Form No. 10-306 (Rev. 10-74)

PH0352152

DATA SHEET

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED AUG 25 1975
DATE ENTERED MAY 12 1976

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Pumping Station No. 2, San Francisco Fire Department Auxiliary Water Supply System

AND/OR COMMON: ***

2 LOCATION

STREET & NUMBER: At northern end of Van Ness Avenue — __NOT FOR PUBLICATION

CITY, TOWN: San Francisco — __ VICINITY OF — CONGRESSIONAL DISTRICT

STATE	CODE	COUNTY	CODE
California	06	San Francisco	075

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	X PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	X GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 AGENCY

REGIONAL HEADQUARTERS: *(If applicable)*
National Park Service Western Region Office

STREET & NUMBER: 450 Golden Gate Avenue Box 36063

CITY, TOWN: San Francisco — VICINITY OF — STATE: California

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: San Francisco City Hall, County Recorder's Office

STREET & NUMBER: Civic Center, between Polk and Van Ness

CITY, TOWN: San Francisco — STATE: California

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: Historic American Engineering Record

DATE: Recording is in progress April 1975 — X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS: Library of Congress

CITY, TOWN: Washington — STATE: D.C.

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
X EXCELLENT	__DETERIORATED	X UNALTERED	X ORIGINAL SITE
__GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

This building is located on the east side of Black Point on a corner of the Fort Mason Military Reservation at the foot (northern end) of Van Ness Avenue at the edge of San Francisco Bay, adjacent to the municipal Aquatic Park Pier. It was erected on bedrock on a site leveled to accommodate the structure. In addition to the main building there are a high smokestack, some underground fuel oil storage tanks, and a couple of large above-ground water storage tanks.

The main building is a simple rectangle built of steel and reinforced concrete in Mission Revival style architecture. The east side presents its public face, and the north end carries its entrance. On the north, three large windows match a series of four similar windows on the east. These and a skylight which extends nearly the full length of the building are sources of natural light, along with three small fan-lights high on the south wall. The scale is large: each window is at least 12 feet wide, and from sill to arched head about 20 feet high. These windows are divided into thirds both vertically and horizontally, but not into equal parts. The units thus formed are further divided into even smaller parts. On the east side of the building, high on the wall, there are small narrow windows near the corners. Both have little wrought iron balconies supported on decorative metal brackets. Directly below and at the first floor level there are three small windows. The north end has blind windows set high on the wall at the corners and beneath at first floor level is a single window under each. The main door into the building is located here on the north side. This door was set into and is a part of the first arched window opening. Here the window was interrupted at mid-point by a shallow projection with the door occurring below that. The door is in four parts and all may be opened to allow for removal or installation of large equipment.

The large arched windows are the chief decorative feature of the building, along with a Spanish-style roof projection supported by a series of paired metal brackets directly above the windows. This roof surface is finished with Spanish tiles, and its soffit and fascia are copper weathered to a green shade. The Spanish roof may best be called an architectural element. It is composed of paired brackets for support, each at a triglyph complete with gattae, the drop-like truncated cone shapes. Both devices relate to the Doric Order. Spaces between triglyphs carry a row of modified dentals. The brackets are exceedingly handsome. Each was fabricated of flat bar steel, about three or four inches wide. The bottom surface is shaped and each bracket is enriched with two openwork scrolls. This shallow roof ends well above and just past the last arched window. Here the architect used one bracket placed flat against the building surface as a finishing device. The soffit corners are decorated.

A shaped mission-style parapet screens a simple built-up ridged roof and the large skylight. The south and west faces of the building are utilitarian, with little decorative architectural relief. A tall smokestack located on the west side of the structure is free-standing on its own foundation. Today it is a simple concrete cylinder, although at one time it had a decorative collar near the top, and is thus altered from its original appearance.

The finish surface of the main structure is stucco painted a light yellow or cream color. The base of the building is defined by a horizontal band of heavy moulding at sill height about five feet above grade.

Inside, one corner of the room has a small separate office and a narrow stair which leads above it to an employee locker room. Another corner is a maintenance area for the building, with tool racks and workbench. The walls are of reinforced concrete, and concrete pilasters on the north and south end walls support metal trusses. An overhead crane system, the roof trusses and trim in general are all painted dark green, while walls

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are a cream color, nearly white. Much of the machinery is painted a rich milk-chocolate brown. The floor surface is thought to be anti-magnetic red composition flooring, scored. There are large areas of the floor of metal plate, and others with open mesh grills for drainage. The building, both exterior and interior, is beautifully maintained, and gives every evidence of having been throughout its life.

The main interior space of the building is filled with the station's machinery. On the south wall, where both fresh water for the boilers and fuel oil for the fireboxes is introduced are two Cochrane Feedwater Heaters built by the Harrison Safety Boiler Works of Philadelphia, Pennsylvania. These are in the middle of the south wall. Just to the west of them, along the wall, are three boiler water feed pumps, 12+9+24, and north of these out in the bay are two similar fuel oil pumps with air banks and fuel oil heaters, all of these pumps manufactured by the George E. Dow Pumping Engine Co. of San Francisco. The pumps were, respectively, builder's numbers 8540, 8539, 8541, 8543 and 8542, in sequence of the numbers assigned to the three water and two fuel pumps.

These pumps fed water and fuel oil to six patented Stirling Boilers built by the Babcock and Wilcox Company at their Barberton Works in Barberton, Ohio. Each boiler had 341 3¼-inch tubes and was 42 inches in diameter, made of open hearth steel under Contract 1780-S in 1912. Each boiler had two fireboxes, three steam drums and one mud drum, and they are Class M Number 17 type. They were built to operate at 200 pounds per square inch pressure, but in the mid-1960s the state boiler inspector ordered them cut back ten per cent to a maximum operating pressure of 180 lbs. due to their age.

Steam from the boilers was fed through cream-colored overhead pipes to four main pumps driven by Curtis Steam Turbines which had a horsepower rating of 750 and a speed of 1,800 revolutions per minute, operating at 150 pounds pressure. These were non-condensing pumps. These turbines, in order of their assigned numbers north to south, carried builder's numbers 5579, 5574, 5573 and 5577. Each carried 12 patent dates, ranging from May 15, 1894 to May 25, 1909, and were marked by the builder as "licensed to be used for all purposes except as a prime mover for marine and aerial craft." All were manufactured by the General Electric Company of Schenectady, New York.

These steam turbines each drove a pump with a capacity of 2,700 gallons per minute at a pressure of 300 pounds per square inch operating at 1,800 revolutions per minute. These pumps were built by the Byron Jackson Iron Works, Inc., of San Francisco, under patents dated Nov. 11, 1900, January 29, 1901, and June 2, 1903, others pending.

To supply electrical power both for the plant and for Fort Mason, along the east side (the pumps being aligned north to south down the center, and the boilers being backed up along the west wall) but some distance out from the wall, are three steam turbine-driven generators, powered by Curtis steam turbines, having builder's numbers according to their numerical sequence north to south of 7922, 7842, and 7887. These were condensing turbines, and their generators produced a capacity of 100 kilowatts each at a speed of 3,600 revolutions per minute powered by steam at 150 pounds per square inch pressure. Each of these turbines was manufactured under eighteen patents ranging from May 15, 1894 to June 8, 1909, licensed with limitations like those of the pump turbines, and built by General Electric Company at Schenectady, New York.

Attached to the various machinery and equipment is a variety of generally brass-

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encased gauges and meters and thermometers. The brass-encased thermometers were made by Hohmann & Maurer Manufacturing Company of Rochester, New York. Many of the brass-encased pressure gauges were supplied by Charles C. Moore & Co., Engineers, of San Francisco, and were "Crosby Gages" supplied by the Crosby Steam Gauge and Valve Company under patents dated December 23, 1873, August 28, 1906 and September 8, 1906. These carried builder's numbers, north to south in sequence, of 64081, 640069, 640070, 640077, 640071, 640076, 640068. The plant has at least one 4½ inch brass-encased steam gauge built by the La France Fire Engine Company of Elmira, New York. To measure the volume of water pumped, the plan is equipped with two 24-inch Venturi Meters, which measure in thousands of gallons per minute. These, also brass encased, were manufactured by the Builder's Iron Foundry of Providence, Rhode Island. They had a diameter of 24 inches and a 13-inch throat. They were shipped in June 1912; the north meter has Tube Number 2560, and the south meter was No. 2559. Attached to these were Type M indicator recorders, instrument no. 347 on the north line, 346 on the south. These carried the following patent data: Clemens Herschel, Oct. 17, 1888; Connet & Jackson, Nov. 20, 1894; F.N. Connet, June 16, 1908, others pending. The generator turbines each had pressure gauges manufactured by the Ashcroft Manufacturing Company of New York under Patent 630049.

Along the east wall is a large electrical switchboard made of imported gray Italian marble about 1½ inches thick, on which are mounted various vintage General Electric switches, meters, and other appurtenances.

The plant is basically as built in 1912, and as of the date of this form, operational. It will soon be altered, however. The city plans to modernize it by removing the four pump turbines and replacing them with diesel engines, thereafter encasing pumps and engines with metal compartments to contain the noise. The boilers will be abandoned and left in place as museum pieces, but the overhead steam pipe lines will be removed. The generators and generator turbines will be removed. One of the pump turbines will be retained and set aside as a museum piece. The electrical switchboard will be left in place as a museum piece, its function replaced by a more modern switchboard. The smokestack, already altered from its original appearance, will be demolished. The subterranean fuel tanks will be excavated and rebuilt in place, and the ground above them restored with plant cover after completion of the work.

The building itself, and the function it serves, will remain unchanged, but the manner in which it serves that function will be changed by a change in power from steam power to diesel.

Class VI Land: ½ acre (part of Fort Mason Historic District already, but nominated separately because of entirely different significance than that of Fort Mason)

Recommended Level of Treatment: Preservation

Estimated Cost of Treatment: $00.0

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Ownership: The building is owned by the City of San Francisco (Fire Department) and the land on which it stands is a part of Fort Mason formerly under the jurisdiction of the U.S. Army but at present under the jurisdiction of the National Park Service (Golden Gate National Recreation Area). The act of Congress approved June 17, 1910, by which the City obtained permission to building this pumping station on federal land, reads:

> Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the consent of the United States is hereby given to the city of San Francisco, a municipal corporation existing under the laws of the State of California, to locate, construct, maintain, and operate a pumping station with accessory equipment upon the property of the United States at Fort Mason, in the State of California, upon the approval of the Secretary of War as to the location of the works and the design and character of the construction and under such terms, conditions, and regulations as may from time to time be prescribed by him regarding the use of the reservation for this purpose and the operation and maintenance of the plant.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	X COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	X ENGINEERING	__MUSIC	__THEATER
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES 1912 to the present BUILDER/ARCHITECT Marsden Manson/Caldwell & Co.

STATEMENT OF SIGNIFICANCE

Pumping Station Number 2 is of local historical significance in the categories of Engineering and Community Planning. It represents innovative planning and innovative design of an "earthquake-proof" fire fighting system for San Francisco which is auxiliary to the domestic water supply system. While the entire system is unquestionably of local historical significance in the above categories, the greatest part of it consists of underground piping, hydrants, cisterns, reservoirs, fireboats, another pumping station and other facilities throughout the city on city land. This nomination addresses only that portion of the system located on Federal land, specifically Pumping Station No. 2. This station, and the whole system, represent an outstanding achievement in engineering and community planning in San Francisco's history.

The above statement of significance is based upon the following historical data, which must address the entire system in order to define the role of Pumping Station No. 2.

On the morning of April 18, 1906, a major earthquake destroyed many buildings in San Francisco, but more important, caused numerous fires which ultimately merged into one vast city-destroying conflagration. Movement of earth during the quake, and falling buildings toppled by the earthquake, caused about 300 breaks in the city water mains as well as over 23,200 broken building service connections. Thus there were over 23,500 leaks in the city's combined domestic/fire-fighting water supply. The earthquake also cracked and drained many of the cisterns and reservoirs. Consequently, because of the earthquake there was no water available in many areas of the city with which to fight the fires.

As a result, on January 28, 1908, the San Francisco Board of Supervisors authorized a study, undertaken by Assistant City Engineer H.D.H. Connick and Consulting Engineer T.W. Ransom, to devise some sort of water supply that could prevent the 1906 situation from recurring in a future earthquake of equivalent magnitude. The Connick/Ransom study recommended a special auxiliary water system for fire-fighting use only, totally separate from the domestic water supply system normally used for fire-fighting, and designed to be as "earthquake-proof" as the engineers could make it. On July 1, 1908, a bond issue of $5,200,000 was voted to finance construction of such a system covering 6700 acres in the northeastern part of San Francisco which constituted the major "downtown" commercial and industrial districts of the city and the area destroyed by the 1906 fire.

The system consisted of a special all-cast-iron pipe line connected only to the sources of supply and to hydrants, laid as much as possible in solid land and on streets unaffected by the 1906 earthquake, with bell and spigot joints in solid ground and double spigot joints connected by sleeves in unstable or filled land, all joints being leaded for malleability, and all joints secured by wrought-iron bolts. The system was designed in two major divisions, one largely on the reclaimed fill land south of Market Street, the other largely on the higher land in the "downtown" hills. There were to be five gate

9 MAJOR BIBLIOGRAPHICAL REFERENCES

A.J. Cleary, "Auxiliary Water Supply for the Fire Protection of San Francisco," Engineering Record, Vol. 68, No. 4 (July 26, 1913), pp. 107-109.
"San Francisco's Auxiliary Water-Supply for Fire Protection, Engineering News, Vol. 73, No. 7 (February 18, 1915), pp. 290-297.
Fred M. Hyde, "San Francisco's Auxiliary System", Fire and Water Engineering, Vol. LXVI, No. 10 (September 3, 1919), pp. 497-499, 503.
(see continuation sheet)

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 1

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	10	550 550	4184 450
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

The boundary along the west side is a line parallel to the west (southwest) wall of the building but forty feet away; the north and east boundaries are the curb of the street which leads into Van Ness Avenue on the south and to the piers on the north; the south boundary is the north line of the stairway which climbs the cliff to Fort Mason, extended eastward to meet the street curb. This land is already a part of the Fort Mason Historic District on the National Register, under different significance than this building.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
Gordon Chappell, Regional Historian — April 10, 1975

ORGANIZATION — DATE
National Park Service, Western Region Office — (415) 556-4165

STREET & NUMBER — TELEPHONE
450 Golden Gate Avenue Box 36063

CITY OR TOWN — STATE
San Francisco — California (94102)

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES X NO ___ NONE ___ JUN 10 1975

Herbert Rhodes
STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 30 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is: ___ National ___ State X Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE Deputy Assistant Secretary DATE AUG 19 1975

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE 8/12/76

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE 5-11-76

KEEPER OF THE NATIONAL REGISTER

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valves which could close off the segments of the pipeline which unavoidable had to be laid through unstable ground (which generally was ground reclaimed by filling from the Bay). Normally, this high-pressure auxiliary water supply system would be supplied with water from the Twin Peaks Reservoir located at an elevation of 755 feet and containing about 10,500,000 gallons, the Jones Street Tank, located at an elevation of 329 feet and containing 750,000 gallons, and the Ashbury Tank, located at an elevation of 490 feet and containing 500,000 gallons, for a total of 11,750,000 gallons. Additionally, the system could be fed from two suction connections in the Golden Gate Park lakes, which contained 20,000,000 gallons, and from municipal swimming pools and 137 storage cisterns of varying capacities which carried a total of 8,600,000 gallons.

As an additional emergency source of supply, if all of these fresh-water sources proved inadequate, failed, or were sucked dry in an emergency, there were to be two "earthquake-proof" pumping stations on or near the shore of San Francisco Bay which could pump salt water from the Bay into the auxiliary pipeline system, using virtually the whole Pacific Ocean as their ultimate reservoir, although limited somewhat by the availability of fuel oil and fresh water for the boilers which powered the turbine-driven pumps.

Finally, one or more fireboats stationed on the waterfront could not only fight waterfront fires using the salt water of the Bay, but could be connected to the high-pressure pipeline system to serve as an additional pumping plant.

Due to the corrosive effects of salt water on the cast iron pipes, water was to be drawn from the Bay only in an emergency, as the system would then have to be extensively flushed out with fresh water for about six days.

Each of the two pumping plants was designed to maintain steam pressure in at least one battery of two boilers on a 24-hour-a-day basis perpetually during the lifetime of the plant, and with a few special exceptions this has been the practice from completion of the system in 1913 to the present (1975).

The first contract for cast iron pipe for the system was awarded in March, 1909. Pumping Station No. 1 was built on the western corner of the intersection at 2nd and Townsend Streets about two city blocks from the edge of the Bay. It housed eight Babcock and Wilcox boilers, and the turbines, pumps, and a generator, in a Mission-style reinforced concrete and steel building on bedrock foundation equipped with steel fire doors and shutters or fire curtains. It could pump at full capacity 12,000 gallons per minute at a pressure of 300 pounds per square inch.

Pumping Station No. 2, the subject of this nomination form, was designed by employees of the city under the direction of City Engineer Marsden Manson and built by Caldwell & Company. It was erected principally in 1912 and all of its component machinery manufactured that year, and it went into service with the rest of the system in 1913. It is located at the foot of Van Ness Avenue at the northeast corner of Fort Mason Military Reservation on the shore of San Francisco Bay. It was placed on U.S. Army land because that particular location offered solid bedrock foundation which, although the whole bedrock might shift some, would not likely fracture or shift during an earthquake as much as less stable ground. At that time, Fort Mason was not

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supplied with electricity, the commercial system not extending that far northwest in the city by 1912. Consequently the Army, eager to obtain a supply of electricity to replace its gas lights, made it a condition of granting the city permission to build the pumping station on Army land that the plant include electrical generators to supply all of the electrical power needed by Fort Mason. Consequently, Pumping Station No. 2 was designed both as a steam powered pumping plant and as a steam powered electrical generating plant, using three comparatively small generators. The plant supplied electricity to Fort Mason until 1942, when the demand for power occasioned by World War II exceeded the plant's capacity, and commercial power finally was introduced into Fort Mason. Since that time, the generators at Pumping Station No. 2 have served only as a standby power source for Fort Mason.

In fighting a fire in the city, the fire department will draw normally on whichever hydrant is more conveniently located, a hydrant connected to the domestic supply or a larger hydrant of the high-pressure auxiliary system. If the two are equally convenient, both may be used. The high-pressure system has one immediate advantage for the fireman: the reservoirs which feed fresh water into the high-pressure system by gravity are located at sufficient elevation in the city that the water can be fed from high-pressure hydrants directly into the hoses used to fight the fire, whereas water from the low-pressure domestic system must first be fed through a pumper truck which boosts its pressure. The cisterns actually constitute an additional backup consisting of many small fresh-water reservoirs located throughout the city which can be drawn on directly by pumper trucks should both the low pressure and high pressure systems fail.

From 1913 to the present, Pumping Station No. 2 has, like Station No. 1, generally had two of its six boilers constantly under steam on a 24-hour a day basis in case of emergency, and it requires only about 30 to 35 minutes for the plant to be fully operational and ready to pump salt water.

In 1934 the city drew up plans for an extension of the high-pressure pipe system and sold a $2,000,000 issue of High Pressure Bonds to finance the construction. Consequently in 1935 the system was extended from its initial coverage of about 9.5 square miles to 9,920 acres or about 15.5 square miles, although pipeline coverage in the areas newly reached was not as dense as in the downtown areas originally covered. The extensions were in the Mission, Marina, Pacific Heights, and Richmond Districts and in the corridor between Golden Gate Park and the Twin Peaks.

Although planned as an emergency system to serve in case of natural disaster, and built before the possibility of aerial saturation bombing of cities in wartime was envisioned, the existence of the high-pressure auxiliary water supply system was a great comfort to San Franciscans during the threat of bombing by the Japanese during World War II.

A significant impact of the auxiliary high pressure water supply system on the city has been experienced in property insurance rates. By 1935, the existence of this system had contributed to reducing the basic dwelling rate from about $1.20 per $100 of insured value for a three year period to $0.60. A more precise measurement, the National Board of Fire Underwriters would reduce fire insurance rates for proper-

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ties within three city blocks of a high pressure line from five to fifteen per cent of the insurance premium. Recently the city considered phasing out Pumping Plant No. 2, but the appalling increase in insurance premiums which would have resulted prevented this action.

The pumping plants are designed so that Pumping Station No. 1 could operate for full capacity for 192 hours (eight days around the clock) without outside supplies, while Pumping Station No. 2 was limited to 48 hours (two days around the clock). To operate longer than these periods, each station would require resupply of fuel oil and fresh water with which to maintain operation of the boilers. (The major part of the 1906 earthquake-associated fire occurred in a three day period).

Each station draws salt water from San Francisco Bay through a tunnel six feet in diameter lined with reinforced concrete whose mouth is below the lowest low tide level in the Bay. Each station is connected with the high pressure pipeline system by two separate pipes, each laid along a different route so that if disaster should incapacitate one it might not affect the other, and each feed pipe is capable of handling the entire input of a pumping station.

The only time the San Francisco Fire Department neared the need to use salt water from the Bay was during the San Francisco Warehouse fire of April 28, 1966 at 625 Third Street (Third and Brannan Streets, practically next door to Pumping Station No. 1 at Second and Townsend). The first alarm was at 6:04 p.m., and the firemen drew on Jones Street Pressure in the high-pressure system as well as on the domestic low pressure system. By 9:31 p.m. they were forced to call in Ashbury Pressure and at 10:13 they were forced to use Twin Peaks Pressure. At 10:57 p.m., immediately after an immense stock of bonded liquor on the third floor of the building had exploded into flame, third and fourth (general) alarms were issued and at 11:15 the chief engineer of Pumping Station No. 1 was directed to prepare to operate. He reported the station fully operational at 11:50, 35 minutes later. At 8:15 a.m. the following day the first alarm of a second major warehouse fire two and a half blocks away at 444 Townsend Street was turned in, followed by a second alarm at 8:17 and a third at 8:18. At 11:55 that morning a six inch water department supply line from Summit Reservoir to West Bay was opened. Much of the fire in the first warehouse was behind brick walls and steel doors, and although controlled or contained in nine hours, was not out for five days. At 8 a.m. on the third day, April 30, water in the main Twin Peaks Reservoir had dropped to a low point of 4,805,086 gallons from 10,690,126 at the beginning of the fire. Had it dropped much lower, salt water from the bay would have had to be used in order to maintain some reservoir pressure in case of other fires in the city. Pumping Station No. 2, the subject of this nomination, was not directly affected.

Further extensions and relocations of the system during the late 1960s led to modernizing the original piping and construction specifications and standards. In 1975, the city replaced the steam boilers and turbines which drive the pumps with diesel-engines in Pumping Station No. 1, and is preparing to do the same in Pumping Station No. 2.

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"The San Francisco Auxiliary Water Supply System for Fire Protection," The U.S. Piper,
Charles R. Boden, "San Francisco's Cisterns," California Historical Quarterly, Vol. 15, No. 4 (December, 1936), pp. 310-323.