

2017 Drinking Water Quality Report

University of California, Davis

(State Water System Number: 5710009)



Important Information about Your Drinking Water

The University of California, Davis tests the campus drinking water supply for many constituents as required by State and Federal Regulations. This report summarizes the results of our monitoring for the period of January 1 - December 31, 2017. This information is provided to inform the campus community about the monitoring and quality of the drinking water supply.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.
由於此報告書正包含着有關飲用水的重要信息,因此希望各位跟能夠翻譯或理解報告書內容的人對話。

Where Does Our Water Come From?

There are two drinking water sources used as the University's water supply- Groundwater and Surface Water.

Groundwater

Six on-campus wells are used as the University's groundwater supply. These wells draw water from aquifers 800 to 1,400 feet below the ground. The water is not treated, except for disinfection using chlorine (sodium hypochlorite). Chlorine levels are typically maintained between 0.50 and 1.0 ppm (parts per million) in the distribution system.

Surface Water

Starting July 2017, the University began to integrate treated surface water from the Sacramento River to the drinking water system. Raw surface water from the Sacramento River is taken in and pumped to the Regional Water Treatment Facility in Woodland. The raw water is treated by traditional surface water techniques, such as flash mixing and granular media filtration to remove microorganisms and other contaminants. The finished water is injected with chlorine and ortho-phosphate before it is delivered into the University's transmission line.

Substances That Might Be in Drinking Water

State-wide, 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 and through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

In order to ensure that tap water is safe to drink, The US Environmental Protection Agency (USEPA) and the California State Water Resources Control Board, Division of Drinking Water prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected contain at least small amounts of some substances. The presence of contaminants does not necessarily indicate that water poses a health risk.

Contaminants that may be present in source water include:

- *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 that 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, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.*
- *Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.*

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. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (1-800-426-4791).

Drinking Water Source Assessment Information

The drinking water assessments are intended to facilitate and provide the basic information necessary for a local community to develop a program to protect the drinking water supply.

Groundwater

A source assessment for the University's groundwater wells was completed in June 2003. The University's groundwater sources are considered most vulnerable to the following activities and not associated with any detected contaminants: Animal Activities; Sewer/Septic Collection & Treatment Systems; Pesticide/Fertilizer/Petroleum/Chemical Storage & Transfer Areas; and Research Laboratories. There have been no contaminants detected in the water supply attributable to these activities; however the source is still considered vulnerable to activities located near the drinking water sources.

For more information, contact the University of California, Davis – Utilities Division. Contact information is provided below. Additional information can be found on the State Water Resources Control Board, Division of Drinking Water website at: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/DWSAP.shtml.

Surface Water

The surface water assessment for the Sacramento River watershed was conducted by several agencies. The Sacramento River Watershed Sanitary Survey 2015 Update Report can be found at: <https://www.wdcwa.com/project-history/>. The update stated that "Overall, the Sacramento River continued to provide good quality raw water. The raw water can currently be treated to meet all drinking water standards using conventional water treatment processes..." The report also identified eight key source water/watershed contaminant sources: Agricultural Drainage; Livestocks; River Corridor and River Recreation; Homeless/Illegal Camping; Urban Runoff; Industrial National Pollutant Discharge Elimination System Permit Discharges; Wastewater Facilities; and Watershed Spills.

What Does Our Water Contain?

Tables 1 through 6 list the drinking water contaminants that were detected during the most recent sampling. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The Division of Drinking Water requires water suppliers to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

In addition to the constituents listed in the tables below, our water was analyzed for numerous other substances that were below regulatory levels or not detectable. Additional information is available at the UC Davis Utilities website below and upon request: <https://facilities.ucdavis.edu/utilities-water-quality-reports>

For more information, contact

Joel McCoy	Superintendent - Water & Gas	(530) 752-4825	jymccoy@ucdavis.edu
Michael Fan	Director - Utilities	(530) 752-7553	mmfan@ucdavis.edu

IMPORTANT DEFINITIONS:

The following are definitions of key terms for the water quality goals and standards noted on the data tables.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of 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 are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

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.

USEPA: The U.S. Environmental Protection Agency.

UCD: University of California, Davis.

Primary Drinking Water Standards (PDWS): MCLs or MRDLs for contaminants that affect health along with their monitoring and reporting requirements and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect health at the MCL levels.

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

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

Variations and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter

ppb: parts per billion or micrograms per liter

pCi/L: picocuries per liter (a measure of radiation)

pCi/L: picocuries per liter (a measure of radiation)

µS/cm: microsiemens per centimeter (a unit expressing the amount of electrical conductivity of a solution)

FOOTNOTES: MAJOR SOURCES IN DRINKING WATER

The following are footnotes referenced in the Major Sources in Drinking Water section of the data tables.

- A. Erosion of natural deposits; residue from some surface water treatment processes
- B. Erosion of natural deposits; runoff from orchards, glass and electronics production wastes
- C. Runoff/leaching from natural deposits; seawater influence
- D. Erosion of natural deposits
- E. Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
- F. Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
- G. Erosion of natural deposits
- H. Decay of natural and man-made deposits
- I. Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring
- J. Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits.
- K. Leaching from natural deposits; industrial wastes
- L. Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
- M. Leaching from natural deposits
- N. Naturally occurring
- O. Drinking water disinfectant added for treatment
- P. Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive)
- Q. Salt present in the water and is generally naturally occurring
- R. Substances that form ions when in water; seawater influence
- S. Runoff/leaching from natural deposits; industrial wastes
- T. Runoff/leaching from natural deposits
- U. Byproduct of drinking water disinfection
- V. Byproduct of drinking water disinfection
- W. Soil runoff

	Table 1 - Detected Constituents With A Drinking Water Standard	Year Sampled	Unit	Regulatory Limits		UCD Groundwater		Sacramento River Water		Major Sources in Drinking Water (footnotes)
				MCL (AL) [MRDL]	PHG (MCLG) [MRDLG]	Results Range	Average	Results Range	Average	
Sampled From Water Sources	Primary Drinking Water Standard Constituents - Inorganic Constituents									
	Aluminum	2017	ppm	1	0.6	ND - 0.092	0.063	ND	ND	A
	Arsenic	2017	ppb	10	0.004	ND - 5.5	3.15	ND	ND	B
	Copper	2017	ppm	(1.3)	0.3	ND	ND	ND - 0.006	0.005	E
	Fluoride	2017	ppm	2	1	0.11 - 0.14	0.13	ND	ND	F
	Selenium	2017	ppb	50	30	ND - 9.9	4.98	ND	ND	P
	Primary Drinking Water Standard Constituents - Organic Constituents									
	Total Trihalomethanes	2017	ppb	80	N/A	N/A	N/A	6.2 - 9.5	7.9	W
	Primary Drinking Water Standard Constituents - Radioactive Constituents									
	Gross Alpha	2017	pCi/L	15	(0)	ND	ND	1.86 - 3.94	2.9	G
	Gross Beta	2017	pCi/L	50	(0)	ND	ND	4.33 - 5.58	5.0	H
	Combined Radium	2017	pCi/L	5	(0)	ND	ND	0.74 - 3.95	2.7	D
	Secondary Drinking Water Standard Constituents ¹									
	Chloride	2017	mg/L	500	N/A	19 - 23	20.5	17 - 21	20	C
	Iron	2017	ug/L	300	N/A	ND - 150	85	ND	ND	K
	Manganese	2017	ug/L	50	N/A	ND - 37	16.8	ND	ND	M
	Specific Conductance	2017	µS/cm	1,600	N/A	520 - 530	523	190 - 220	203	R
	Sulfate (as SO4)	2017	mg/L	500	N/A	31 - 35	33.3	5.1 - 7.5	6	S
	Total Dissolved Solids	2017	mg/L	1,000	N/A	300 - 310	303	120	120	T
	Turbidity	2017	Units	5	N/A	0.11 - 0.27	0.17	ND - 0.16	0.13	W

Note 1: There are no PHGs or MCLGs for constituents with secondary drinking water standards because these are not health-based levels, but set on the basis of aesthetics.

	Table 2 - Detected Constituents Without A Drinking Water Standard	Year Sampled	Unit	UCD Groundwater		Sacramento River Water		Major Sources in Drinking Water (footnotes)
				Results Range	Average	Results Range	Average	
Sampled From Water Sources	Alkalinity, Bicarbonate (as CaCO3)	2017	mg/L	200 - 210	208	60 - 67	63	N/A
	Alkalinity, Carbonate (as CaCO3)	2017	mg/L	ND - 7.6	4.5	60 - 67	63	N/A
	Calcium	2017	mg/L	14 - 15	14.5	11 - 13	12	N/A
	Hardness, Total (as CaCO3)	2017	mg/L	80 - 120	108	53 - 57	55	I
	Magnesium	2017	mg/L	11 - 20	17	5.9 - 6.5	6	N/A
	pH	2017	N/A	8.3	8.3	8	8	N
	Sodium	2017	mg/L	73 - 86	77	18 - 23	20	Q

	Table 3 - Disinfection By-Products	Year Sampled	Unit	Regulatory Limits		Results Range	Major Sources in Drinking Water (footnotes)	
				MCL	PHG or (MCLG) [MRDLG]			
Sampled From Distribution System	Total Trihalomethanes	2017	ppb	80	N/A	24 - 27	V	
	Total Haloacetic Acids	2017	ppb	60	N/A	8.4 - 9.4	U	
	Residual Chlorine	2017	ppm	[4.0]	[4.0]	0.16 - 1.23	O	
	Table 4 - Lead and Copper							
	Year Sampled	Unit	Regulatory Limits		No. of Samples Collected	90th Percentile Level Result	No. of Sites Exceeding Action Level	Major Sources in Drinking Water (footnotes)
			Action Level	PHG				
	2017	ppb	15	0.2	36	ND	0	L
	2017	ppm	1.3	0.3	36	0.134	0	E

Hexavalent Chromium

In 2014, the State established a primary drinking water standard for the previously unregulated contaminant, Hexavalent Chromium. A lawsuit was filed against the State; consequently, the court invalidated this standard on May 31, 2017. As of September 11, 2017, public water systems were no longer required to comply with this standard. UC Davis continued to monitor hexavalent chromium until the end of September 2017. A summary of the hexavalent chromium results in 2017 is provided below. For more information, visit: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/chromium6/chrome_6_faqs.pdf.

Sampled From Water Sources	Table 5 - Hexavalent Chromium ²	Year Sampled	Unit	PHG	UCD Groundwater		Sacramento River Water		Major Sources in Drinking Water
					Results Range	Average	Results Range	Average	
	Hexavalent Chromium	2017	ppb	0.02	ND - 7.1	4.1	0.18 - 0.23	0.20	J

Note ²: There is currently no MCL for hexavalent chromium. The previous MCL of 0.010 mg/L was withdrawn on September 11, 2017.

Unregulated Contaminant Monitoring Rule 3

As part of the Safe Drinking Water Act Amendments of 1996, the U.S. Environmental Protection Agency (EPA) is required to create a list every five years of up to 30 unregulated contaminants to be monitored in public water supplies. This list is derived from the Candidate Contaminant List (CCL) and represents compounds for which the EPA may consider as candidates for regulation. In 2012, USEPA revised the Unregulated Contaminant Monitoring Rule to establish a new set of unregulated contaminants. All of the groundwater wells and two locations within the distribution system were sampled for a number of organic and inorganic compounds. The table below lists the unregulated constituents that were detected in the source water or in the distribution system. Unregulated Contaminant Monitoring Rule 3 (UCMR 3) results must be reported for five years after the first sampling event.

Sampled From Water Sources	Table 6 - Constituents Detected Under UCMR 3	Year Sampled	Unit	UCD Groundwater	
				Results Range	Average
	Chlorate	2014 - 2015	ppb	120 - 190	156
	Molybdenum	2014 - 2015	ppb	1.8 - 2.1	1.96
	Strontium	2014 - 2015	ppb	270 - 340	314
	Vanadium	2014 - 2015	ppb	15 - 24	20
	Total Chromium	2014 - 2015	ppb	2.5 - 45	15.3
	Hexavalent Chromium	2014 - 2015	ppb	2.4 - 47	16.3

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. U.S. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. *Cryptosporidium* was detected in the untreated surface water eight times in 2017. However, the Regional Water Treatment Facility is designed to remove and/or deactivate these pathogens to the level that meets all drinking water standards. Note that current test methods approved by the USEPA do not distinguish between dead organisms and those capable of causing disease. Ingestion of *Cryptosporidium* may produce symptoms of nausea, abdominal cramps, diarrhea, and associated headaches. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects 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 damage and circulatory problems.

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. UC Davis Utilities Division 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 do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants. 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 <http://www.epa.gov/lead>.

Water Conservation Tips for Consumers

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers – a 5 minutes shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair, and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They are inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaking toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!

Visit www.epa.gov/watersense for more information.

Source Water Protection

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use U.S. EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste – Drains to River" or "Protect Your Water". Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.