

# San Francisco Groundwater Supply Project

For the past decade, the San Francisco Public Utilities Commission has been conducting planning and design work for the **San Francisco Groundwater Supply Project**. During this time, we've also had many opportunities to communicate with the public and stakeholders about the Project. As part of this outreach, we have developed answers to Frequently Asked Questions. You can also find more information on the Project, including project fact sheets, water quality data, technical reports and other resources at [sfwater.org/sfgroundwater](http://sfwater.org/sfgroundwater).

## PROJECT OVERVIEW

### What is the Project?

The **San Francisco Groundwater Supply Project** is a forward-looking, proactive project that allows us to diversify our water sources by blending a small amount of local, high quality groundwater with our regional water supplies. By diversifying in this way, our water supplies are less vulnerable to risks such as earthquake, drought and maintenance activities, and we are helping to meet the long-term water supply needs of the City. Water is a precious resource here in California, and we can't take it for granted. It's our goal and our obligation to prepare today for whatever tomorrow may bring.

The Project has been in planning and development for over 10 years. Construction is near complete on the pipeline infrastructure, and on 4 of the 6 wells planned for this Project. We are now in the start up phase of implementing the Project.

### Why now?

The next major earthquake could be tomorrow. The next drought may be imminent. These risks are always with us, and taking action with groundwater today is a crucial element in addressing these vulnerabilities. It can take several years to evaluate, fund and develop new water supply projects and we need to be ready in advance of the need, not afterward.

The San Francisco Public Utilities Commission (SFPUC) delivers water to 2.7 million customers, including residents and businesses in San Francisco. We rely on several reservoirs: on average 85% of our supply comes from Hetch Hetchy Reservoir in Yosemite National Park, and the other 15% is from five Bay Area reservoirs. Depending on the time of year and operational factors, customers typically receive a blend of water from these various sources.

Delivering water 24 hours a day, 7 days a week without interruption is a basic necessity for public health — and ensuring this constant supply is always our top priority. Routine maintenance, climate variability, earthquakes, droughts, security incidents, environmental regulations, population growth, and other factors represent ongoing challenges and risks to water delivery today, tomorrow, and into the future.

One of the most important steps we can take to plan for these challenges and risks is to diversify our sources of water supply. That's why we're blending local groundwater into our supply, and why we are using recycled water to irrigate our golf courses and parks. It's also why we have established an onsite reuse program to require all new, large buildings in San Francisco to treat their own wastewater onsite for irrigation and toilet flushing. We are also looking at additional water supplies such as desalination and purified water.

### What is groundwater?

Groundwater — also known as well water — is an important natural resource that is stored in underground reservoirs called aquifers. Aquifers are replenished primarily by rainfall. About 80% of Californians rely on groundwater for their drinking water supply, including our neighboring cities of Daly City, San Bruno and South San Francisco.

### Where does San Francisco's groundwater come from?

This Project extracts groundwater from the Westside Basin aquifer, which is located beneath Golden Gate Park and the Sunset District in San Francisco, and extends southward to Burlingame in San Mateo County. The Westside Basin is 45 square miles in area. The Project's well depths range from 270 to 460 feet below ground.

More information about the San Francisco Groundwater Supply Project can be found at [sfwater.org/sfgroundwater](http://sfwater.org/sfgroundwater)

**HETCH HETCHY**  
+ **LOCAL WATER**  
Better together.



## WATER QUALITY

### Will my tap water be safe to drink with the groundwater in it?

Yes. All wells will produce groundwater that meets all health-based State and Federal drinking water standards after blending. Groundwater will be blended in small quantities with the Hetch Hetchy Regional Water System (Regional Water System) supply, and the quality of this blend will surpass all drinking water standards set by the California State Water Resources Control Board, Division of Drinking Water (State Water Board), and the United States Environmental Protection Agency (EPA). Groundwater from the shared Westside Basin has been supplying drinking water to Daly City, San Bruno, and South San Francisco for over 100 years.

The San Francisco Department of Public Health (SFDPH) has stated, “We believe the evidence is clear that the plan to blend groundwater with surface water supplies will not create any adverse health consequences.” SFDPH and SFPUC staff will continue to review emerging scientific, medical, and public health literature relevant to drinking water standard development and applicability.

### Will my tap water taste or smell different with the groundwater in it?

No. The amount of groundwater we will blend with the Regional Water System supply at our reservoirs is a small percentage. This ensures that the resulting water does not have any distinguishable difference in taste or smell from our current tap water. Our community will continue to receive the high-quality, great-tasting water that they’re used to.

### Is the groundwater water quality monitoring data available on [sfwater.org](http://sfwater.org)?

Yes. The data is available at [sfwater.org/sfgroundwater](http://sfwater.org/sfgroundwater).

### Why is groundwater considered a high quality source of water?

Since groundwater is stored deep underground in aquifers, it has the dual benefits of a) being less vulnerable than surface water to direct contamination, and b) being naturally filtered through layers of soil and rock. When rain falls, it can run off the ground into a surface water body or it can soak into the ground. After soaking into the ground, the water travels within and through many layers of permeable gravel, sand, silt and clay. Several physical, chemical and biological processes take place as the water travels. Through these processes, deep groundwater is naturally free from microbes, algae and turbidity, which may be present in surface water sources. The aquifer also provides protected storage to preserve the quality of the water. The Westside Basin in San Francisco is a deep, protected aquifer that provides high quality groundwater for use as a drinking water supply.

### Will the groundwater be treated?

Yes. We already treat our Hetch Hetchy Regional Water supplies and groundwater will receive some of the same treatment. Our groundwater treatment includes chlorination, pH adjustment, and blending. Sodium hypochlorite (chlorine) will be added to the groundwater to maintain the required level of disinfectant in the City’s distribution system. Chlorine is also added for disinfection in our Regional Water System. In addition, the pH of the blended water will be raised by adding sodium hydroxide, as is done throughout the Regional Water System for corrosion control.

### Do you test for pesticides and herbicides?

Yes. We test for the 44 pesticide or herbicide compounds as required for all drinking water sources by the State Water Board. These compounds include glyphosate, the active ingredient in the commonly used herbicide Roundup®. We have not detected any of these compounds in our groundwater wells.

### What else do you test for?

In addition to the 44 pesticides and herbicides, other water quality parameters we test for include:

- Total coliform and E. coli
- General chemistry parameters (dissolved minerals, total dissolved solids, hardness, pH)
- Inorganics with primary maximum contaminant levels (MCLs) (metallic elements and anions)
- Volatile organic chemicals (VOCs) with primary MCLs
- Semi-volatile synthetic organic chemicals (SOCs) with primary MCLs, other than pesticides and herbicides
- Components with secondary maximum contaminant levels (SMCLs) (includes metallic elements, color, odor and turbidity)
- Radionuclides – naturally occurring and synthetically produced

### When you are operating the system, what will be your testing protocols?

The individual wells and the blended/treated water at the Sunset reservoir outlets will be sampled and analyzed according to a water quality compliance monitoring plan that has been reviewed and approved by the State Water Board. In addition, we will also sample blended water in the Sutro Reservoir. During initial start up of each new well after construction, more frequent monitoring of the individual wells and the blended/treated water is conducted, after which a long-term monitoring schedule begins.

## PROJECT DESIGN AND OPERATION

### How much groundwater will be added to the existing supply?

In the first year of the project we will be adding an average of 1 million gallons of groundwater per day (mgd) to our Regional Water Supply – that’s about 3% groundwater in the Sunset and Sutro Reservoirs. The Project will eventually contribute up to 4 mgd of groundwater to our Regional Water Supply, which will represent approximately 13% groundwater in the Sunset Reservoir. This will be done incrementally over several years with ongoing monitoring throughout the process.

### Who is drinking the water supply that includes groundwater?

The supply that includes a small portion of groundwater blend is being served to over half of the City of San Francisco. Groundwater is blended with water from the Regional Water System supply in the Sunset and Sutro Reservoirs before entering the distribution system. Distribution of the groundwater blend is based on the elevations and pressure zones of the Sunset and Sutro Reservoirs, and the smaller reservoirs and tanks they feed. The groundwater distribution map can be found at: [sfwater.org/sfggroundwater](http://sfwater.org/sfggroundwater).

### Why isn't the whole City getting the groundwater in their supply?

Gravity plays a big role in delivering our water. Variations in elevation throughout the City prevent us from serving the groundwater blend to all parts of San Francisco during normal daily operations. The areas that are served by the Sunset and Sutro Reservoirs, and the smaller reservoirs and tanks they feed, are receiving the groundwater blend. The remaining portions of the City are served by the University Mound Reservoir and several additional small reservoirs.

### Why can't we just use the groundwater in a drought or when there's an actual emergency?

The goal of this Project is to develop a sustainable, reliable and local source of drinking water that can help ensure the SFPUC's ability to deliver water reliably now and into the future. The Project is part of our Local Water Program, which includes conservation, groundwater, recycled water and other non-potable supplies. The SFPUC initiated the Local Water Program in 2008, recognizing the many risks and challenges we face to our current water supply including emergencies such as droughts and earthquakes, but also to adapt to climate variability, changing environmental regulations and population growth. It is important that we are prepared with a reliable and robust water supply system before, not after, these risks materialize.

The long-term monitoring schedule for the blended/treated water at the Sunset Reservoir outlet is as follows:

- Total coliform – weekly (same as existing requirement for reservoir outlets)
- Chrome 6 – monthly; daily calculations of Chrome 6 concentrations will be made based on daily well flow rates and daily reservoir volumes (totalized flow) entering and exiting the reservoir
- Nitrate – monthly; daily calculations of nitrate concentrations will be made based on daily well flow rates and daily reservoir volumes (totalized flow) entering and exiting the reservoir
- Manganese – annually; quarterly monitoring will be initiated if the manganese SMCL is exceeded
- pH – biweekly

The long-term monitoring schedule for the individual wells is as follows:

- Total coliform and E. coli – monthly for a total of 18 months within the first 2-year period of operation
- General chemistry parameters (dissolved minerals, total dissolved solids, hardness, pH) – every 3 years
- Inorganics with primary maximum contaminant levels (MCLs) (metallic elements and anions, except for Chrome 6 and nitrate) - annually
- Chrome 6 and nitrate – quarterly
- Volatile organic chemicals (VOCs) with primary MCLs – 4 consecutive quarterly samples in the first year of operation; subsequent routine monitoring frequency will be established based on initial quarterly results
- Semi-volatile synthetic organic chemicals (SVOCs) with primary MCLs, including pesticides and herbicides – 2 consecutive quarterly samples in the first year of operation; subsequent routine monitoring frequency will be established based on initial quarterly results
- Components with secondary maximum contaminant levels (SMCLs) (includes metallic elements, color, odor and turbidity) – annually
- Radionuclides, naturally occurring – 4 consecutive quarterly samples in the first year of operation; subsequent routine monitoring frequency will be established based on initial quarterly results
- Radionuclides, synthetically produced – 1 sample on startup; synthetic radionuclides would not be monitored if not present based on the initial result

Monitoring of the individual wells and the blended/treated water at the Sunset and Sutro reservoir outlets will be more frequent than the above schedules during the initial startup of each well following completion of construction. This more frequent monitoring will allow us to characterize steady-state chemical concentrations in the groundwater, guide the optimization of operations, and confirm treatment performance.

## **Why are there no Project groundwater wells in the eastern portion of San Francisco?**

The Westside Basin contains high quality groundwater suitable for a potable supply. In fact, extending from Golden Gate Park to Burlingame, the Westside Basin has sustainably provided potable supplies to Daly City, San Bruno, and South San Francisco for over 100 years. Now this high-quality water will be a potable water source for the City as well. In contrast, groundwater basins in the eastern portion of the City would not provide the same quality of water for drinking purposes. Several projects are underway on the East side of the City to utilize the groundwater for non-potable applications.

## **How do you decide where to install the wells? And how do you tell if the groundwater there is high quality?**

We have established and currently maintain a groundwater monitoring program for the Westside Basin aquifer to collect groundwater data from various locations and depths. This basin monitoring program includes a network of 45 wells at 19 locations in San Francisco. Over 10 years of monitoring using this network has allowed us to confirm the basin's water quality and select locations for production wells. The monitoring network also allows us to track any changes that might occur once the production wells are operating.

In selecting locations for the production wells, we have avoided areas or land uses that have potential to contribute contaminants. We designed the production wells to protect our water quality at standards even higher than the State's well standards. For example, the grout seals for our wells are over 100 feet deep (the State's standard for the seal is only 50 feet). Finally, groundwater samples from the production well locations have been tested for the approximately 105 chemicals and general water quality indicators as required for all drinking water sources by the State Water Board.

## **Is water filtering through artificial turf and draining into the aquifer?**

No. The artificial turf playing fields being installed in San Francisco within the Westside Groundwater Basin are lined, and water filtering through the turf is captured by the liner. That liner then drains the captured water into our sewer system, not the aquifer.

## **Why build new groundwater pipelines instead of connecting the wells to the existing water mains?**

The new pipelines are part of our blending strategy to maintain the high quality and consistent taste of the water supply. By installing new groundwater pipelines to connect the wells to the Sunset Reservoir and the Lake Merced Pump Station, the groundwater will first be blended with the Regional Water System supply in the Sunset and Sutro Reservoirs, and then that blend will be distributed via existing water mains to households.

The existing water mains in the City transmit water from reservoirs to individual households. If groundwater from the

wells were connected directly to existing water mains, the percentage of groundwater in some areas would be much higher than in others.

## **Why is San Francisco getting the groundwater blend but the Peninsula gets the Regional Water System supply?**

Many of our suburban, wholesale customers outside of the City have used their local groundwater to supplement their supply from our Regional Water System for decades. For example, Daly City and San Bruno blend groundwater with supplies provided by the SFPUC to serve their customers. Our wholesale customers also have undertaken programs and projects to diversify their water supplies. Recycled water, groundwater and water conservation programs and projects are underway throughout our wholesale service area.

The vast majority of San Francisco's water will still be from the Regional Water System supply with the addition of a small portion of groundwater.

## **WATER SUPPLY PLANNING AND SUSTAINABILITY**

### **How will you manage and protect the Westside Basin?**

To make sure SFPUC responsibly and sustainably manages and protects the Westside Basin, monitoring of the groundwater quality and its water levels is our top priority. A series of groundwater monitoring wells was installed in 2004 along the Great Highway to collect data, and since 2001 we have been collecting data from a network of groundwater monitoring wells surrounding Lake Merced. We are continuing to monitor these wells as the Project is put into service, to assess how the groundwater basin responds to the operation of this Project. This allows us to adapt our groundwater pumping, if necessary, in response to changes in the aquifer.

### **How are you diversifying San Francisco's water supply portfolio?**

The SFPUC is committed to diversifying its water supply portfolio by developing local water supplies. This includes:

- Creating a water-efficient San Francisco by promoting water use efficiency and reducing wasteful consumption in homes and businesses through our Water Conservation Program.
- Irrigating San Francisco's large parks and golf courses by treating wastewater through our Recycled Water Program.
- Reusing water in buildings by collecting and treating water onsite for toilet flushing in lieu of drinking water through our Non-potable Water Program.
- Maximizing local water sources by blending groundwater with surface water supplies through our Groundwater Program.
- Encouraging homeowners to irrigate their landscape by collecting and using rainwater and graywater through our Residential Programs.