

2016 ANNUAL WATER QUALITY REPORT

Presidio of San Francisco



Lobos Creek, 1914 (Golden Gate NRA, Park Archives)



Lobos Creek, today

The Presidio Water Treatment Plant vigilantly safeguards its water supplies. Last year, Presidio tap water met all U.S. Environmental Protection Agency and State drinking water health standards. This report details where your water comes from and how its quality is measured.

(Este informe contiene información muy importante sobre su agua beber. Tradúzcalo o hable con alguien que lo entienda bien.)



THE PRESIDIO WATER SUPPLY

The Presidio gets its water from two sources. Seventy to eighty percent is drawn from the Presidio's Lobos Creek, the last free-flowing natural stream in San Francisco. The remainder is purchased from the San Francisco Water Department. This water is drawn from the Hetch Hetchy Watershed, the Alameda County Watershed, and the Peninsula Watershed.

LOBOS CREEK

Most of the Presidio's potable water needs are met by a local surface water source, Lobos Creek, which runs along the Presidio's southwest corner. Daily flows in 2016 averaged 1.4 million gallons per day. The Presidio Water Treatment Plant (PWTP) draws source (or "raw") water from Lobos Creek, treats the water, and distributes the treated (or "finished") water park-wide to more than 1,300 service connections. Treatment processes at the PWTP include coagulation, flocculation, sedimentation, filtration, disinfection, fluoridation, and chloramination.

To ensure healthy water, the Presidio Trust implements a Water Quality Management Plan that includes procedures to detect and remedy any potential sources of contaminants. The Trust also has a sampling program that requires quarterly Volatile Organic Compounds (VOC) testing. Additionally, the Trust monitors the trend of Tetrachloroethylene (PCE) levels in Lobos Creek (for complete results, see the tables beginning on p. 4). Raw samples are taken from Lobos Creek; samples of finished water are taken from the main reservoir.

The Presidio Trust prepared a *Watershed Sanitary Survey* for Lobos Creek. It is updated every five years. It was last updated in December 2016. A copy is available for review at the Presidio Trust by calling (415) 561-4135. As of 2016, potential contaminant sources included wastewater collection systems (primarily that of the San Francisco Public Utilities Commission), urban runoff, commercial and residential activity in the Richmond District of San Francisco, and landfill/environmental sites. In 2016,

Lobos Creek sample analysis results detected low levels (0.71 parts per billion) of Tetrachloroethylene (PCE), likely from dry cleaning establishments located throughout the neighboring Richmond District. However, samples from finished water (i.e., post-treatment) have not detected any PCE. In 2016, Lobos Creek also contained detectable levels of nitrates that may come from leaks in the San Francisco combined sanitary/storm water sewer system; the nitrate levels, however, have never exceeded the Maximum Contaminant Level (MCL) in finished water.

The landfill/environmental sites identified in the 2016 sanitary survey include a former military missile site and landfills located northeast of the creek. These sites were cleaned up as part of the Presidio Trust remediation program. Ground water monitoring has been conducted at all remediation sites before and after clean-up to ensure the Trust's potable water sources remain safe. Other potential contaminant sources identified in the 2016 sanitary survey include recreational use, unauthorized camps, vegetation/habitat management, and wildlife. Though these types of activities exist within the watershed boundary, there is no evidence that they contaminate the water supply.

The Lobos Creek *Watershed Sanitary Survey* will be updated in 2021.

SAN FRANCISCO WATER DEPARTMENT

Supplied by the San Francisco Regional Water System (SFRWS), which is owned and operated by the San Francisco Public Utilities Commission (SFPUC), San Francisco's major water source originates from spring snowmelt flowing down the Tuolumne River to storage in Hetch Hetchy Reservoir. The pristine, well protected Sierra water source is exempt from filtration requirements by the United States Environmental Protection Agency (USEPA) and State Water Resources Control Board's Division of Drinking Water (SWRCB). Water treatment provided by the SFRWS, includes disinfection by ultraviolet light and chlorine, corrosion control by adjustment of the water pH value, fluoridation for dental health protection, and

chloramination for maintaining disinfectant residual and minimizing disinfection byproduct formation.

The Hetch Hetchy water is supplemented with surface water from two local watersheds. Rainfall and runoff from the 35,000-acre Alameda Watershed in Alameda and Santa Clara counties are collected in the Calaveras and San Antonio reservoirs, and delivered to the Sunol Valley Water Treatment Plant (SVWTP). Rainfall and runoff from the 23,000-acre Peninsula Watershed in San Mateo County are stored in the Crystal Springs, San Andreas, and Pilarcitos reservoirs, and delivered to the Harry Tracy Water Treatment Plant. Beginning in 2015, the SWRCB approved the SFRWS to use surface water collected in Lake Eleanor, Lake Cherry, Early Intake Reservoir and conveyed via the Lower Cherry Aqueduct, and the associated creeks (collectively known as Upcountry Non-Hetch Hetchy Sources, or UNHHS) as an additional drinking water source. The UNHHS water will be treated at the SVWTP prior to service to customers. Water at the two treatment plants is subject to filtration, disinfection, fluoridation, and pH adjustment for corrosion control optimization.

As in the past, the Hetch Hetchy Watershed provided the majority of our total, non-Lobos Creek water supply in 2016, with the remainder contributed by the two local watersheds.

The SFPUC conducts watershed sanitary surveys for Hetch Hetchy source water annually and for local water sources every five years. The latest local sanitary survey was done in 2016. In 2015, a special watershed sanitary survey for the upcountry water sources including Cherry Creek, Eleanor Creek, and Lower Cherry Aqueduct was completed as part of the SFPUC's drought response plan efforts. These surveys evaluated the sanitary condition, water quality, potential contamination sources, and the results of watershed management activities, and were completed with support from partner agencies including the National Park Service and U.S. Forest Service.

These surveys have identified wildlife, stock, and human activities as potential contamination sources. The reports are available for review at the San

Francisco District office of SWRCB (contact phone number: 510-620-3474).

QUESTIONS?

If you have questions about this report or Presidio drinking water, please contact Dan Patrick at the Presidio Water Treatment Plant at (415) 561-4134. To learn about drinking water regulations, visit the California Department of Public Health at www.cdph.ca.gov or the U.S. Environmental Protection Agency at www.epa.gov.

San Francisco water policy issues are decided at the San Francisco Public Utilities Commission hearings, held the second and fourth Tuesdays of each month at 1:30 pm at San Francisco City Hall, Room 400 (visit www.sfwater.org). For information about Presidio Trust public meetings, call (415) 561-5300 or visit www.presidio.gov.

WHY TEST DRINKING WATER?

The Presidio Trust conducts extensive testing of the park's water supplies and distribution system to ensure that the Presidio's drinking water is safe and healthy. In all cases, Presidio drinking water meets or exceeds the standards set by federal and state health protection agencies. The State of California allows the Trust to monitor for some contaminants less than once per year because concentrations of these contaminants do not change frequently. Some of the data, though representative, are more than one year old.

Nationwide, 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 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.

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.

WATER QUALITY DATA

These tables list all drinking water contaminants detected in the Presidio in 2016. Presidio drinking water met or surpassed all state and federal water quality requirements.

TABLE 1: INDIVIDUAL TAP MONITORING FOR LEAD AND COPPER

Monitoring of individual taps from locations within the water system is performed every three years and was last performed in August 2016 to verify that the delivered water does not contain lead or copper at levels that may have negative health effects. The next round of tests is scheduled for August 2019. This table summarizes the most recent monitoring for these constituents. **No site exceeded the regulatory action level.**

	NO. OF SAMPLES	90TH PERCENTILE LEVEL DETECTED	ACTION LEVEL	PHG	TYPICAL SOURCE
Lead (ppb)	10	2.3	15	0.2	Corrosion of plumbing systems
Copper (ppm)	10	.205	1.3	0.3	Corrosion of plumbing systems

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 Presidio Water Treatment Plant is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. 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.

TABLE 2: DISTRIBUTION SYSTEM MICROBIOLOGICAL SUMMARY

MICROBIOLOGICAL CONTAMINANTS	HIGHEST NO. OF DETECTIONS	MCL	MCLG	TYPICAL SOURCE OF BACTERIA
Total Coliform	1	More than one sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or E. coli	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or E. coli	0	Human and animal fecal waste

TABLE 3: DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

CHEMICAL OR CONSTITUENT (REPORTING UNITS)	SAMPLE DATE	LEVEL DETECTED	RANGE OF DETECTIONS	MCL	PHG (MCLG)	TYPICAL SOURCE OF CONTAMINANT
Asbestos (MFL)	2010	.37	.37	7	7	Internal corrosion of asbestos cement water mains; Erosion of natural deposits.
Nitrate as N (ppm)	2016	8.17	7.5-8.17	10	10	Erosion of natural deposits, Soil run-off
Tetrachloroethylene-PCE (ppb)	2016	.71	<0.5-0.71	5	0	Leaching from PVC pipes, discharge from factories, dry cleaners and auto shops (metal degreaser)

Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps. Nitrate in drinking water at levels above 45 ppm is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 ppm may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider. **The PCE results are from Lobos Creek. Treated water samples show no detection of PCE.** (MFL = Million Fibers per Liter)

TABLE 4: SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES

PRESIDIO TREATED WATER: 2015	
TREATMENT TECHNIQUE*	CONVENTIONAL FILTRATION
Turbidity Performance Standards**	Turbidity of the filtered water must: 1 - Be less than or equal to 0.15 NTU in 95% of measurements in a month. 2 - Not to exceed one NTU for more than eight consecutive hours. 3 - Not to exceed five NTU at any time
Lowest monthly % of samples that met Turbidity Performance Standard No. 1	100%
Highest single turbidity measurement during the year	0.079 NTU
The number of violations of any surface water treatment requirements	None

* A required process intended to reduce the level of a contaminant in drinking water.
** Turbidity measured in nephelometric turbidity units (NTUs) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results that meet performance standards are considered to be in compliance with filtration requirements.

SAN FRANCISCO TREATED WATER

Turbidity - Harry Tracy Treatment Plant	2016	= or <0.3 NTU 100% of the time	Highest 0.06 NTU
Turbidity - Sunol Treatment Plant	2016	= or <0.3 NTU 98-100% of the time	Highest 1.0 NTU
Turbidity - Unfiltered Hetch Hetchy	2016	Range 0.3 - 0.5 NTU monthly average	Highest 3.2 NTU
Filtered water must be equal or less than 0.3 NTU 95% of the time. Both Harry Tracy and Sunol Water Treatment Plants met this standard 98% of the time.			

TABLE 4a: DISINFECTANT BYPRODUCTS

DETECTED CONTAMINANT	UNIT	MCL	RANGE OF DETECTION	HIGHEST LRAA	TYPICAL SOURCE IN DRINKING WATER
TTHM	ppb	80	40 - 58	48	Byproduct of chlorination
HAA5	ppb	60	13 - 24	19	Byproduct of chlorination

(ppm=parts per million / ppb=parts per billion / NTU=nephelometric turbidity unit / LRAA=locational running annual average / ND=non-detect)

- Inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban storm water 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 storm water runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water 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. To ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. SWRCB regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

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

IRON AND MANGANESE

We routinely detect high levels of minerals, iron, and manganese (see analyses) in Lobos Creek. However, treated water testing results were well below the Secondary MCL. Iron and manganese are secondary constituents that affect the aesthetic quality of water (i.e. taste, color, and odor) but do not pose a health threat. Manganese has a tendency to discolor water.

Periodically, your water may appear yellowish-brown. If you experience this, let your water run for several minutes or until the color goes away. If the problem persists, please call the Presidio Water Treatment Plant at (415) 561-4134.

RADIOLOGICAL WATER QUALITY

Results of most recent test for radiological constituents: Below MCL: All. Date: 4/2012.

DISINFECTION AND FLUORIDATION

The Presidio Water Treatment Plant used chloramines as a disinfectant in 2016. The San Francisco Water Department also uses chloramines. Chloramines are a combination of chlorine and ammonia. Chloramines are disinfectants that are believed to reduce potentially harmful by-products of chlorine alone. Chloramines may be toxic to kidney dialysis patients and some pet fish.

KEY TERMS

Following are definitions of key terms noted on the adjacent water quality data table. These terms refer to the standards and goals for water quality described below.

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 USEPA.

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):

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.

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.

Regulatory Action Level (RAL):

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.

TABLE 5: SECONDARY STANDARDS

No MCLG for secondary constituents. Typical source of contaminant for the following is run off/leaching from natural deposits.

PRESIDIO WATER: LOBOS CREEK UNTREATED

SAN FRANCISCO WATER: HETCH HETCHY AND TREATED FROM SVWTP AND HTWTP

	DATE OF TEST	LEVEL DETECTED	SECONDARY MCL
Aluminum	2016	<0.5 ppb	200ppb
Hardness	2016	232 ppm	none set
Sodium	2016	30.7 ppm	none set
Sulfate	2016	51.5 ppm	500 ppm
Iron	2016	78.8 ppb	300 ppb
Manganese	2016	24.6 ppb	50 ppb
Chloride	2016	50.3 ppm	500 ppm
Color	2016	8 units	15 units
Conductivity	2016	605 uS/cm	1600 uS/cm
TDS	2016	336 ppm	1000 ppm
Vanadium	2016	2.65 ppb	none set

	DATE OF TEST	RANGE	AVERAGE	SECONDARY MCL
Aluminum	2016	ND-55	ND	200 ppb
Hardness	2016	8 - 76	44 ppm	none set
Sodium	2016	2.6 - 17	11 ppm	none set
Sulfate	2016	1.0 - 30	15 ppm	500 ppm
Iron	2016	not reported	not reported	300 ppb
Manganese	2016	not reported	not reported	50 ppm
Chloride	2016	<3 -16	8.8 ppm	500 ppm
Color	2016	<5 - 11	<5	15 units
Conductivity	2016	31 - 218	146 uS/cm	1600 uS/cm
TDS	2016	<20 - 95	63 ppm	1000 ppm
Vanadium	2016	not reported	not reported	none set

Water fluoridation is a widely accepted practice, proven to be safe and effective for preventing and controlling tooth decay. The Presidio fluoride target level in finished water is 0.7 milligram per liter, consistent with current federal and state guidance. Infants fed formula mixed with water containing fluoride at this level may have an increased 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 health provider or SWRCB if you have concerns about dental fluorosis. For additional information visit the SWRCB website www.swrcb.ca.gov and search for fluoride, or the CDC website www.cdc.gov/fluoridation.

CRYPTOSPORIDIUM

Cryptosporidium is a parasitic microbe found in most surface water. The SFPUC regularly tests for this waterborne pathogen, and found it at very low levels in source water and finished water in 2016; it has also been

previously detected at low levels in Lobos Creek. 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 NEEDS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those 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 health care providers. USEPA/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 at (800) 426-4791 or at www.epa.gov/safewater.