

# 2020 Annual Water Quality Report

## Stanford University Water Resources and Civil Infrastructure

MAY 2021



### High Quality Water

Stanford University Water Resources and Civil Infrastructure (WRCI) is pleased to provide you with the 2020 Annual Water Quality Report. The San Francisco Public Utilities Commission (SFPUC) and WRCI monitored water quality for both source and treated water supplies during 2020, and the water quality was in compliance with the State Water Resources Control Board - Division of Drinking Water (SWRCB-DDW) and the United States Environmental Protection Agency (USEPA) drinking water requirements (see page 5 for details). We continue our commitment to provide our customers with safe, high quality drinking water. The policy of WRCI is to fully inform its consumers about the water quality standards and typical concentrations. Stanford's water supply is both chloraminated and fluoridated by the SFPUC.

The SFPUC collects daily water quality samples from various locations within the San Francisco Regional Water System (SFRWS). The samples are analyzed for primary standards that apply to the protection of public health and secondary standards that refer to the aesthetic qualities of water, such as taste and odor.

Stanford also routinely collects water quality samples from various locations within the campus distribution system. The most frequently collected samples are analyzed for chloramine residual, coliform bacteria, and general physical parameters. Additional water quality samples are collected to monitor for more constituents in compliance with applicable requirements. A California certified laboratory analyzes required samples. Stanford submits monthly reports to the SWRCB-DDW that include monitoring results.

### Stanford Water Resources and Civil Infrastructure

WRCI manages the storage, distribution, maintenance, and monitoring programs for Stanford's drinking water supply. WRCI also manages flushing, cross-connection, and backflow prevention programs to ensure a consistent high quality drinking water supply.

Learn more at  
[suwater.stanford.edu](http://suwater.stanford.edu)

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# Stanford University's Drinking Water Sources

## SFRWS Drinking Water Sources and Treatment

The San Francisco Regional Water System's (SFRWS) major drinking water supply consists of surface water and groundwater that are well protected and carefully managed by the San Francisco Public Utilities Commission (SFPUC). These sources are diverse in both the origin and the location with the surface water stored in reservoirs located in the Sierra Nevada, Alameda County, and San Mateo County, and groundwater stored in a deep aquifer located in the northern part of San Mateo County. Groundwater was not part of the water supply delivered to Stanford in 2020; during that year, we only received surface water from the SFRWS.

To meet drinking water standards for consumption, all surface water supplies from SFRWS undergo treatment before it is delivered to our customers. Water from the Hetch Hetchy Reservoir is exempt from state and federal filtration requirements but receives the

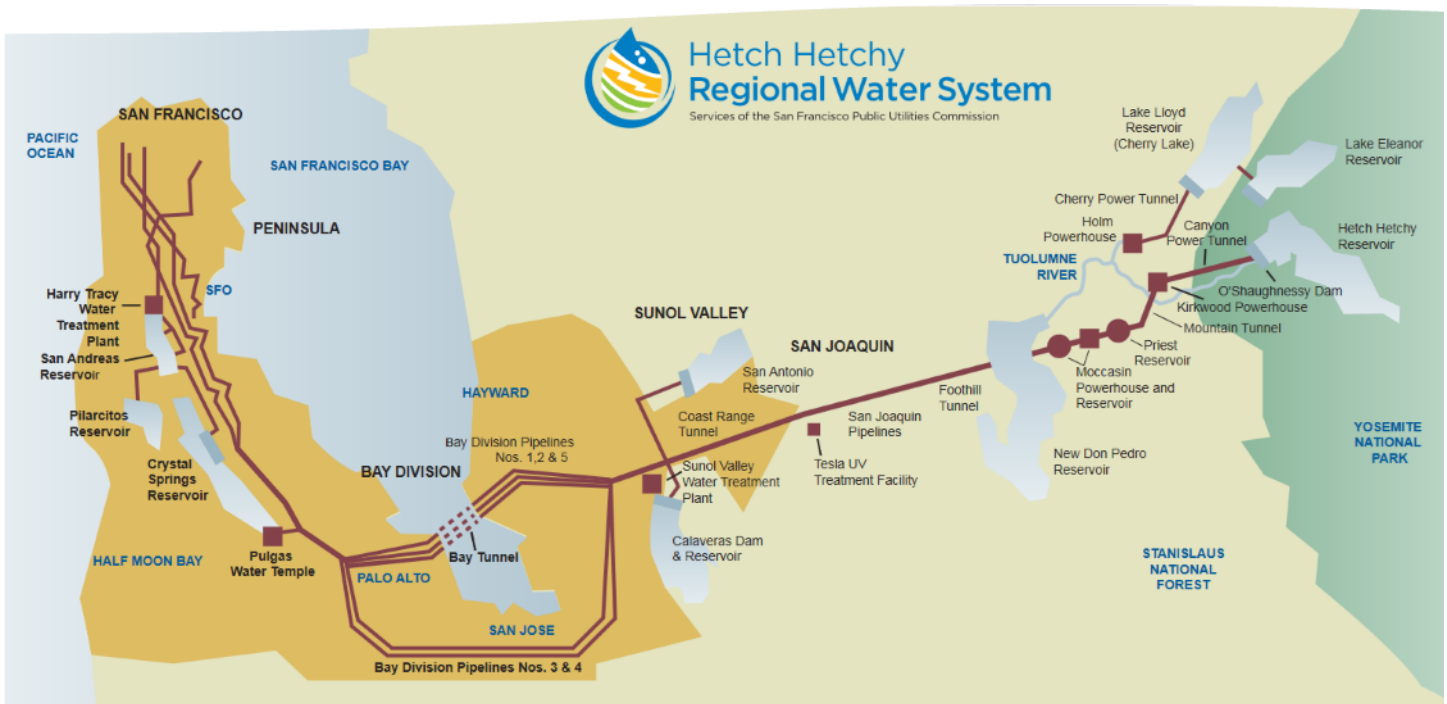
following treatment: ultraviolet light and chlorine disinfection, pH adjustment for optimum corrosion control, fluoridation for dental health protection, and chloramination for maintaining disinfectant residual and minimizing the formation of regulated disinfection byproducts. Water from local Bay Area reservoirs in Alameda County and San Mateo County is delivered to the Sunol Valley Water Treatment Plant (SVWTP) and Harry Tracy Water Treatment Plant (HTWTP), respectively, and is treated by filtration, disinfection, fluoridation, optimum corrosion control, and taste and odor removal processes.



Hetch Hetchy Reservoir

## Watersheds Protection

SFRWS conducts watershed sanitary surveys for the Hetch Hetchy source annually and for non-Hetch Hetchy surface water sources every five years. The latest sanitary surveys for the non-Hetch Hetchy watersheds were completed in 2021 for the period of 2016-2020. All these surveys together with our stringent watershed protection management activities were completed with support from partner agencies including the National Park Service and US Forest Service. The purposes of the surveys are to evaluate the sanitary conditions and water quality of the watersheds and to review results of watershed management activities conducted in the preceding years. Wildlife, stock, and human activities continue to be the potential contamination sources. You may contact the San Francisco District office of the State Water Resources Control Board's Division of Drinking Water (SWRCB-DDW) at (510) 620-3474 for the review of these reports.



# Contaminants in Drinking Water

SFRWS regularly collects and tests water samples from reservoirs and designated sampling points throughout the sources and the transmission system to ensure the water delivered to you meets or exceeds federal and State drinking water standards. In 2020, SFRWS conducted more than 47,200 drinking water tests in the sources and the transmission system. This is in addition to the extensive treatment process control monitoring performed by SFRWS's certified operators and online instruments.

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 the water poses a health risk. In order to ensure that tap water is safe to drink, the United States Environmental Protection Agency (USEPA) and the SWRCB-DDW prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.

Generally, the sources of drinking water (both tap water and bottled water) include rivers, lakes, oceans, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or 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. Such substances are called contaminants. Major categories of contaminants that may be present in water sources are listed to the right.

## Drinking Water and Lead

Exposure to lead, if present, can cause serious health effects in all age groups, especially for pregnant women and young children. Infants and children who drink water containing lead could have decreases in IQ and attention span and increases in learning and behavior problems. Lead exposure among women who are pregnant increases prenatal risks. Lead exposure among women who later become pregnant has similar risks if lead stored in the mother's bones is released during pregnancy. Recent science suggests that adults who drink water containing lead have increased risks of heart disease, high blood pressure, and kidney or nervous system problems.

Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. There are no known lead service lines in the SFRWS or Stanford distribution system. We are responsible for providing high quality drinking water, but we cannot control the variety of materials used in plumbing components. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, or doing laundry or a load of dishes. You can also use a filter certified to remove lead from drinking water. If you are concerned about lead in your water and wish to have your water tested, please call the Water Information Line at (650) 725-8030 or email [stanfordwater@stanford.edu](mailto:stanfordwater@stanford.edu). Information about lead in drinking water, testing methods, and steps you can take to minimize exposure is available at [epa.gov/safewater/lead](http://epa.gov/safewater/lead).

As previously reported in 2018, at the completion of the lead user service line (LUSL) inventory, there were no known pipelines and connectors between water mains and meters made of lead (nor were there any pipelines or connectors made of unknown materials). Our policy is to remove and replace any LUSL promptly if it is discovered during pipeline repair and/or maintenance.

*More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800) 426-4791, or at [epa.gov/safewater](http://epa.gov/safewater).*

## Potential Contaminants in Water Sources

**Microbial contaminants:** Viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

**Inorganic contaminants:** 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:** These may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

**Organic chemical contaminants:** Includes synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production. Can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

**Radioactive contaminants:** These can be naturally occurring or be the result of oil and gas production and mining activities.



# Contaminants in Drinking Water, continued

## Cryptosporidium

*Cryptosporidium* is a parasitic microbe found in most surface water. SFRWS regularly tests for this waterborne pathogen and found it at very low levels in source water and treated water in 2020. However, 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.

## Special Health Needs

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly people, and infants, can be particularly at risk from infections.

These people should seek advice about drinking water from their healthcare providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (800) 426-4791 or at [epa.gov/safewater](http://epa.gov/safewater).

## Important Definitions

The table (page 5) lists all 2020 detected drinking water contaminants and information about their typical sources. Contaminants below detection limits for reporting are not shown, in accordance with regulatory guidance. SFRWS holds a SWRCB-DDW monitoring waiver for some contaminants in its surface water supply and therefore the associated monitoring frequencies are less than annual. The following are definitions of key terms referring to standards and goals of water quality noted on the data table.

**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 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 USEPA.

**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 (SMCLs) are set to protect the odor, taste, and appearance of drinking water.

**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.

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

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

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

**Turbidity:** A water clarity indicator that measures cloudiness of the water, and is also used to indicate the effectiveness of the filtration system. High turbidity can hinder the effectiveness of disinfectants.

### Diverse Uses of Campus Drinking Water



Swimming Pools



Drinking Fountains



Laboratories

# Stanford University's Annual Water Quality Data for 2020 <sup>(a)</sup>

## DETECTED CONTAMINANTS

\* SFPUC Samples

† Stanford samples

CONSTITUENTS WITH PRIMARY STANDARDS	Unit	MCL	PHG or (MCLG)	Range or Level Found	Average or [Max]	Major Sources in Drinking Water
<b>TURBIDITY</b>						
* Unfiltered Hetch Hetchy Water	NTU	5	N/A	0.2 - 0.5 <sup>(b)</sup>	[1.3]	Soil runoff
* Filtered Water – Sunol Valley Water Treatment Plant (SVWTP)	NTU	1 <sup>(c)</sup>	N/A	-	[0.4]	Soil runoff
	-	Min 95 % of samples ≤ 0.3 NTU <sup>(c)</sup>	N/A	99.8% - 100%	-	Soil runoff
* Filtered Water – Harry Tracy Water Treatment Plant (HTWTP)	NTU	1 <sup>(c)</sup>	N/A	-	[0.1]	Soil runoff
	-	Min 95 % of samples ≤ 0.3 NTU <sup>(c)</sup>	N/A	100%	-	Soil runoff
<b>DISINFECTION BYPRODUCTS AND PRECURSOR</b>						
† Total Trihalomethanes (TTHMs)	ppb	80	N/A	15.00 - 43.47	[44.7] <sup>(d)</sup>	By-product of drinking water disinfection
† Haloacetic Acids 5 (HAA5)	ppb	60	N/A	11.5 - 52.9	[40.2] <sup>(d)</sup>	By-product of drinking water disinfection
* Total Organic Carbon (TOC) <sup>(e)</sup>	ppm	TT	N/A	1.7 - 3.4	2.9	Various natural and man-made sources
<b>MICROBIOLOGICAL</b>						
† Total Coliform	-	NoP ≤ 5% of monthly samples	(0)	-	[0%] <sup>(f)</sup>	Naturally present in the environment
* <i>Giardia lamblia</i>	cyst/L	TT	(0)	0 - 0.05	0.01	Naturally present in the environment
<b>INORGANIC CONTAMINANTS</b>						
* Fluoride (source water) <sup>(g)</sup>	ppm	2.0	1	ND - 0.7	0.3 <sup>(h)</sup>	Erosion of natural deposits; water additive to promote strong teeth
† Chloramine (as chlorine)	ppm	MRDL = 4.0	MRDLG = 4	0.7 - 3.2	[2.6] <sup>(i)</sup>	Drinking water disinfectant added for treatment

CONSTITUENTS WITH SECONDARY STANDARDS	Unit	SMCL	PHG	Range	Average	Major Sources in Drinking Water
* Chloride	ppm	500	N/A	< 3 - 15	8.7	Runoff / leaching from natural deposits
† Color	unit	15	N/A	< 5 - 10	-	Naturally occurring organic materials
* Specific Conductance	µS/cm	1600	N/A	30 - 260	160	Substances that form ions when in water
* Sulfate	ppm	500	N/A	1 - 34	17	Runoff / leaching from natural deposits
* Total Dissolved Solids	ppm	1000	N/A	< 20 - 137	72	Runoff / leaching from natural deposits
* Turbidity	NTU	5	N/A	ND - 0.2	ND	Soil runoff

LEAD AND COPPER	Unit	AL	PHG	Range	90 <sup>th</sup> Percentile	Major Sources in Drinking Water
† Copper (30 samples collected)	ppb	1300	300	< 50 - 200	70 <sup>(j)</sup>	Internal corrosion of household water plumbing systems
† Lead (40 samples collected)	ppb	15	0.2	< 5 - 8.9	< 5 <sup>(j)</sup>	Internal corrosion of household water plumbing systems

OTHER WATER QUALITY PARAMETERS	Unit	ORL	Range	Average
* Alkalinity (as CaCO <sub>3</sub> )	ppm	N/A	6.7 - 138	55
* Calcium (as Ca)	ppm	N/A	2.9 - 22	12
* Chlorate <sup>(k)</sup>	ppb	800 (NL)	67 - 480	240
* Hardness (as CaCO <sub>3</sub> )	ppm	N/A	8.0 - 79	45
* Magnesium	ppm	N/A	0.2 - 6.8	4.0
* pH	-	N/A	8.6 - 9.8	9.3
* Potassium	ppm	N/A	0.3 - 1.3	0.8
* Silica	ppm	N/A	2.8 - 7	4.8
* Sodium	ppm	N/A	2.4 - 22	14
* Strontium	ppb	N/A	14 - 242	110

KEY	
< / ≤	less than / less than equal to
AL	Action Level
Max	Maximum
Min	Minimum
N/A	Not Applicable
ND	Non-detect
NL	Notification Level
NoP	Number of Coliform-Positive Samples
NTU	Nephelometric Turbidity Unit
ORL	Other Regulatory Level
ppb	parts per billion
ppm	parts per million
µS/cm	microSiemens / centimeter

### Footnotes:

- (a) Only detected contaminants shown. All results met State and Federal drinking water health standards.
- (b) These are monthly average turbidity values measured every 4 hours daily.
- (c) There is no turbidity MCL for filtered water. The limits are based on the TT requirements for filtration systems.
- (d) This is the highest locational running annual average (LRAA), which is used to determine compliance.
- (e) Total organic carbon is a precursor for disinfection by-product formation. The TT requirement applies to the filtered water from the SVWTP only.
- (f) The highest percentage of positive samples collected in any one month.

- (g) The SWRCB recommends an optimal fluoride level of 0.7 ppm be maintained in the treated water. In 2020, the range and average of the fluoride levels were 0.6 ppm - 0.9 ppm and 0.7 ppm, respectively (see Page 6).
- (h) The natural fluoride level in the Hetch Hetchy supply was ND. Elevated fluoride levels in raw water for the SVWTP and HTWTP were attributed to the transfer of fluoridated Hetch Hetchy water into the local reservoirs.
- (i) This is the highest running annual average value.
- (j) Lead and copper monitoring was conducted in 2018 at 30 homes. Lead monitoring was conducted at 2 public schools. All results were below the lead and copper Action Levels. Lead and copper tap sampling in homes is required again in 2021.
- (k) The detected chlorate in treated water is a degradation product of sodium hypochlorite used by the SFRWS for water disinfection.

# Additional Information About Our Water

## Fluoridation and Dental Fluorosis

Mandated by State law, water fluoridation is a widely accepted practice proven to be safe and effective for preventing and controlling tooth decay. The fluoride target level in the water is 0.7 milligram per liter (mg/L, or part per million, ppm), consistent with the May 2015 State regulatory guidance on optimal fluoride level. Infants fed formula mixed with water containing fluoride at this level may still have a chance of developing tiny white lines or streaks in their teeth. These marks are referred to as mild to very mild fluorosis, and are often only visible under a microscope. Even in cases where the marks are visible, they do not pose any health risk. The Centers for Disease Control (CDC) considers it safe to use optimally fluoridated water for preparing infant formula. To lessen this chance of dental fluorosis, you may choose to use low-fluoride bottled water to prepare infant formula. Nevertheless, children may still develop dental fluorosis due to fluoride intake from other sources such as food, toothpaste and dental products.

Contact your healthcare provider or SWRCB-DDW if you have concerns about dental fluorosis. For additional information about fluoridation or oral health, visit the SWRCB-DDW website at [waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/Fluoridation.html](http://waterboards.ca.gov/drinking_water/certlic/drinkingwater/Fluoridation.html) or the CDC website at [cdc.gov/fluoridation](http://cdc.gov/fluoridation).

## Monitoring of Per- and Polyfluoroalkyl Substances (PFAS)

PFAS is a group of approximately 5,000 man-made chemicals used in a variety of industries and consumer products. These chemicals are very persistent in the environment and human body. SFRWS conducted a special round of PFAS monitoring of its surface water sources and transmission system in 2019 and five groundwater wells in 2020. The monitoring effort was entirely proactive and voluntary with the objective to identify if SFRWS's water supplies are impacted by PFAS. Using the State's stringent sampling procedures and based on the approved/certified method of analysis for 18 PFAS contaminants, SFRWS confirmed no PFAS was detected in its water sources and transmission system. Considering USEPA's recent development of a newer method of analysis for additional PFAS contaminants, SFRWS intends to conduct another round of monitoring when the new analytical method is available at its contract laboratory. For additional information about PFAS, visit the SWRCB-DDW website at [waterboards.ca.gov/pfas](http://waterboards.ca.gov/pfas) or the USEPA website at [epa.gov/pfas](http://epa.gov/pfas).



## Unregulated Contaminant Monitoring Rule

The fourth Unregulated Contaminant Monitoring Rule (UCMR4) was released by USEPA in December 2016 and is used in the consideration and development of future drinking water standards. The UCMR4 listed a total of 30 chemical contaminants and two viruses for monitoring by select water systems between 2018 and 2020. Due to the characteristics of Stanford's water system, Stanford was required to monitor for these chemical constituents between July 2019 and October 2020.

Of the chemical constituents monitored, only five were detected (at very low levels), as reported in the table below. The SFPUC has reported similar data from their 2018 monitoring. In the absence of identifiable industrial sources, the SFPUC has reported that these contaminants are naturally occurring in their watersheds, except disinfectant by-products. Disinfectant by-products are a common contaminant found in drinking water from treatment facilities throughout the nation.

Detected Contaminants <sup>(a)</sup>	Unit	Range	Average
Manganese <sup>(b)</sup>	ppb	2.62 - 3.66	3.28
Bromochloroacetic acid (BCAA) <sup>(c)</sup>	ppb	0.416 - 0.830	0.612
Dichloroacetic acid (DCAA) <sup>(c)</sup>	ppb	12.9 - 30.4	19.3
Monochloroacetic acid (MCAA) <sup>(c)</sup>	ppb	2.14	2.14
Trichloroacetic acid (TCAA) <sup>(c)</sup>	ppb	5.92 - 13.1	9.89

- (a) There are no PHGs or MCLs established for these constituents, except for Manganese, which has a secondary MCL of 50 ppb.
- (b) Manganese typically comes from the erosion of natural deposits into drinking water supplies.
- (c) BCAA, DCAA, MCAA, and TCAA are byproducts of drinking water disinfection.



# Water Conservation for Residents

## Conservation is a Stanford Way of Life

California is a drought-prone state that experiences sporadic weather cycles. Conserving water now will make us more resilient to water scarcity in the future and help protect the ecosystems our water is sourced from. As a reminder, the following water-wasting practices remain prohibited:

1. Allowing irrigation to run off from lawns and landscaping
2. Washing a car using a hose without a shut-off nozzle
3. Washing pavement (except for health and safety needs)
4. Using fountains without a recirculation system
5. Irrigation during and within 48 hours of measurable rainfall

For more information about water conservation, including conservation tips, fact sheets, and rebate details, visit [suwater.stanford.edu](http://suwater.stanford.edu) or call the Water Information Line at (650) 725-8030.

## Help Us Detect Leaks

If you see a water leak on campus, please report it to the 24-Hour Maintenance Customer Service Line at (650) 723-2281. Thank you!

**WaterSmart:** Single family residents can now receive automated leak alerts and see their hourly water use at [suwater.watersmart.com](http://suwater.watersmart.com). If you do not have your account number or need other assistance with WaterSmart, please email [stanfordwater@stanford.edu](mailto:stanfordwater@stanford.edu) or call (650) 725-8030.

**Free Water-Saving Tools:** Visit [cloud.valleywater.org/shopping-cart](http://cloud.valleywater.org/shopping-cart) or call (408) 630-2554 to get free water-saving devices and kits from Valley Water, including a DIY Water Wise Home Survey Kit, efficient showerheads, and faucet aerators.

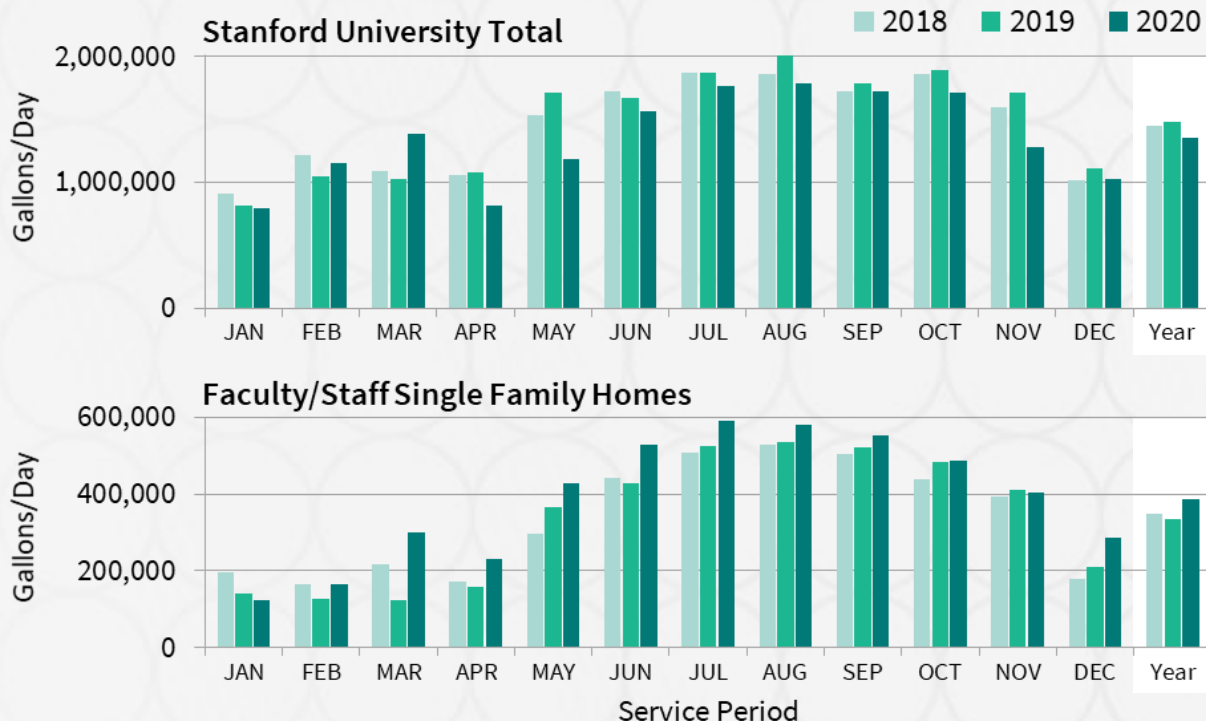
**Water Wise Outdoor Survey:** Call Valley Water at (408) 630-2000 or visit [watersavings.org](http://watersavings.org) to schedule a free professional evaluation of your irrigation system.

**Landscape Rebates:** Stanford residents are eligible for rebates from Valley Water for turf/pool removal, drip irrigation, irrigation equipment upgrades, and rainwater capture! Learn more at [watersavings.org](http://watersavings.org) or by calling (408) 630-2554. Contact Valley Water prior to starting your project.

**Free Landscape Classes:** Learn how to maintain a beautiful, water-efficient garden. Free workshops are offered in the Spring and Fall each year, online and at various locations in the Bay Area. Visit [bawsca.org/classes](http://bawsca.org/classes) or call (650) 349-3000 to learn more.

## SFPUC Drinking Water Use Trends

Thank you for continuing to conserve water.

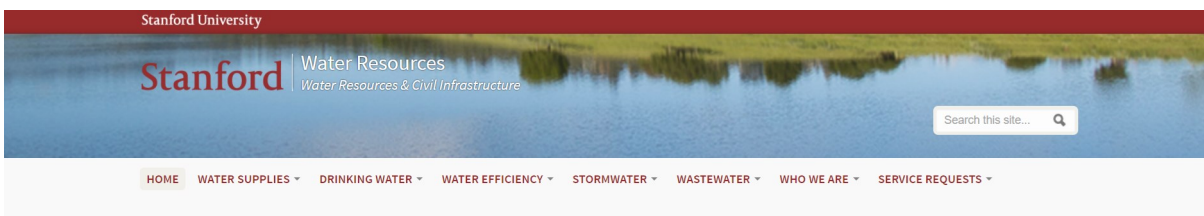


# Stanford University

Sustainability and Energy Management  
Water Resources and Civil Infrastructure  
315 Bonair Siding, 2nd Floor  
Stanford, CA 94305-7272

Visit our website for more information about Stanford's water systems, water conservation programs, and other resources.

[suwater.stanford.edu](http://suwater.stanford.edu)



## Contact Information



If you have questions or need additional information about this report or Stanford's water quality, please email us at [stanfordwater@stanford.edu](mailto:stanfordwater@stanford.edu) or call the Water Information Line at (650) 725-8030.

Este informe contiene información muy importante sobre su agua para beber. Favor de comunicarse Stanford University a (650) 725-8030 para asistirlo en español.

### USEPA Drinking Water Homepage:

[epa.gov/safewater](http://epa.gov/safewater)

Safe Drinking Water Hotline: (800) 426-4791

### SWRCB - Division of Drinking Water Program Homepage:

[waterboards.ca.gov/drinking\\_water/programs](http://waterboards.ca.gov/drinking_water/programs)

### SFPUC Homepage:

[sfpuc.org](http://sfpuc.org)

### Stanford Water Resources Homepage:

[suwater.stanford.edu](http://suwater.stanford.edu)