (Yes or No)	Major Sources
Turbidity	NTU (Nephelometric Turbidity Unit)	TT = 1; and not less than 95% ≤ 0.3 NTU	0.14	100%	No	Soil runoff into canals.

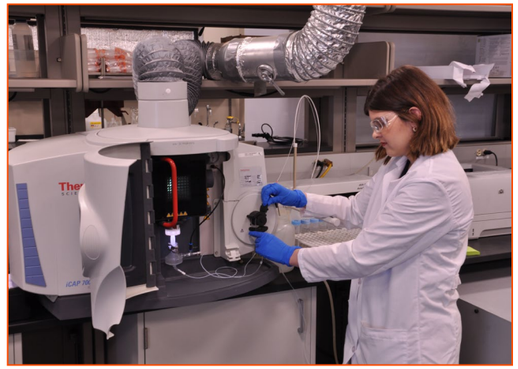
Turbidity - Turbidity is a measure of the cloudiness of water. Turbidity is monitored because it is a good indicator of water quality. High turbidity can reduce the effectiveness of disinfectants.

Constituent	Unit	MCL	MCLG	Result	Violation (Yes or No)	Major Sources
E. coli	Absent or Present	Positive repeat sample with original or repeat result having positive E. coli or failing to take or test repeat samples for E. coli	0	Absent	No	Naturally present in the environment from human and animal fecal waste.

Constituent	Unit	MCL	Highest LRAA	Range (single sample)	Violation (Yes or No)	Major Sources
Total Trihalomethanes (TTHM)	ppb	LRAA of 80	65	3.0 - 75	No	By-products of drinking water chlorination.
Total Haloacetic Acids (HAA)	ppb	LRAA of 60	17	ND - 19	No	







Constituent	Unit	Action Level	90th Percentile Result	Number of results above action level	Violation (Yes or No)	Major sources
Copper	ppm	1.3	0.15	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead	ppb	15	2.7	0	No	Corrosion of household plumbing systems; erosion of natural deposits

51 Households tested for lead and copper.

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. The City of Tempe is responsible for providing high quality drinking water but cannot control the variety of materials used in home 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 two 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 EPA website epa.gov/SafeWater/lead.

Special Information for Immunocompromised People

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer, undergoing chemotherapy, who have undergone organ transplants, with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) or other immune system disorders, some elderly and infants can be particularly at risk for infection. These people should seek advice regarding drinking water from their healthcare providers.

Cryptosporidium
Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people, infants, small children and the elderly are at greater risk of developing life-threatening illness. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100% removal. Monitoring indicates, although infrequent, these organisms are present in Tempe's source water. Current test methods do not identify if the organisms are dead or if they are capable of causing disease. Based on source water monitoring for Cryptosporidium at Tempe's two water treatment plants between 2015 and 2017, Tempe is required to maintain ongoing documentation of effective disinfection practices. EPA and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available through the EPA website epa.gov/SafeWater.

Source Water Assessment Summary
Arizona Department of Environmental Quality (ADEQ) evaluates each water source used by public water systems in Arizona. These evaluations assess the hydrogeology of drinking water sources to determine the quality of groundwater being drawn into wells, the watersheds supplying surface water and the surveyed land being used for activities occurring near drinking water sources.

ADEQ completed an assessment of the surface waters and ground water wells for Tempe's public water system in 2004. Based on the information available on the hydrogeologic settings and the adjacent land uses in the specified proximity of the drinking water source(s), ADEQ has given a high risk designation for the degree to which this public water system drinking water source(s) are protected. A designation of high risk indicates there may be additional source water protection measures which can be implemented on the local level. This does not imply that the source water is contaminated, nor does it mean that contamination is imminent. Rather, it simply states that land use activities or hydrogeologic conditions exist that make the source water susceptible to possible contamination.

Tempe regularly conducts monitoring of all drinking water sources to ensure that nearby land use has not impacted water quality. The complete Source Water Assessment is available for review at ADEQ, 1110 W. Washington St., Phoenix, AZ 85007, or an electronic copy may be requested by phone: 602-771-4597. For more information visit the ADEQ website at azdeq.gov/SourceWaterProtection.

Constituents of Frequent Interest to Customers

Constituent	Units	Average Value	Range of Values
Hardness	ppm	212	140 - 470
Hardness	grains /gallon	12.4	8.2 - 27.5
Radon (2008 and 2011)	pCi/L	346	ND - 704

Radon - Radon is a radioactive gas that occurs naturally in groundwater and is released from water into the air during household use. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a nominal source. For additional information, call Arizona Radiation Regulatory Agency at 602-255-4845 or contact EPA's Radon Hotline 800-767-7236.

Protect Tempe's Waterways
In Tempe, stormwater runoff does not go to a treatment plant before entering local recreational or water sources. Stormwater runoff can collect dirt, garbage, oil, grease, debris, chemicals and any other pollutant as it flows over surfaces such as roads, parking lots, sidewalks, driveways or lawns. Following the tips found at tempe.gov/StormwaterTips, adopting a path or street or utilizing the Household Products Collection Center will help reduce pollutants from entering the stormwater system and ultimately protect waterways.

Operating Budget
Every two years, Municipal Utilities conducts a cost of service study to help determine what, if any, adjustments are needed to recover the costs of water and wastewater services. Periodic review of cost-based rates, fees and charges is an important component of a well-managed and operated water utility. As utility costs throughout the country continue to rise, staff is committed to managing costs and staying efficient, while upholding Tempe's commitment to a sustainable future. The Water Utilities Division Fiscal Year 2020-2021 Operating Budget is $102,887,045.

Capital Improvement Program (CIP)
The Water Utilities Division plans and manages a comprehensive asset management program that includes assessment and improvements to all aspects of both water and wastewater utility operations. This program includes projects designed to ensure Tempe is reliably providing the highest quality water to its customers and efficient wastewater collection and treatment at the lowest reasonable cost, while meeting all applicable federal, state and local rules, regulations and statues. CIP planning for Fiscal Year 2021-2022 through Fiscal Year 2025-2026, for both water and wastewater, is over $400 million over the five-year planning period and will be considered for Tempe City Council approval later this year.

Highlights of the water treatment and water distribution CIP include rehabilitation and improvements to the following major areas of Water Utilities operation:

- Water Treatment Plant (WTP) Asset Maintenance and Upgrades;
- Transmission and Distribution System;
- Water System Pumping Stations, Reservoirs and Tanks;
- Wells – Asset Maintenance and New Production.

Customer Services
The Customer Services Section is responsible for Municipal Utilities billing and customer service operations. Tempe invested in Advanced Metering Infrastructure (AMI) for over 43,000 water meters which provide hourly water consumption data and billable reads. Customers can access their water usage data by visiting tempe.gov/WaterSmart. Tempe offers multiple ways to pay for the utility services and more information on payment options, rates and other utility billing-related questions can be found at tempe.gov/government/internal-services/finance/customer-services.

If you have questions about the information provided in this report, or about water quality or Tempe's water or wastewater systems, call the City of Tempe at 480-350-4311. Residents are also invited to address the Tempe City Council during regularly-scheduled Council meetings. City Council meetings are usually held every other Thursday and meeting schedules and agendas may be found online at tempe.gov/clerk, or by calling 480-350-4311. For additional information, visit Tempe's website at tempe.gov/WaterQuality, visit tapintoquality.com or see information provided by the EPA at epa.gov/SafeWater.

TAP INTO QUALITY

Tempe
Municipal Utilities

This report is also available at
tempe.gov/ccr