

Regional Groundwater Storage and Recovery Project

What is the Regional Groundwater Storage and Recovery Project?

The Regional Groundwater Storage and Recovery Project coordinates the management of surface water and groundwater supplies to provide a new water supply to sustainably meet drought year water supply needs for the Regional Water System. As one of the San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program (WSIP) projects, it will provide additional dry-year water supply and help achieve the WSIP level-of-service goals to increase water delivery reliability, limit rationing and meet customer water supply needs during droughts and emergencies.

What is groundwater?

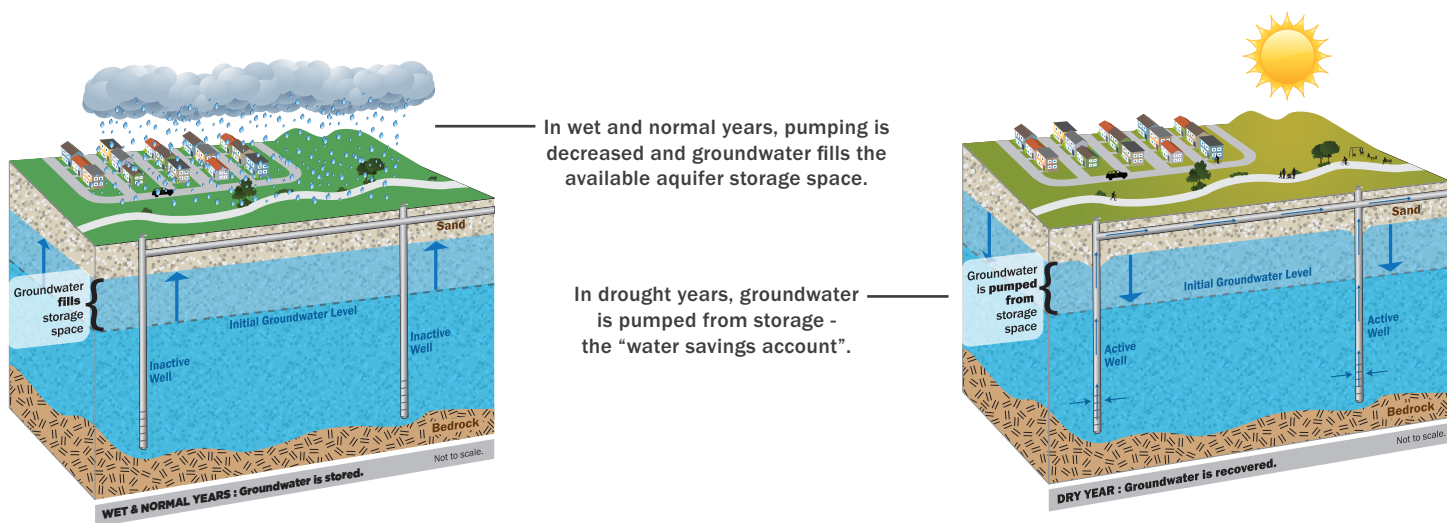
Groundwater — also known as well water — is an important natural resource that is stored in underground reservoirs called aquifers. Aquifers are replenished by a process known as recharge, which is primarily accomplished by rainfall. About 80% of Californians rely on groundwater for their drinking water supply, including our neighboring cities of Daly City, San Bruno and South San Francisco, some of which have been using groundwater for over 100 years.

Where will the 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 aquifer is approximately 45 square miles in area. The South Westside Basin aquifer is located within the larger Westside Basin aquifer and extends from Daly City south to Burlingame. The trough-shaped basin is filled with sand, silt and clay sediments. The layers of sand, which can readily yield water to wells, are called “aquifers.” In the South Westside Basin, Groundwater Storage and Recovery Project wells typically draw water from depths of between 240 and 700 feet below the ground surface.

How will groundwater storage and recovery work?

Through a regional partnership with California Water Service Company (Cal Water) (serving South San Francisco and Colma), and the cities of Daly City and San Bruno, the Regional Groundwater Storage and Recovery Project will balance groundwater and Regional Water System surface water supply to increase drought year water supplies. During wet and normal years — when water is plentiful — water from the Regional Water System will be delivered to the Partner Agencies (Cal Water, Daly City, and San Bruno) in-lieu of groundwater pumping. This will reduce the Partner Agencies’ need to pump groundwater and thus allow the basin to naturally recharge and store water for future use. Over time, this reduction in groundwater pumping will result in a water savings account of up to 60,500 acre-feet of water — a volume equivalent to that of Crystal Springs Reservoir. The water will be stored underground in the South Westside Basin aquifer until it is needed during a drought or emergency.



What makes groundwater storage and recovery possible?

Some groundwater basins can be managed in combination with surface water supplies to store water when it is plentiful and provide critical supplemental supply of water during droughts. This type of management is called conjunctive use and is made possible for the Regional Groundwater Storage and Recovery Project by the geology of the South Westside Basin and the location of the Partner Agencies, which allows the basin to be managed in this way.

What is meant by “in-lieu recharge”?

The Regional Groundwater Storage and Recovery Project provides surface water to the Partner Agencies in-lieu of typical groundwater pumping to allow the basin to naturally recharge and store additional water supply. In-lieu recharge is the process of temporarily decreasing the amount of groundwater pumped from an aquifer, in combination with increasing surface water deliveries to meet demand. The decrease in groundwater pumping occurs in normal and wet years when surface water supplies can be delivered “in-lieu” of groundwater pumping. Decreasing pumping allows the natural recharge to accumulate in the underground aquifer for storage for use during dry years.

How do you know it will work?

To determine the feasibility of the Regional Groundwater Storage and Recovery Project, a pilot study was conducted in 2002 to characterize aquifer recharge properties and test the aquifer storage potential. Results of the pilot study showed that with reduced groundwater pumping in the South Westside Basin, groundwater levels increased. During the 2002-2005 study period, groundwater was stored through natural recharge resulting in an increase of aquifer water levels by over 30 feet. Since May 2016 we have resumed the in-lieu surface water deliveries and, as of September 2017, the groundwater levels have increased by 20 feet.

What type of facilities are included in the project?

The Regional Groundwater Storage and Recovery Project will be completed in two phases. Phase 1 includes construction of 13 groundwater wells. Two wells connect to Daly City, two wells connect to Cal Water, and nine wells connect to the SFPUC’s Regional Water System. Each groundwater well site contains a groundwater production well, pump station, underground distribution piping, and utility connections. The facilities will provide disinfection and treatment, including chloramination, fluoridation, and pH adjustment at all wells and blending and manganese treatment where needed. The aboveground features are housed within a small building or will be enclosed with fencing. Phase 2 includes constructing up to three new test wells to determine future production potential and completing construction on one production well and associated piping started under Phase 1.

When will operations begin?

The Regional Groundwater Storage and Recovery Project will undergo a start-up testing phase anticipated to begin in Summer 2018. Groundwater will be delivered to the Regional Water System and San Francisco during the start-up testing period. During the start-up testing period, individual well stations will be operated for approximately 7 nonconsecutive days. During the 7 days of testing, three groundwater wells may be operated at the same time. Following the testing of wells individually and in combination, the testing phase will proceed with operation of all nine wells for approximately 7 weeks.

Once the testing phase is complete and the construction phase is closed out, the Regional Groundwater Storage and Recovery Project will continue in a storage phase. In wet and normal years when the Regional Groundwater Storage and Recovery Project is in a storage phase, the wells will not be operated. In times of drought when the SFPUC calls for dry-year water supplies, the Regional Groundwater Storage and Recovery Project will enter a recovery phase and all Project wells will be operated.

During the initial start-up and testing phase of the Regional Groundwater Storage and Recovery Project, will the San Francisco Groundwater Project operate at the same time?

During most of the initial 7-day testing and 7-week operations of the Regional Groundwater Storage and Recovery Project, the San Francisco Groundwater Project will not be operated at the same time. For a brief period, the San Francisco Groundwater Project and the Regional Groundwater Storage and Recovery Project will operate at the same time to test the functionality of both projects and project controls.

How much groundwater will be delivered to San Francisco during the start-up and testing phase?

Groundwater from the Regional Groundwater Storage and Recovery Project will be delivered to the Regional Water System and to San Francisco through the Regional Water System during the Project's start-up and testing phase. All areas of San Francisco will receive groundwater from the Project when all 9 Project wells are operating. Approximately 4 million gallons per day (mgd) of groundwater will enter San Francisco when the Project is in the later stage of the start-up and testing phase and when it is fully operational during a drought.

During a drought, how will groundwater be delivered to San Francisco from the Regional Groundwater Storage and Recovery Project?

When the SFPUC declares a drought, the Regional Groundwater Storage and Recovery Project will operate to provide groundwater to the SFPUC Regional Water System and to Daly City's and Cal Water's Distribution Systems. Approximately 4 mgd of groundwater will be blended with surface water supplies in the Regional Water System. All customers in San Francisco will receive a blend of groundwater and surface water supplies during a drought.

How will you manage and protect the entire Westside Basin?

Maintaining groundwater quality and quantity is the SFPUC's top priority. Over 100 groundwater monitoring wells were installed to collect water quality and water quantity data. Since 2001 we have been collecting data from a network of groundwater monitoring wells, and we prepare an Annual Groundwater Monitoring Report for the entire Westside Basin.

We will continue to monitor the groundwater quality and quantity to assess how the groundwater basin responds to the operation of the Regional Groundwater Storage and Recovery Project. This allows us to adapt our groundwater pumping, if necessary, in response to changes in the aquifer.

How is the South Westside Basin groundwater aquifer managed?

Groundwater is a shared resource in the South Westside Basin, and it is managed by local agencies overlying the basin. In July of 2012, a Groundwater Management Plan was completed for the South Westside Basin by the City of San Bruno in coordination with the City of Daly City, Cal Water, the SFPUC and other stakeholders. The plan provides a framework for regional groundwater management in the South Westside Basin to sustain the beneficial use of the groundwater resource.

Currently, groundwater pumping in the basin is monitored through metering for municipal pumping and metering or estimating for irrigation pumping. Daly City, San Bruno, Cal Water and the SFPUC jointly participate in a monitoring program for the Westside Basin to provide information regarding groundwater levels and quality.

The Regional Groundwater Storage and Recovery Project includes the formation of an Operating Committee to monitor and manage the operation of the Project within the South Westside Basin. The Operating Committee consists of Daly City, Cal Water, San Bruno, the SFPUC and the Bay Area Water Supply & Conservation Agency (BAWSCA). The Operating Committee is responsible for development of annual Project operation, maintenance and monitoring plans, including Project well operating schedules during recovery periods.

Who determines when to recover stored groundwater?

An Operating Committee consisting of SFPUC, Groundwater Storage and Recovery Partner Agencies (Daly City, Cal Water, San Bruno) and BAWSCA was formed to oversee the Project and determine Project operations. The SFPUC and the Partner Agencies entered into an Operating Agreement in December 2014.

The determination to operate Project wells during times of drought to recover groundwater stored during the storage phase of the Project is the responsibility of the SFPUC.

The SFPUC will issue a Recovery Notice to the Partner Agencies when it is determined that water supply from the Regional Water System is insufficient to meet customer demand. Upon issuance of a Recovery Notice by the SFPUC, the Partner Agencies and the Operating Committee shall make plans to recover groundwater from the storage account.

Are groundwater storage and recovery projects happening in other places?

Conjunctive use projects such as this one have been implemented by many water agencies in California and across the U.S. On a local level, several Bay Area agencies have been successfully operating groundwater storage and recovery projects for many years, including the Santa Clara Valley Water District; the Alameda County Water District; and the Zone 7 Water Agency serving Livermore, Pleasanton and Dublin. In Southern California, conjunctive use and groundwater management programs have been in place since the 1950s.

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For More Information:

For more information on the project, or to sign up for the privacy protected project mailing list for the proposed Regional Groundwater Storage and Recovery Project, contact us at:
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