



CITY OF
Yuma

WATER QUALITY REPORT 2018

PWS ID# AZ0414024

About this Report

To our valued water customers, it is my pleasure to present to you, on behalf of the staff of the City of Yuma Utilities Department, our 2018 Annual Water Quality Report. The information contained within this report covers thousands of drinking water tests, any detected regulated contaminants, and our source water identification for calendar year 2018. We remain committed to providing the highest quality tap water and reliable services to you, our customers. This past year was a very busy year for our Department. Water production totals were up 4% (337 million gallons), the Main Street Water Treatment Plant Filter Project improved upon the mixed media filters, and we had several projects within the community improving

the water distribution system. As we look towards the future, I am pleased to report the Utilities Department is well positioned for our community's future needs. We will be able to meet the anticipated demands of both quantity and quality to our customers. If you have any questions, comments, or concerns about the information contained within this report, I encourage you to contact either myself or my staff. We are always excited to provide you, our customers, answers to your questions. Thank you.

Sincerely, Jeremy McCall
Interim Director of Utilities

PHOTO COURTESY OF GILBERT BEDOYA

COMMUNITY PARTICIPATION

Your input on water quality is always welcome. The City of Yuma's Water and Sewer Commission is a group of citizens developing ideas and providing advice to the Director of Utilities on a range of water and wastewater issues. Our Water and Sewer Commission meets on-call at 5:00 p.m. in the Department of Public Works Administrative Conference Room. The public is invited. You can contact the Utilities Department at (928) 373-4544 for more information regarding meeting dates.

This report contains important information about your drinking water. Have someone translate it for you, or speak with someone who understands it.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

More information about contaminants, potential health effects, including guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants, is available from the US Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791.

Source Water Assessment

In 2004, the Arizona Department of Environmental Quality completed a source water assessment for the Yuma Main Canal, "A" Main Canal, and groundwater wells used by the City of Yuma. The assessment reviewed the adjacent land uses that may pose a potential risk to the sources. The assessment determined that adjacent land use presented a low risk of contamination to the source water. For a complete copy of the Assessment contact dml@azdeq.gov or call 602-771-4641 or visit the ADEQ's Source Water Assessment and Protection Unit website at www.azdeq.gov/environ/water/dw/swap.html.

Variations and Exemptions (ADEQ or EPA permission not to meet an MCL or a treatment technique under certain conditions):

The City of Yuma was granted a waiver from the Enhanced Coagulation and Enhanced Softening rules on October 25, 2017 by the Arizona Department of Environmental Quality. The waiver was based on two years of research performed on City of Yuma water. The data confirmed that the Colorado River water at Yuma is not amenable to the requirements of the rule. The waiver remains in effect as long as the running annual average for Total Trihalomethanes (TTHM) remains below 0.064 mg/L, and Haloacetic Acids (HAA5) remains below 0.048 mg/L.

QUESTIONS?

If you have any questions about this report or the quality of our drinking water, please contact Betsy Bowman,

Water Quality & Compliance Manager, at the Utilities Treatment Laboratory, (928) 329-2893

E-mail address:
Betsy.Bowman@yumaaz.gov

City of Yuma Home Page:
www.yumaaz.gov

Laboratory Direct Web Page:
<https://www.yumaaz.gov/utilities/utilities-treatment-division/laboratory.html>

Environmental Protection Agency: (800) 426-4791

Arizona Department of Environmental Quality: (800) 234-5677



Where does our water come from? And how is it treated?

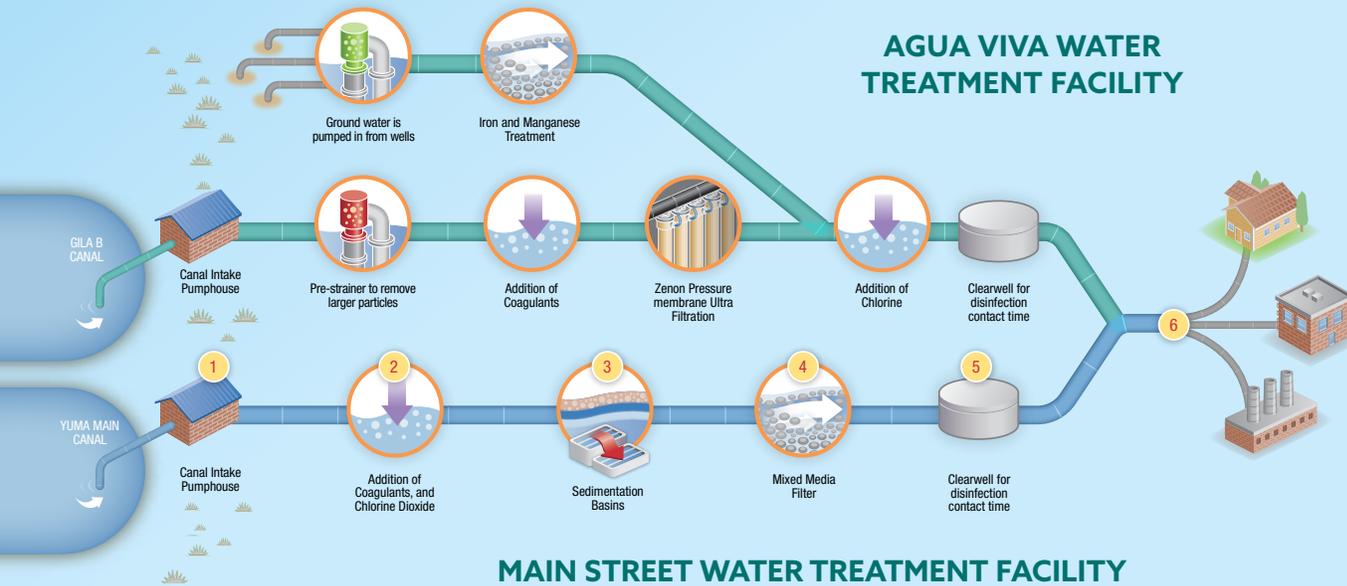
The main source of Yuma's drinking water is surface water from the Colorado River, which is delivered to the Treatment Facilities via the canal systems. Our water is treated by two distinctive water treatment plants with differing technologies. The treatment processes for both plants are depicted in the graphic below.

The Main Street Water Treatment Facility is a conventional surface water treatment plant.

The Agua Viva Water Treatment Facility may use surface water, ground water, or a blend of both prior to entering the water distribution system.

Agua Viva's ground water treatment process pumps water from the wells. Chlorine is added, followed by treatment for iron and manganese removal. The treated ground water enters storage tanks prior to additional disinfection and being distributed into the water system.

Agua Viva's surface water treatment process uses an advanced membrane treatment technology. Raw water is sent through a 500-micron screen, adding alum to coagulate particles, and then is sent to the membrane ultra-filtration system. After the water passes through the membranes, treated water will receive a dose of fluoride to prevent tooth decay. Finally, the water will enter storage tanks prior to disinfection and being distributed into the water system.



MAIN STREET WATER TREATMENT FACILITY

The City of Yuma Main Street Water Treatment Facility uses conventional water treatment methods.

- 1 Raw water is pumped from the Yuma Main Canal.
- 2 Raw water is dosed with chlorine dioxide for algae control and alum and polymer are added for coagulation.
- 3 The coagulants continue to mix in the water and create floc as the water makes its way into the sedimentation basins. This causes small particles in the water to adhere to one another (called floc), making them large enough to settle to the bottom of the sedimentation basin.
- 4 The water then flows through dual media filters (sand and anthracite), which filter out the remaining unsettled particulate matter. As smaller, suspended particles are removed, turbidity disappears and clear water emerges.
- 5 Filtered water enters the clear well, which provides contact time for the post-chlorinated water. This allows for disinfection of any bacterial contamination in the water and provides a chlorine residual for the distribution system. Fluoride (Hydrofluorosilicic Acid) is added to prevent tooth decay. In Yuma, voters mandated that fluoride be added to the water supply at our two water treatment plants.
- 6 The water is then pumped into the City's distribution and storage system. The water is distributed throughout the City of Yuma for residential, commercial and industrial use via more than 500 miles of pipeline.

A Note from the EPA

To ensure that tap water is safe to drink, the Environmental Protection Agency sets regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, or water that passes through home treatment systems, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The 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 through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, 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, may be by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, may be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants in tap water and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791 or visit online at www.epa.gov/safewater/hotline. Information on bottled water can be obtained from the U.S. Food and Drug Administration.

Important Health Information

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, persons with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

Yuma's Water Quality staff collects and analyzes the drinking water you receive at your home or business. These tests ensure that your water meets health and safety standards set by the state and federal governments. Yuma has a state certified laboratory. Our staff works diligently to ensure compliance with all drinking water regulations and to supply safe, high quality drinking water at a reasonable cost.

During 2018 the City of Yuma conducted all water quality testing required by state and federal regulations plus many more tests than regulations require. Testing documented the city's drinking water quality met all regulatory standards set to safeguard public health. The data tables present 2018 test results and corresponding water quality standards. The table below shows only those **regulated** contaminants that were detected in the drinking water and the Maximum Contaminant Level (MCL). **Please note, the presence of a substance or contaminant in drinking water does NOT necessarily indicate the drinking water poses a health risk.**

Monitoring Results for Regulated Contaminants

WATER TREATMENT PROCESS DESIGNED TO REMOVE TURBIDITY

The filters in the water treatment process produce water of superior clarity. Turbidity readings are a measure of the water clarity and a good indicator that the treatment process is removing tiny particles, including microorganisms.

Using conventional filtration, the Main Street Treatment Facility's standard for turbidity or clarity is 0.3 Nephelometric Turbidity Units (NTU - a measure of clarity) in at least 95 percent of the measurements taken each month, and must not exceed 1 NTU.

Using membrane filtration, the Agua Viva Treatment Facility's standard for turbidity or clarity is 1 Nephelometric Turbidity Units (NTU - a measure of clarity) in at least 95 percent of the measurements taken each month, and must not exceed 5 NTU.

2018 TURBIDITY MONITORING AFTER TREATMENT AT THE WATER TREATMENT PLANTS							
Plant	Units	MCL	Highest Measurement	TT Requirements for Monthly Readings	Lowest Monthly Percentage	Violation	Likely Source in Drinking Water
Main Street	NTU	1	0.086 NTU	95% less than 0.3 NTU	100%	No	Soil runoff
Agua Viva	NTU	5	0.5 NTU	95% less than 1 NTU	100%	No	Soil runoff

MEETING THE LEAD AND COPPER STANDARDS

Lead and copper usually enter our drinking water from corrosion of household plumbing, pipes and fixtures that contain these metals, such as copper piping, lead solder or brass fixtures. The EPA requires water systems to perform periodic testing for lead and copper in the tap water from inside customers' homes. The City of Yuma is required to collect these samples every three years. **The City of Yuma's drinking water test results are well below the action level for both lead and copper: the water meets the requirements of this program.**

2018 RESULTS OF LEAD AND COPPER SAMPLING FROM RESIDENTIAL WATER TAPS							
Substances	Units	Action Level (AL) applies instead of MCL	MCLG	Amount detected 90%	Sites above AL / Total sites	Violation	Major Source in Drinking Water
Copper	ppm	1.3	1.3	0.07 ppm	0 / 126	No	Corrosion of household plumbing systems
Lead	ppb	15	0	1.1 ppb	0 / 126	No	Corrosion of household plumbing systems

While the City of Yuma's water meets the EPA's limits, lead and copper levels at some customers' homes may be elevated due to leaching of materials into the water from materials used in the household plumbing fixtures. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Yuma is responsible for providing high quality drinking water, but cannot control the variety of materials used in household 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 present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. 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 or at www.epa.gov/safewater/lead.

YUMA MONITORS FOR UNREGULATED CONTAMINANTS

We participated in EPA's 3rd and 4th Unregulated Contaminant Monitoring Rule (UCMR3 and UCMR4) programs by performing additional testing on the drinking water.

This rule benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if EPA needs to introduce new regulatory standards to improve drinking water quality. Any UCMR3 and UCMR4 detections are shown in the data tables in this report.

UCMR4		
Location	Main Street	Agua Viva
Year sampled 2018	Range	Range
Manganese (ppb)	0.040 - 0.64	ND - 0.61
UCMR4 Distribution System		
Total HAA5 (ppb)	2018	7.2 - 18
Total HAA6BR (ppb)	2018	14 - 26
Total HAA6 (ppb)	2018	16 - 38

UCMR3						
Location		Main Street	Main Street (dist. system)	Agua Viva	Agua Viva (dist. system)	
Year Sampled		2013 - 2014	2013 - 2014	2013 - 2014	2013 - 2014	
Substance	Units	Low - High	Low - High	Low - High	Low - High	Major Sources in Drinking Water
Bromochloromethane	ppb	0.066 - 0.23	NA	ND	NA	Used as a fire- extinguishing fluid.
Chlorate	ppb	<20 - 82	78 - 120	210 - 400	220 - 390	Agricultural defoliant or desiccant; disinfection byproduct; used in production of chlorine dioxide.
Chromium (total)	ppb	NA	NA	<0.2 - 0.23	NA	Naturally present in the environment; discharge from steel and pulp mills.
Chromium-6	ppb	NA	NA	<0.03 - 0.032	<0.03 - 0.033	Naturally present in the environment; used for chrome-plating, dyes, pigments.
Molybdenum	ppb	5.2 - 10	4.7 - 5.62	4.6 - 5.0	4.6 - 5.7	Naturally present in the environment.
Strontium	ppb	1100 - 2100	1000 - 1200	980 - 1100	950 - 1200	Naturally present in the environment.
Vanadium	ppb	1.8 - 3.6	1.7 - 2.7	1.6 - 2.8	1.6 - 2.7	Naturally present in the environment.

CONTROLLING DISINFECTANTS AND DISINFECTION BYPRODUCTS

Yuma's entire water supply (well water and treated surface water) is safely disinfected with chlorine before being delivered to customers. Federal law requires a minimum chlorine residual level of 0.2 parts per million in the water leaving a water treatment plant. There also is a Maximum Residual Disinfectant Level (MRDL) allowed in the water in the distribution system as it travels to your tap.

While it is essential to disinfect the water to prevent widespread outbreaks of serious diseases and comply with EPA standards, the use of disinfectants can create disinfection byproducts (DBPs), which are formed when natural organic matter such as total organic carbon in water reacts with chemicals used for disinfection.

2018 DISINFECTANT AND DISINFECTION BYPRODUCT MONITORING IN OUR DISTRIBUTION SYSTEM							
Substance	Units	MCL	MCLG	Highest Running Annual Average	Sample Results Range	Violation	Major Source in Drinking Water
Chlorine	ppm	MRDL= 4 Running Annual Average	MRDLG = 4	0.55	0.08 - 0.91	No	Water additive used to control microbes.
Chlorite	ppm	1	0.8	0.42 (highest sample set average)	0.078 - 0.45	No	Byproduct of drinking water treatment.
Haloacetic Acids (HHAs)	ppb	60 ppb LRAA	NA	15	6.4 - 17	No	Byproduct of drinking water disinfection.
Total Trihalomethanes (TTMs)	ppb	80 ppb LRAA	NA	65	25 - 110	No	Byproduct of drinking water disinfection.

2018 REGULATED SUBSTANCES DETECTIONS						
Substance	Units	MCL	MAIN STREET	AGUA VIVA		Major Sources in Drinking Water
			Amount Detected	Amount Detected	Violation	
Arsenic	ppb	10	3.9	2.1	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium	ppb	2	0.02	0.12	No	Erosion of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Fluoride	ppm	4	0.40	0.38	No	Erosion of natural deposits; water additive, which promotes strong teeth; discharge from fertilizer and aluminum factories.
Nickel	ppm	No MCL	ND	0.0054	No	Naturally occurring in soils, ground water and surface waters; discharge from mining and refining operations.
Nitrate	ppm	10	0.34	0.32	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Sodium	ppm	No MCL	140	130	No	Naturally present in the environment.

Substance	Units	Year Sampled	MCL	MAIN STREET	AGUA VIVA		Major Sources in Drinking Water
				Amount Detected	Amount Detected	Violation	
Alpha Emitters	pCi/L	2017***	15	0.2	ND	No	Erosion of natural deposits
Combined Uranium	ppb	2017***	30	2.5	4	No	Erosion of natural deposits

***2017 Monitoring. Some of our data although representative, may be more than a year old. The Arizona Department of Environmental Quality allows us to monitor for certain substances less than once per year because the concentrations are below MCLs and reduced monitoring has been granted.

UNDERSTANDING THE LANGUAGE OF WATER

The following are definitions of terms used to describe types of limits or substances that may be found in drinking water.

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 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.

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.

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

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

Not Detected (ND): Indicates that the substance was not found by laboratory analysis.

Part per million: One part per million (1 ppm) or one milligram per liter (1 mg/L) is approximately equal to a single penny in \$10,000 or one minute of time in two years. To convert ppm to ppb, multiply ppm by 1000.

Part per billion: One part per billion (1 ppb) or one microgram per liter (1 µg/L) is approximately equal to a single penny in \$10,000,000 or one minute of time in 1,920 years. To convert ppb to ppm, divide ppb by 1000.

Locational Running Annual Average (LRAA): the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

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

Nephelometric Turbidity Units (NTU): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

NA: Not Applicable

Microbiological testing is performed monthly at over 100 sites within the distribution system for Total Coliform bacteria in order to verify the integrity of the distribution system.

2018 MICROBIOLOGICAL MONITORING IN THE DISTRIBUTION SYSTEM

Substance	MCL	Amount detected	Violation	Major Sources in Drinking Water
Total Coliform Bacteria	5% of monthly samples are positive	0 (Zero)	No	Naturally present in the environment

LATE REPORTING

The City of Yuma collected all required samples throughout 2018 and all samples met the regulatory standards; however, two reports were submitted to ADEQ outside the reporting deadline. Please refer to the chart below:

2018 DISINFECTANT AND DISINFECTION BYPRODUCT MONITORING IN OUR DISTRIBUTION SYSTEM

Report	Monitoring Period	Date Due	Date Received at ADEQ	Adverse Health Effects	Actions Taken
Chlorine Dioxide/Chlorite Daily Samples Report	July – September 2018 (Quarterly Report)	October 10, 2018	October 12, 2018	None	This report is now being sent electronically to ADEQ instead of by mail to minimize the potential for late reporting.
Surface Water Treatment Report (SWTR)	September 2018 Monthly Report	October 10, 2018	October 12, 2018	None	This report is now being sent electronically to ADEQ instead of by mail to minimize the potential for late reporting.

Cryptosporidium

The EPA's Long Term 2 Enhanced Surface Water Treatment Rule required Yuma and other large water systems to conduct monthly monitoring for Cryptosporidium in their source water. Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates, although infrequently, these organisms are present in our **source water**. Current test methods cannot determine if the organisms are dead or if they are capable of causing disease. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

In 2015, the City of Yuma began the twenty-four month LT2ESWTR source water monitoring for Cryptosporidium. The results range from not detected (ND) to 0.348 oocysts per liter in the source water. **The results from the testing show that the City of Yuma's source water meets the lowest classification for Cryptosporidium and requires no additional treatment.**

