

# A CHRONOLOGY OF SAN FRANCISCO'S WATER DEVELOPMENT (from a website)

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- 1769** Expedition of Portola and Ortega
- 1773** Expedition of Moncada and Palou
- 1776** Presidio Pueblo and Mission San Francisco established by de Anza
- 1825** Ending of Spanish royal rule in California
- 1833** Mexican Secularization Act opens California world trade
- 1835** Trading post established at Yerba Buena cove
- 1836** First adobe building built at Yerba Buena
- 1846** JULY 9: Pueblo of Yerba Buena taken by U.S.S. Portsmouth, commanded by Captain R.B. Montgomery. Montgomery appointed his lieutenant, Washington Bartlett, who was bi-lingual, to be the first American Alcalde or Mayor. Bartlett proclaimed the name of the Pueblo to be San Francisco.
- 1849** Drinking water sold by the barrel and the bucket in the streets
- 1850-1852** San Francisco devastated by fire six times
- 1851**
- Mountain Lake Water Company formed
  - Sausalito Water and Steam Tug Company importing water from Marin
- 1853** Mountain Lake Water Company granted first of several time extensions
- 1856**
- San Mateo lands excluded in San Francisco City and County consolidation
  - First pipelines laid in the City
- 1857** San Francisco City Water Company brings water from Lobos Creek
- 1858** Spring Valley Water Company franchised by State Legislature
- 1860**
- U.S. Census reports San Francisco population at 78,000
  - APRIL: Spring Valley takes over Islais and Salinas Water Company
  - Alexi W. von Schmidt becomes Chief Engineer of Spring Valley
- 1861** Construction of the first Pilarcitos Dam and Tunnel
- 1862**
- Spring Valley Water Works now rivals San Francisco City Water Works
  - JULY 4: First peninsula water enters San Francisco
- 1863** DECEMBER: First Pilarcitos Dam completed
- 1864**
- A.W. von Schmidt leaves Spring Valley
  - OCTOBER 8: Calvin Brown, Spring Valley Chief Engineer, hires Hermann Schussler to raise main Pilarcitos Dam
- 1864** San Francisco City Water Works taps into Spring Valley water main

- 1865** • Schussler starts second long tunnel on Pilarcitos conduit line
  - FEBRUARY 13: Spring Valley buys out San Francisco Water Works
- 1866** MAY: Schussler named Chief Engineer of Spring Valley Water Works
- 1867** Main Pilarcitos Dam completed to height of 70 feet
- 1868** • Spring Valley buys San Andrés Dam
  - APRIL: Schussler starts construction of San Andrés Dam
  - AUGUST: Spring Valley acquires rights to Lake Merced
- 1869** Spring Valley Water Works sues San Francisco for water payment for "municipal purposes"
- 1870** • State legislature considers bill by Lake Tahoe Water Company to tunnel through Sierra Nevada
  - San Francisco Mayor Selby vetoes Board of Supervisors' \$6 million bond issue as "inappropriate"
  - JUNE: Lock's Creek Line Aqueduct (Stone Dam Tunnel #1) started
- 1871** Stone Dam and Lock's Creek Tunnel completed - Lock's Creek Line developed
- 1873** First municipal efforts to buy out Spring Valley Water Works
- 1875** • Schussler raises main Pilarcitos Dam to 95 feet
  - San Andrés Dam increased in height
  - Spring Valley Water Company buys Calaveras land and water rights
  - San Francisco offers to buy out Spring Valley Water Company
  - APRIL 19: City Engineer T. R. Scowden recommends San Francisco buy Calaveras site
- 1876** Upper Crystal Springs Dam constructed
- 1877** San Francisco offer of \$11 million to buy out Spring Valley declined
- 1880** Newly adopted State Constitution allows Board of Supervisors to fix water rates for San Francisco
- 1882** MAY: J. P. Dart, San Francisco and Tuolumne Company proposes Tuolumne water for San Francisco
- 1888** • George Harris offers Tuolumne water rights to Mayor E. P. Bond for \$200,000
  - Schussler completes Crystal Springs Dam and first outlet gate tower
- 1891** • John Quinton surveys Hetch Hetchy and Tuolumne as potential San Francisco water source
  - Schussler raises Crystal Springs Dam parapet - builds second outlet gate tower
- 1898** Use of Lock's Creek Line aqueduct discontinued - drilling starts at Pleasanton Well Field
- 1899-** U. S. Geological Survey annual report recommends Hetch Hetchy for San Francisco
- 1900** water supply
- 1900** • Sunol aqueduct and Filter Beds completed
  - JANUARY 8: New City Charter requires development of municipal water supply
- 1901** • FEBRUARY 15: Congress permits Interior Secretary to grant rights-of-way through

Yosemite and other National Parks

- JULY 29: As private citizen, Mayor Phelan files for water rights
- AUGUST 12: City Engineer Grunsky recommends Tuolumne after studying 14 possible water systems
- OCTOBER 15: Phelan applies to Interior Secretary for reservoir sites at Hetch Hetchy and Lake Eleanor

**1902** Eugene Schmitz becomes Mayor of San Francisco

- 1903**
- Spring Valley Water Company buys out Spring Valley Water Works
  - FEBRUARY 20: Phelan assigns all Hetch Hetchy water interests to San Francisco
  - JUNE 20: Interior Secretary Hitchcock denies San Francisco's first application to develop Hetch Hetchy

- 1906**
- Board of Supervisors adopts resolution #6949 formally abandoning the Hetch Hetchy development
  - APRIL 18: San Francisco Earthquake disrupts Spring Valley water supply - the City burns for three days
  - MAY 26: A. W. von Schmidt dies at age 85

**1907** U. S. Geographic Board declares name of San Andrés Valley to be San Andreas

- 1908**
- APRIL 22: City Engineer Marsden Manson files duplicates of Phelan maps with Interior Secretary
  - MAY 11: Interior Secretary Garfield gives limited permission for Hetch Hetchy and Lake Eleanor

**1909** Hermann Schussler retires from Spring Valley Water

**1909-** Diversion tunnel constructed at Eleanor damsite

**1910**

- 1910**
- State Constitution changed - Railroad Commission to fix water rates
  - San Francisco votes 20-1 for \$45 million bond issue to build Hetch Hetchy system
  - FEBRUARY 25: Interior Secretary Ballinger withdraws Hetch Hetchy from Garfield permit
  - APRIL 13: City purchases Eleanor Basin lands and water rights for \$400,000
  - MAY 10: Interior Secretary requests War Secretary to appoint advisory Board of Engineers
  - MAY 18: Board of Army Engineers appointed

- 1911**
- Fred C. Herrmann appointed Chief Engineer of Spring Valley
  - Crystal Springs Dam parapet raised four feet in height
  - JUNE 22: City purchases Cherry Creek Basin land and water rights for \$600,000

- 1912**
- Priest Grade road reconstructed
  - JANUARY 8: "Sunny Jim" Rolph becomes mayor of San Francisco
  - JULY 15: John Freeman publishes his "Freeman Plan" for Hetch Hetchy
  - SEPTEMBER 1: Mayor Rolph hires M. M. O'Shaughnessy as City Engineer
  - NOVEMBER 30: Hearings before Interior Secretary Fisher concluded

**1913** • FEBRUARY 19: Board of Army Engineers report recommends San Francisco develop

- Hetch Hetchy for \$20 million cheaper
- MARCH 1: Interior Secretary Fisher refuses further permits without Congressional authority
  - APRIL 7: First of "Hetch Hetchy" bills introduced into Congress
  - AUGUST 1: Raker Act introduced in Congress
  - SEPTEMBER 3: House adopts Raker Act
  - DECEMBER 2: Senate adopts Raker Act
  - DECEMBER 6: President Woodrow Wilson signs Raker Act into law
- 1914**
- Spring Valley starts construction of Calaveras Dam
  - San Francisco ratifies Raker Act
  - Surveys made for Lower Cherry power aqueduct, Mountain Tunnel and Priest Reservoir
  - George A. Elliott succeeds Fred Herrman as Chief Engineer of Spring Valley
  - APRIL: Surveys start for Hetch Hetchy Railroad
  - JULY: Start of Hog Ranch - Hetch Hetchy and Eleanor Intake roads, present location of Camp Mather
- 1915**
- Preliminary preparation work starts in Hetch Hetchy Valley
  - JULY 21: Canyon Ranch sawmill starts operations for Hetch Hetchy
  - SEPTEMBER: Diversion tunnel at O'Shaughnessy damsite starts
  - DECEMBER 6: Construction of Hetch Hetchy Railroad starts
- 1916**
- Surveys made for Coast Range tunnel
  - AUGUST 11: Construction of Lower Cherry Aqueduct starts
- 1917**
- SUMMER: Lower Cherry Diversion Dam completed
  - JULY: Drifting Mountain Tunnel begins at Early Intake and South Fork
  - AUGUST: Construction starts on Eleanor Dam
  - OCTOBER: Construction of Hetch Hetchy Railroad completed - operations start
- 1918**
- JANUARY: Construction of Priest Dam starts
  - MARCH 24: Calaveras Dam fails - reconstruction monitored by City Engineer
  - MAY 6: Early Intake Powerhouse starts operation
  - JUNE: Eleanor Dam completed to a height of 70 feet
  - SEPTEMBER 18: Power Administrator orders surplus Early Intake power to PG&E
- 1919**
- Hermann Schussler dies at age 77
  - JUNE: Hetch Hetchy sawmill moves to Hog Ranch
- 1920**
- JANUARY 16: O'Shaughnessy Dam diversion tunnel completed
- 1921**
- State Railroad Commission directs Spring Valley to raise Calaveras Dam
  - FALL: Construction of Moccasin Powerhouse starts
  - SEPTEMBER 28: Construction of Priest Dam starts
- 1922**
- JUNE: Construction of Moccasin Power Tunnel starts
  - JUNE 23: Construction of Pulgas Tunnel at Crystal Springs starts
  - JULY: Construction of Moccasin Penstock starts
  - AUGUST 17: San Francisco gets option to buy Spring Valley Water Company - agrees to build Pipeline #1 across San Francisco Bay
- 1923**
- Construction of Calaveras Dam starts

- APRIL 6: O'Shaughnessy Dam completed
  - MAY 18: Construction of Bay Crossing Pipeline #1 starts
  - JULY 7: O'Shaughnessy Dam dedicated - height 226.6 feet, capacity 206,000 acre feet
  - OCTOBER 2: Construction of Early Intake Diversion Tunnel started
  - Priest Dam completed
- 1924**
- Sawmill operations at Hog Ranch (Camp Mather) terminated
  - Construction of Dumbarton Bridge for Bay Pipeline #1 starts
  - MAY: Pulgas Tunnel completed
  - AUGUST 28: Upper Crystal Springs Dam Tunnel restored to use
  - OCTOBER 7: \$10 million bond issue for Foothill and Coast Range Tunnels approved
- 1925**
- Calaveras Dam completed to a height of 215 feet
  - APRIL 10: Early Intake Diversion Dam completed
  - MAY 2: Moccasin PowerTunnel completed
  - JUNE 1: Moccasin Penstock completed
  - JUNE 2: Mountain PowerTunnel completed - first water passes to Priest Reservoir
  - AUGUST 14: Moccasin Powerhouse complete - begins commercial operations
  - SEPTEMBER 12: Bay Crossing Pipeline #1 placed in partial service
  - NOVEMBER 27: Hetch Hetchy moves from Groveland to Hetch Hetchy Junction
- 1926**
- FEBRUARY 4: Foothill Tunnel starts from Pedro west face
  - MAY 21: Bay Crossing Pipeline #1 enters full service
- 1927**
- APRIL: Construction of Coast Range Tunnel starts
  - MAY: Construction of Mocho Shaft on Coast Range Tunnel starts
- 1928**
- San Andreas Dam raised to 105 feet
  - MAY 1: \$24 million bond issue for Coast Range Tunnel and San Joaquin pipelines approved
  - MAY 1: \$41 million bond issue to buy Spring Valley Water Company approved
  - DECEMBER 6: Foothill Tunnel holed through
- 1929**
- SEPTEMBER: Foothill Tunnel completed
  - NOVEMBER: Moccasin Dam and reservoir completed
- 1930**
- MARCH 3: San Francisco purchases Spring Valley for \$39.96 million - Water Department created under Board of Public Works - Nelson A. Eckert named General Manager and Chief Engineer
- 1931**
- Second outlet gate tower built at Crystal Springs Reservoir
- 1932**
- JANUARY 8: New City Charter places Hetch Hetchy and Water Department under Public Utilities Commission - Edward Cahill appointed Utilities General Manager, Lloyd McAfee named General Manager and Chief Engineer of Hetch Hetchy
  - MAY 3: \$6.5 million bond issue to complete Hetch Hetchy Aqueduct approved
  - JULY 9: San Joaquin Pipeline #1 completed
- 1933**
- NOVEMBER 7: Two bond issues - \$3.5 million to enlarge O'Shaughnessy Dam, and \$12.1 million to construct second Bay Crossing Pipeline, Crystal Springs Pipeline, distribution system reservoirs and improve the distribution system approved

- 1934**
  - JANUARY 5: Coast Range Tunnel holed through from Mocho to Mitchell shaft
  - FEBRUARY 24: Alameda Creek Siphon completed
  - AUGUST 24: Construction of Bay Crossing Pipeline #2 started
  - OCTOBER 12: Michael M. O'Shaughnessy dies at age 72
  - OCTOBER 19: First Hetch Hetchy water passes through Coast Range Tunnel to Alameda Creek
  - OCTOBER 24: First Hetch Hetchy water flows into Pulgas Water Temple at 10:12am
  - OCTOBER 28: Hetch Hetchy water delivery to San Francisco celebrated at Crystal Springs Lake
- 1935**
  - NOVEMBER 18: Construction starts on Moccasin diversion works
  - DECEMBER 10: PG&E disconnected from Early Intake Powerhouse - output pooled with Moccasin
- 1936**
  - JUNE 22: Bay Crossing Pipeline #2 completed
  - AUGUST 31: Moccasin diversion works completed
  - DECEMBER 16: Interior Secretary Ickes approves Plan 7 to dispose of Hetch Hetchy electrical power
- 1938** JULY 1: O'Shaughnessy Dam raised 85.5 feet - capacity 360,000 acre feet
- 1942** James H. Turner named General Manager and Chief Engineer of Hetch Hetchy
- 1943** Turlock and Modesto Irrigation Districts participate with San Francisco and Corps of Engineers in Tuolumne flood control
- 1945**
  - James H. Turner appointed Utilities General Manager
  - Axel O. Olson named General Manager and Chief Engineer of Hetch Hetchy
  - JUNE 22: Exploratory work at Cherry Creek damsite starts
  - JULY 2: Interior Secretary approves new power disposition contracts as being in compliance with the Raker Act
- 1946** MAY 11: Hetch Hetchy starts power delivery to Modesto's Station J
- 1947** NOVEMBER 4: \$25 million bond issue approved to construct San Joaquin Pipeline #2 and Bay Division Pipeline #3
- 1949**
  - George W. Pracy named Water Department General Manager and Chief Engineer
  - Hetch Hetchy Railroad tracks removed
  - NOVEMBER 4: \$4 million bond issue approved to construct Cherry Valley Dam - Federal aid to be \$9 million
- 1950**
  - JUNE 9: PUC holds ceremony and opens 33.3 miles of San Joaquin Pipeline #2 west of Oakdale
  - DECEMBER: Rock River Lime Treatment Plant completed
- 1951** JUNE: Construction of 22,000 volt power line from Early Intake to Cherry Valley damsite starts
- 1952**
  - Harry E. Lloyd named General Manager and Chief Engineer of Hetch Hetchy
  - OCTOBER 17: San Joaquin Pipeline #2 enters service for entire 47.5 mile length
- 1953**
  - MARCH 25: San Joaquin Pipelines #1 and #2 operated jointly for the first time

- AUGUST: Construction of Cherry Valley Dam starts
- 1954** MAY 18: Cherry Creek water diverted at damsite
- 1955**
  - OCTOBER 27: Cherry Valley Dam dedicated
  - NOVEMBER 8: \$54 million bond issue approved to construct Canyon and Cherry Creek power projects
- 1956**
  - T. N. Bland appointed Utilities General Manager
  - Bay Crossing Pipeline #3 completed
  - MARCH 15: First joint operation of Hetch Hetchy and Lake Lloyd reservoirs for flood control
- 1957**
  - James H. Turner named Water Department General Manager and Chief Engineer
  - AUGUST 30: Construction of Cherry Power and Eleanor-Cherry tunnels started
- 1958** SEPTEMBER 16: Construction of Cherry Powerhouse started
- 1959**
  - Robert Kirkwood appointed Utilities General Manager
  - JANUARY 26: Cherry Power Tunnel, 29,278 feet long, is holed through
  - APRIL 6: New transmission line - Early Intake to Moccasin - completed
  - MAY 18: Eleanor-Cherry Tunnel, 5,854 feet long is holed through
- 1960**
  - MARCH 6: First water diversion to Lake Lloyd through Eleanor-Cherry Tunnel
  - APRIL 16: New transmission line - Moccasin to Modesto's Station J - completed
  - JUNE 17: Cherry Power and Eleanor-Cherry tunnels completed
  - AUGUST 1: Cherry Powerhouse begins commercial operation
  - AUGUST 25: Early Intake Powerhouse ceases operation after 46 years of service
- 1961**
  - Oral L. Moore named General Manager and Chief Engineer of Hetch Hetchy
  - FEBRUARY 24: Water delivery to Lawrence Livermore National Laboratory from Mocho Shaft starts
  - NOVEMBER 7: \$115 million water system bond issue approved
- 1963** Oral L. Moore named Water Department Acting General Manager - H. Christopher Medbery named Water Department Acting Chief Engineer
- 1964** JUNE 24: Canyon Power Tunnel, 54,888 feet long, is holed through
- 1965**
  - James K. Carr appointed Utilities General Manager • Arthur H. Fry, Jr. named Water Department General Manager and Chief Engineer
  - Turner Dam completed to 195 feet forming San Antonio Reservoir
  - FEBRUARY 26: Canyon Power Tunnel completed
  - JUNE 30: A new record for Hetch Hetchy water delivered to Water Department - 220 million gallons per day
  - NOVEMBER 3: First water to Groveland Community Services District from Second Garrotte Shaft
- 1966** SEPTEMBER 14: Sunol Filtration Plant activated
- 1967**
  - MARCH 1: Robert C. Kirkwood Powerhouse starts commercial operation
  - SEPTEMBER 1: Construction of New Don Pedro Dam starts
- 1968** MARCH 29: San Joaquin Pipeline #3 enters service - 300 million gallons per day can be

delivered to west end of Coast Range Tunnel - maximum delivery limited to 280 million gallons per day, the capacity of the Bay Division pipelines

- 1969** • JANUARY 27: New Moccasin Powerhouse begins operation
- FEBRUARY 7: Old Moccasin Powerhouse taken out of service after 44 years
- 1970** • John D. Crowley appointed Utilities General Manager
- New Don Pedro Dam topped out
- 1971** MAY 22: New Don Pedro Dam dedicated
- 1972** • Pilarcitos Dam upstream face repaired
- JUNE 14: Bay Crossing Pipeline #4 completed
- AUGUST 8: San Andreas Filtration Plant activated
- 1975** • Water Department strengthens Calaveras Dam to meet current earthquake standards
- JULY 1: Main PG&E contract covering power wheeling, supplementary energy and standby service negotiated and extended
- 1976** • Kenneth R. Boyd named Water Department General Manager and Chief Engineer
- Sunol Filtration Plant expanded to 160 million gallons per day capacity
- Crystal Springs Dam designated Historic Civil Engineering Landmark
- 1977** • John B. Wentz appointed Utilities General Manager
- NOVEMBER: Seismic study of Lower Crystal Springs Dam completed
- 1978** Eugene J. Kellerher named Water Department General Manager and Chief Engineer
- 1979** • Richard Sklar appointed Utilities General Manager
- Dean W. Coffey named General Manager of Hetch Hetchy
- 1980** • JANUARY: Phase I seismic study of San Andreas Dam completed
- SEPTEMBER: Suburban Division moves into new headquarters building in Millbrae
- 1981** FEBRUARY: Water quality laboratory moves to suburban headquarters in Millbrae
- 1982** FEBRUARY: San Andreas Pipeline #3 placed into service
- 1983** • Rudolf Nothenberg appointed Utilities General Manager
- FEBRUARY: Phase II seismic study of San Andreas Dam completed
- JUNE: Seismic study of Pilarcitos Dam completed
- FALL: Environmental assessment prepared for proposed 1.5 megawatt plant (\$5 million budget) at O'Shaughnessy Dam
- 1984** • SPRING: Engineering design starts on third generator at Kirkwood Powerhouse
- SPRING: Construction starts on powerline from new Moccasin Low-Head Hydro Project
- SEPTEMBER: Arthur Jensen named Water Department Acting General Manager
- NOVEMBER: Voters approve \$104 million water system revenue bonds to build Crystal Springs Filtration Plant and balancing reservoir, and to increase the capacity of San Andreas Filtration Plant
- 1986** Moccasin low-head generating plant goes into operation
- 1987** • Fire at Stanislaus complex



- Extended drought commences, 25% mandatory rationing imposed
- 1988**
  - Dean W. Coffey appointed Acting Utilities General Manager
  - New Crystal Springs Pipeline #3 placed in service between Baden Pump Station and Randolph Street in South San Francisco
  - Anson B. Moran named Hetch Hetchy General Manager
  - 28 1/2-year Power, Sales, and Support Services contracts signed with Modesto Irrigation District, Turlock Irrigation District and Pacific Gas and Electric
  - Kirkwood Powerhouse Unit 3 goes into operation
- 1989**
  - Thomas J. Elzey appointed Utilities General Manager
  - OCTOBER 17: Loma Prieta Earthquake strikes, system holds
- 1990** John P. Mullane named General Manager of Water Department
- 1991**
  - San Andreas Water Treatment Plant, Phase I Expansion to 120 million gallons per day completed
  - Drought continues, temporary connection with State Water Project made - Water purchased from State Water Bank and various water agencies
  - 45% mandatory rationing imposed until March rains and purchased water permit the return to 25% mandatory rationing
  - Memorandum of understanding concerning Urban Water Conservation is signed
  - Water Department/Clean Water Reclaimed Water Ordinance passed by Board of Supervisors - Requires water to be reused for irrigation
- 1992**
  - San Andreas Water Treatment Plant Phase II expansion to 180 million gallons per day completed - Ozonization capability developed
  - Joint Water Department/Public Works Reclaimed Water Study funded for Master Plan
  - Groundwater surveys for San Francisco completed by U. S. Geological Survey and consultants
  - Water Department assesses feasibility of using local aquifers as additional water sources
  - Heavy storms hit Sierra Nevada - reservoirs rise
- 1993**
  - Drought officially over - mandatory rationing rescinded
  - Anson B. Moran appointed Utilities General Manager
- 1994**
  - FEBRUARY: Dedication and renaming of San Andreas Water Treatment Plant as Harry W. Tracy Water Treatment Plant
  - JULY: San Francisco Water Department and Hetch Hetchy become the only City departments to be governed by the San Francisco Public Utilities Commission when the San Francisco Municipal Railway is placed under a separate transportation commission

REFERENCE: San Francisco Water and Power: A History of the Municipal Water Department and Hetch Hetchy System by Warren D. Hanson