

San Francisco Public Utilities Commission Peninsula Watershed

The San Francisco Public Utilities Commission (SFPUC) owns 23,000 acres of watershed lands on the Peninsula adjacent to Highway 280. They house three drinking water reservoirs—San Andreas, Crystal Springs (upper and lower), and Pilarcitos—that collect Montara Mountain Watershed and San Mateo Creek runoff. Also, the San Andreas and Crystal Springs reservoirs store water from the Hetch Hetchy Regional Water System.



History

The story of how these San Mateo County lands came into the possession of the City and County of San Francisco, and became the foundation of a regional water system that would eventually serve 2.6 million people in four Bay Area counties, begins with a private company called Spring Valley Water Company, and their chief engineer—Hermann Schussler.

Originally organized in 1858 under the name of Spring Valley Water Works, it was one of many private entities that sought opportunity to meet a growing San Francisco's need for a water supply. The company took water from springs in the City, and sold it through a series of pipes to customers. Within a year, the company's management switched its attention to neighboring San Mateo County as a potential source of drinking water.

Pilarcitos Dam and Reservoir

Construction of Pilarcitos Dam began in 1864, and was completed in 1866. It was raised in 1867 and 1874. The dam is an earth fill dam with a clay puddle core, and a height of 95 feet from foundation to crest. The reservoir has a capacity of just over 1 billion gallons. Its spillway was not constructed until 1937.

Pilarcitos Aqueduct

Now Spring Valley needed a transmission system to convey Pilarcitos Reservoir water north to San Francisco. To take advantage of gravity, Hermann Schussler decided to tunnel through to San Andreas Valley, which was at a lower elevation. Schussler himself surveyed the tunnel

alignment, which was bored from both ends towards the center under the mountain. Schussler's colleagues took bets on how far apart the two mining teams would actually be when they holed through and met under the mountain. In reality they struck within half an inch of each other in 1868. In the end, not one, but two, tunnels were bored through the mountain to connect to San Andreas Reservoir, and then on to the transmission lines headed north.

San Andreas Dam and Reservoir

While Schussler was surveying the alignment for the Pilarcitos Pipeline to connect Pilarcitos Reservoir north to San Francisco, he recognized the prospect for a reservoir in the flat San Andreas Valley. As San Francisco's demand for water increased, he convinced his board of the potential. He sent an agent to quietly purchase the land in the valley and the surrounding watershed. Schussler believed that the best way to protect a water source was to control and protect the watershed. Today, our customers continue to benefit from his foresight.

Construction on San Andreas Dam was begun in 1868, and completed in 1870. It was raised in 1875. It is earth fill with a clay puddle core. San Andreas Reservoir has a capacity of 6.2 billion gallons of water.

Upper Crystal Springs Dam and Reservoir

Construction began in 1875 on another dam in a large valley due west of Belmont. When completed in 1877, the Upper Crystal Springs Reservoir had a capacity of 4 billion gallons. At this point water was conveyed through a pipeline and flume system on its way to the City.

The earthen dam with a puddle core was raised once in 1891. Most drivers on Highway 92 between Highway 280 and Half Moon Bay are not aware that they are traveling over a dam that is more than 130 years old. Upper Crystal Springs Dam and Reservoir are so named, not because of their geography—they are indeed south of Lower Crystal Springs Dam—but because hydraulically they are at a higher elevation.

Lower Crystal Springs Dam and Reservoir

Lower Crystal Springs Dam was completed in 1888, and was raised in 1890, and again in 1911. Unlike the Upper Crystal Springs Dam and San Andreas Dam, Lower Crystal Springs Dam is a gravity arch dam, engineered in a way that revolutionized the dam and concrete industry and would make Schussler famous.

One of the first concrete dams on the West Coast, it consists of interlocking concrete blocks that were poured in place using a precise mix dictated by Schussler. Each block cured before the neighboring block was poured, and the joints were sealed with cement. The result is a strong dam with vertical joints that do not align. Although located adjacent to the San Andreas Fault, the dam survived both the 1906 and 1989 earthquakes without any significant damage. This dam served as a model for the Hoover Dam.

Upper and Lower Crystal Springs reservoirs operate as one system, and have a combined capacity of 22.5 billion gallons of water.



How the Watershed Currently Operates

The Hetch Hetchy Regional Water System provides drinking water to 2.6 million people in Alameda, Santa Clara, San Mateo, and San Francisco counties. The water stored in the Peninsula Watershed directly serves more than one million people in northern San Mateo and San Francisco counties.

Pilarcitos Reservoir

The water impounded at Pilarcitos Dam and Reservoir and Stone Dam currently is transferred to Coastside County Water District. Pilarcitos impounds only local watershed water, and is the one instance in the entire system where we deliver raw, untreated, water for our wholesale customers to treat themselves. It is still possible to also divert Pilarcitos water to the San Andreas Reservoir if need be.

Crystal Springs San Andreas

Crystal Springs and San Andreas reservoirs store local watershed water as well as water from the Hetch Hetchy Regional Water System.

Hetch Hetchy Regional Water System Storage

Water from the Hetch Hetchy Regional Water System enters the watershed from the Pulgas Tunnel. It must pass through the balancing reservoir and the dechloramination facility before outfall into the Crystal Springs Reservoir. Water stored in the Crystal Springs and San Andreas lakes must be filtered at the Harry Tracy Water Treatment Plant before reaching our customers.

The Crystal Springs/San Andreas Pipeline System and accompanying Crystal Springs Pump station move water from the Crystal Springs reservoir to San Andreas. From there, the San Andreas Pump Station pumps it on up to the Harry Tracy Water Treatment Plant.

After treatment and filtration, water travels from Harry Tracy Water Treatment Plant via San Andreas Pipelines 2 and 3, and the Sunset Supply Line to our Peninsula and San Francisco customers. The San Andreas #3 and the Sunset pipelines terminate at Sunset Reservoir in San Francisco.

Hetch Hetchy Regional Water System Bypass

Hetch Hetchy water can also bypass the Peninsula reservoirs altogether through the Crystal Springs Bypass Tunnel and Pipeline to join the Crystal Springs Pipelines 1 and 2 at the Crystal Springs Pump Station. The Crystal Springs lines terminate at University Mound Reservoir in San Francisco, or the Sunset Supply line to Sunset Reservoir.



Protected Watershed Lands

Because the 23,000 acres were purchased in the late 1800s and have been protected ever since, these lands are home to some of the Bay Area's most intact native habitats. These include: old growth Douglas fir forests, with thousands of trees over 200 years old; serpentine grasslands, dominated by native bunchgrasses; areas of coastal scrub and chaparral; stream corridors; and wetlands.

Together, they harbor over 800 species of plants and trees, 165 species of birds, 50 species of mammals, and 30 species of reptiles and amphibians. Rare, threatened and endangered fauna include the Marbled Murrelet, three species of butterfly and the San Francisco garter snake. In fact, the SFPUC Peninsula Watershed contains the highest concentration of rare, threatened, and endangered species in the nine-county Bay Area and is a State Fish and Game Refuge.

Providing a reliable supply of high-quality water is our top priority. We are committed to protecting our watershed lands and its natural habitats. By carefully regulating human activity in our watersheds, we minimize the risk of fire, erosion, and pollution that can negatively impact the water or its surrounding lands. We are extremely proud of the quality of our water, and we appreciate the assistance of all Bay Area residents in helping us keep our watersheds healthy.

We recognize the watershed's potential as an educational tool and refuge from urban development. We believe that sound environmental stewardship can coexist with carefully managed recreational uses on our watershed lands.

Fifield-Cahill Ridge Trail

The 10-mile Fifield-Cahill Ridge Trail opened to the general public in the summer of 2003. This trail segment is the SFPUC-managed component of the Bay Area Ridge Trail. The future 550-mile Bay Area Ridge Trail, when completed, will circle the entire Bay along the ridgelines, connecting parks, open spaces, and watershed lands to nearby communities.

The current Fifield-Cahill Ridge Trail starts at Skyline Quarry at Highway 92 and extends northward to the watershed boundary at the Portola Ridge gate. There it connects with the GGNRA (Golden Gate National Recreation Area) trail system and the Sweeney Ridge section of the Bay Area Ridge Trail, which is open to the public. Trail users can then access the Sneath Lane Gate Trailhead by following the Sweeney Ridge Trail to Army Road, which leads to the trailhead approximately 3.7 miles north of the Portola Ridge gate.

Trained volunteer trail leaders head excursions on foot, mountain bike, or horseback three days a week. We carefully monitor trail use by the public to ensure that there are no significant impacts to the fragile ecosystem.

A planned new extension of the Ridge Trail is now under way. It will link the existing trail with the Golden Gate National Recreation Area Phleger Estate to the south and create a single 16.5-mile path across the 23,000-acre refuge. It will also fill a critical gap in the Bay Area Ridge Trail Project, which—when completed—will circle the bay as a continuous 550-mile trail along the ridgelines.