

88 TH YEAR

PACIFIC
NORTHWEST
SECTION

OF

THE AMERICAN
WATER WORKS
ASSOCIATION

1927-2015

SEATTLE
WATER
DEPARTMENT

1890
TO
1997

SEATTLE WATER DEPARTMENT HISTORY

MARY MC WILLIAMS 1954

CHAPTER I

Early Water Systems in Seattle . . .	
Yesler 1854 - 1882	
Union 1891	. . .
Coppin 1899	
Maggs 1899 - 1950	
Spring Hill 1881 - 1890	
Kinnear 1888 - 1952	

CHAPTER II

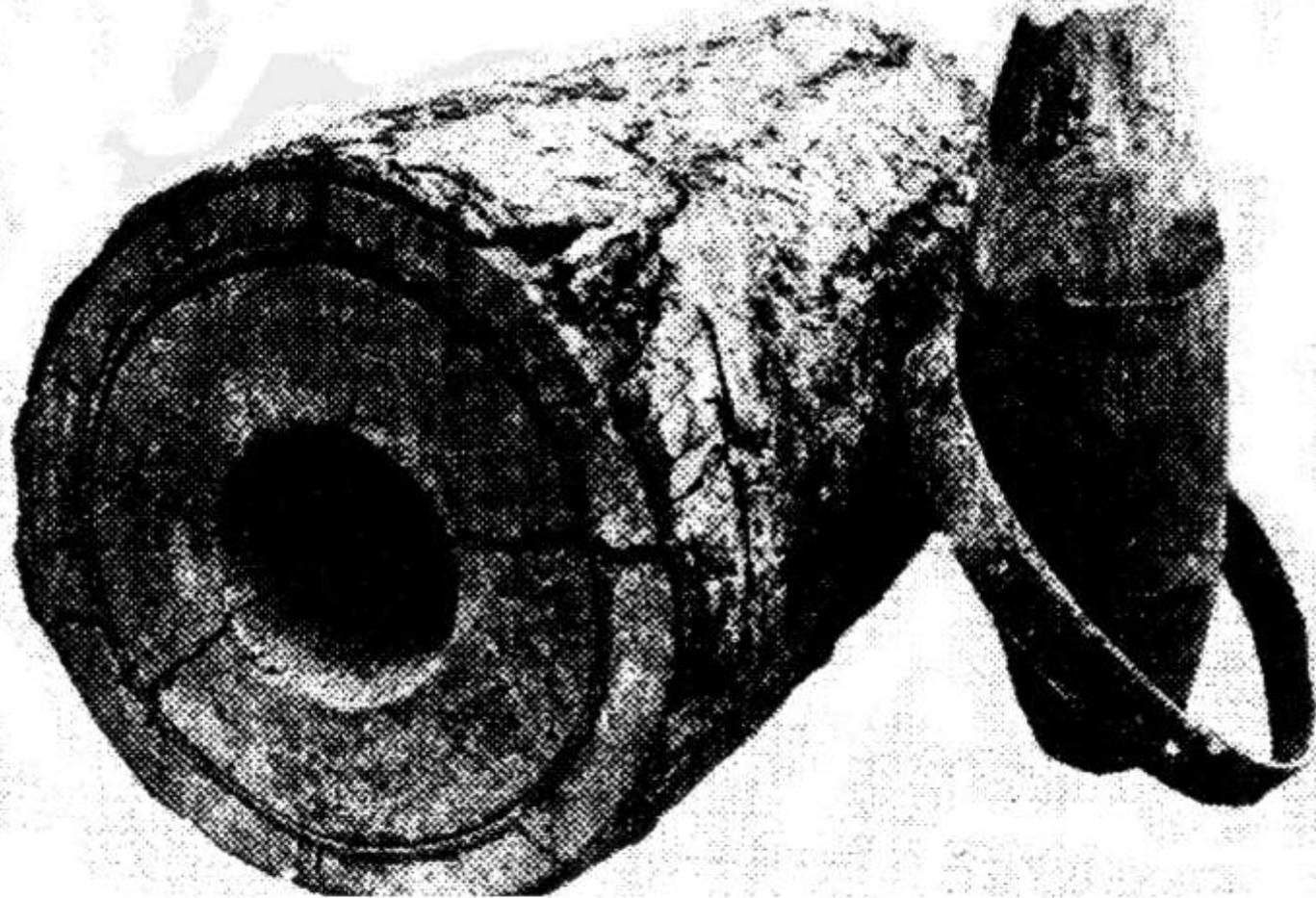
Early Contracts with Communities . . .	
Fort Lawton 1898 - 1950	
Ballard 1902 - 1938	. . .
Renton 1899 - 1950	
Georgetown 1903 - 1952	
Columbia 1902 - 1907	
Rainier Valley 1907 - 1908	
West Seattle 1907 - 1952	
Fairmount 1910 - 1912	

HENRY YESLER'S MILL & FIRST WATER SYSTEM



YESLER FLUMES

YESLER MILL



BORED WOOD LOG SECTION OF
HENRY YESLER'S 2ND WATER SYSTEM
UNCOVERED DURING CONSTRUCTION OF I-5
THROUGH DOWNTOWN SEATTLE

Seattle Water Department: Water Quality & Public Health Legacy

- 1865 (incorporation) to 1888.
- 1887-8: Cedar River & sewer system decisions.
- 1909 and 1911: Two emergencies that reinforced the importance of water quality – and reliability.
- 1944: Abel Wolman – a national expert perspective.
- Summary: Key elements in water quality and public health protection throughout Seattle's history.

1865 to about 1888

- Seattle (incorporated in 1865) was small and could be supplied by local springs and Lk Union. By 1886 supply from Lk Washington was added.
- On Sept 24, 1888, Mayor Moran sent a letter to the Council proposing the development of the “pure” Cedar River.
- Up until then, drinking water quality – source protection, sampling, treating – were not major concerns.
- And a disaster intervened to ensure passage of the proposal by voters.....



Start of Great Seattle Fire

SEATTLE'S GREAT FIRE

The overturning of a glue pot in Victor Clairmont's wood-working shop under the rear of the building at the southwest corner of First Avenue and Madison Street, was the cause of the fire.

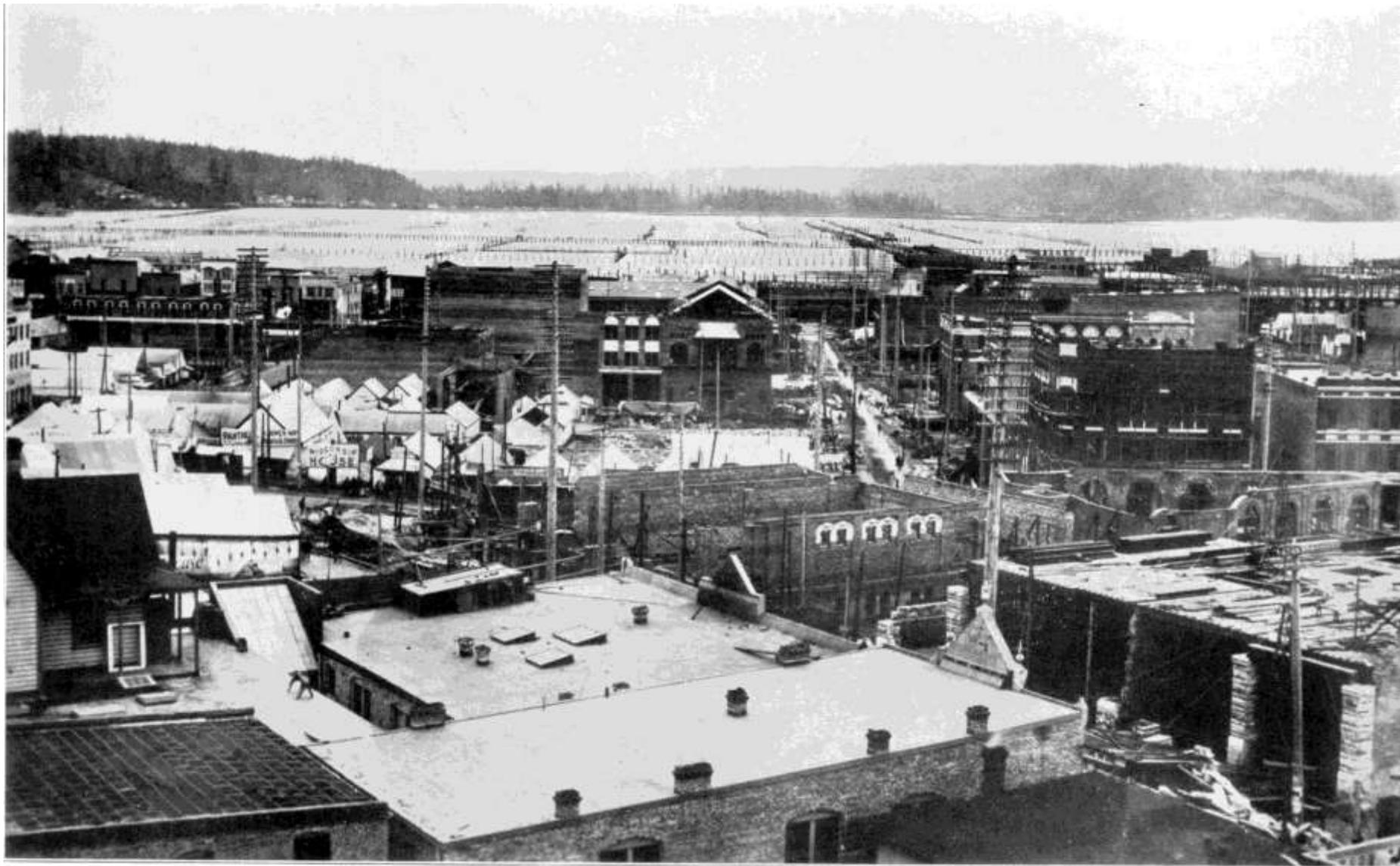
In about 7 hours the entire business section was reduced to ruins.

June 6th, 1889

...the June 6, 1889 Great Seattle Fire.

On July 8, the Cedar River vote passed overwhelmingly.





After the fire Looking South

The Cedar River: Benefits of Quality – in addition to reliability, and fireflow

“The objective of the Seattle Water Department from its beginnings with the Cedar River system, had been to prevent contamination at the source of supply rather than to let it get in and then set up expensive purification procedures to remove it.”

- Seattle Water Department History, M. McWilliams, p 135

Sewers were being added
in parallel with Cedar River development –
a dual improvement to public health.



Lake Union sewer overflow

- Two emergencies reinforced the
- importance of water quality and system reliability

1909 Alaska Yukon Exhibition

A typhoid outbreak tied to contaminated water:
over 500 sickened and 61 died.



1911 Flooding that destroyed the Cedar River Pipeline Crossing

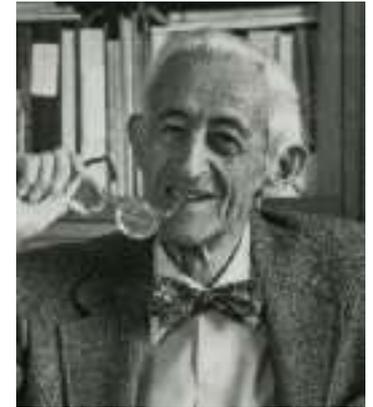
This resulted in empty watermains, a boil water advisory, a variety of temporary water supplies and the first use of chlorine – chloride of lime



1944 Dr. Abel Wolman Commission

Key Recommendations and Actions

(Dr. Wolman (1892-1989) was a professor at Johns Hopkins University and a pioneer of modern sanitary engineering)



- Close the watershed or evolve to a virgin forest.
- Improve chlorination and bacti & chemical sampling.
- Clarify Water Supt. responsibilities for control of water quality (public health dept.had lead).
- Employ a full time sanitary engineer.
- Consider filtration (Estimated Capital Cost: \$3.6M)

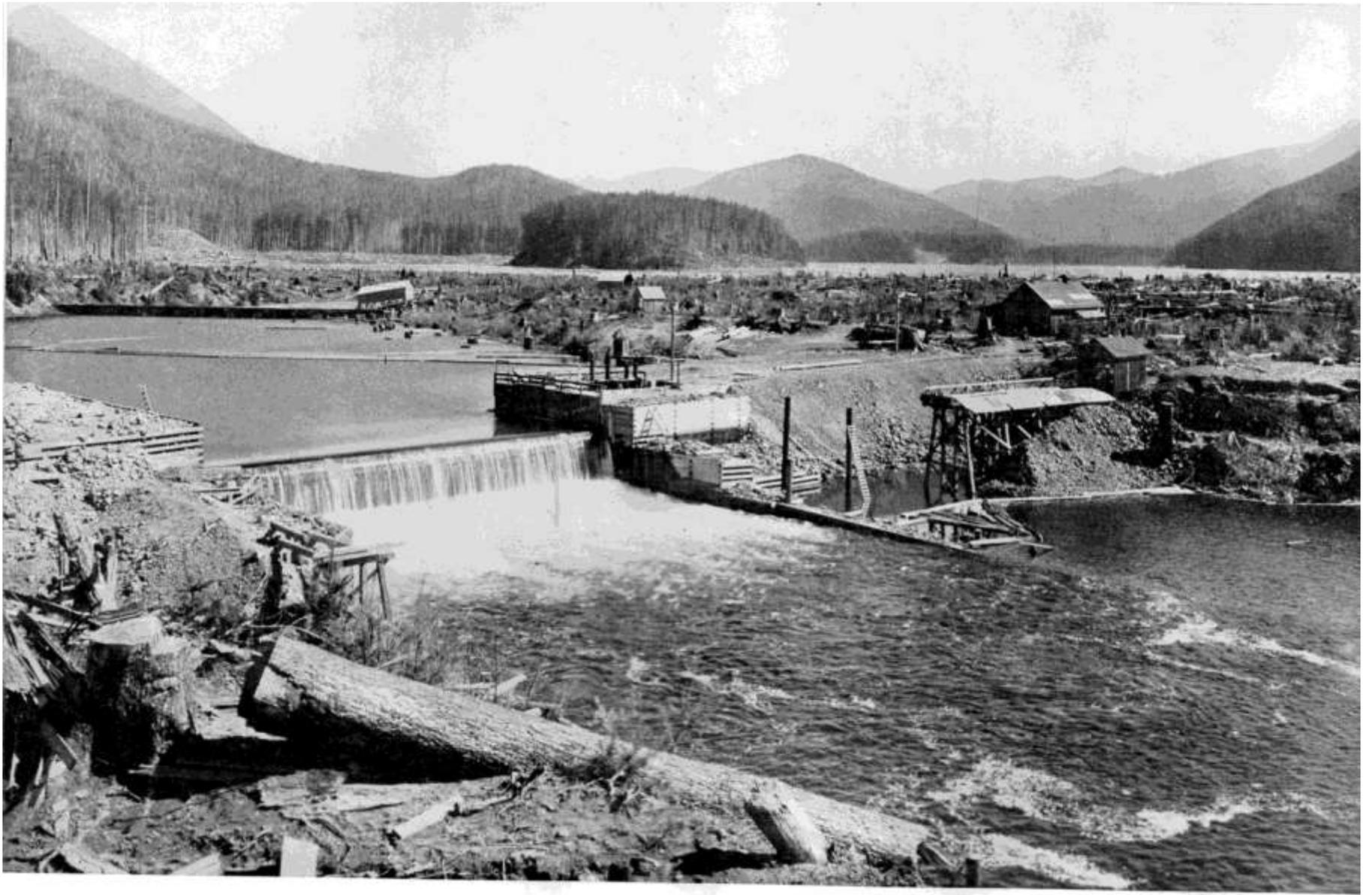
Improvements Since the Mid 1940s

- Both watersheds are 100% in public ownership with no commercial logging.
- Multi-barrier disinfection – ozone and/or UV and chlorination.
- There has been a focused responsibility for water quality and treatment in the utility since E.J Allen, who was the first sanitary engineer.
- Seattle has the largest WQ Lab in the state.
- We added filtration on the Tolt in 2001 but may never have to filter the Cedar supply.

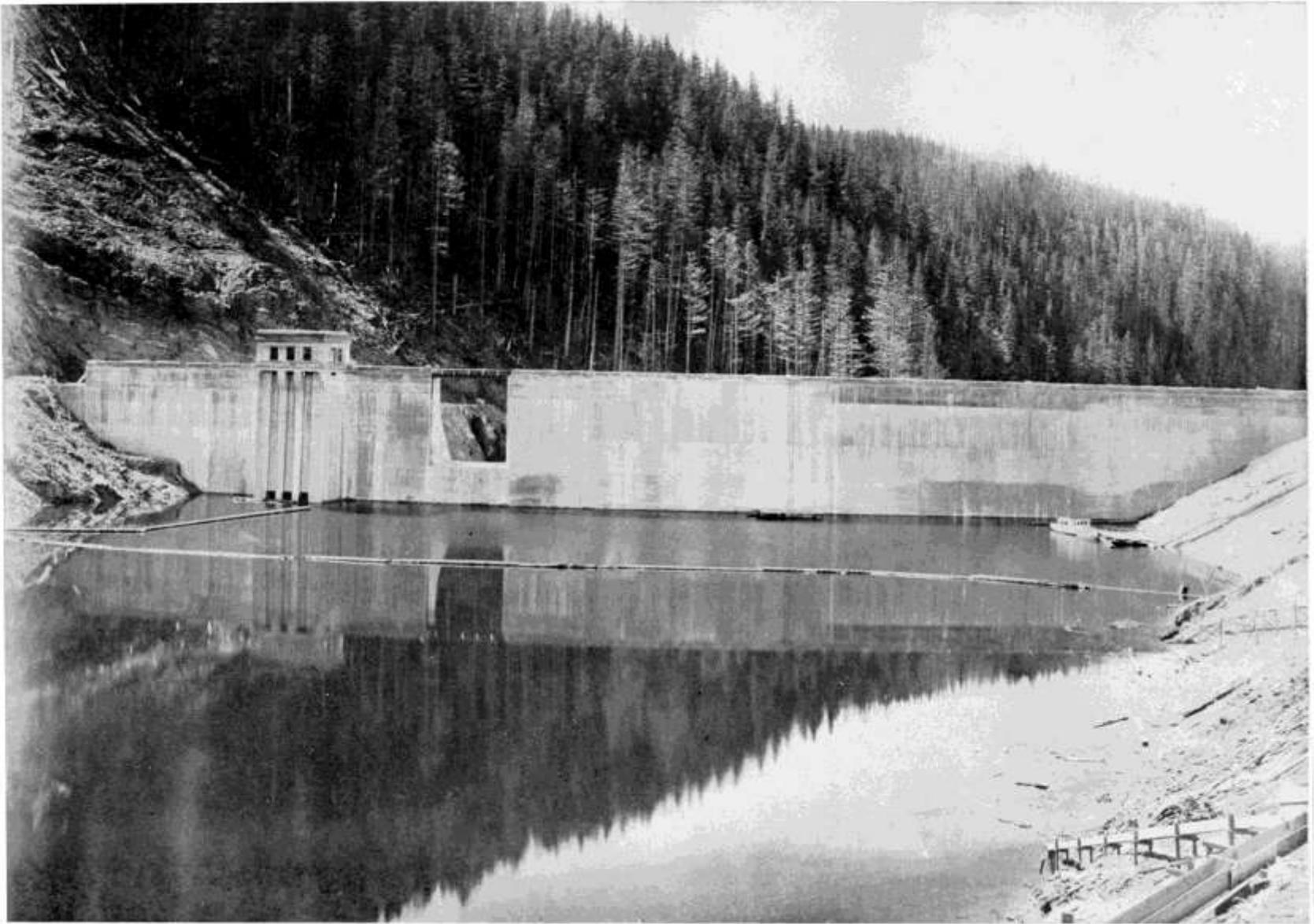
.....and all of the open reservoirs are now covered.

Key elements in Seattle's Water Quality & Public Health Protection History

- Leadership – Mayor Moran, R. H. Thomson, Dr. Abel Wolman and others.
 - Partnerships – With WaDOH, Wholesale Customers and others.
 - Source protection – ‘Start with an excellent raw product’ – a Vision of and achieving 100% public ownership of watersheds.
 - Treatment – There can be less treatment– and it can be less expensive – when there is excellent source protection.
 - Monitoring – Understanding water quality source to tap allows better decision making and communicating with your public.
- and sometimes fortunate timing (A “Great” Fire; a typhoid outbreak, a flood...)

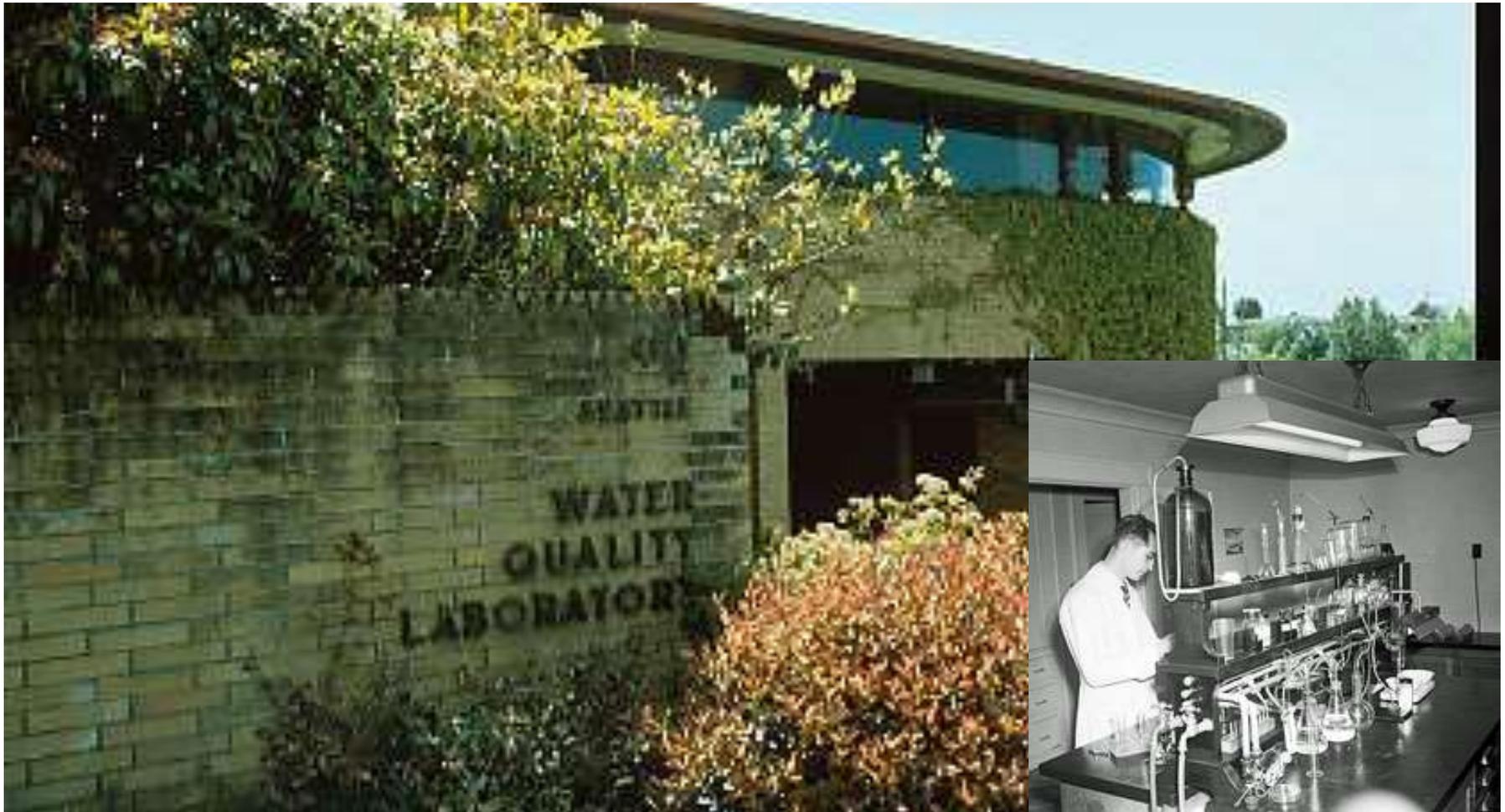


Outlet of Cedar Lake before 1916



New Municipal Dam before 1916

Water Quality Monitoring



Early Water Treatment Equipment





Lake Youngs (Swan Lake before 1916)



Upright Pipeline Header and Square Bottom Gate Valves
At Lake Youngs Outlet (1926)



66" Steel Cedar River Pipeline at 18th Ave East & Prospect Street
Under construction in 1923



9 Fifty Thousand Gallon Wood Tanks
Constructed between 1910 & 1919
40th Ave. SW & W Charlestown
Replaced in 1927
by a one Million Gallon Steel Standpipe

Supply & 1963 Pressure Zones

The four pipelines coming into the city are of different sizes, one being 42- to 66-inch steel, one being 66-inch steel, one being 42- to 60-inch combination steel and wood, and one 72" concrete. The capacity of these four lines is 220 million gallons per day.

From the control works near Lake Youngs, the four transmission mains run 16 miles and vent freely into the city reservoirs.

The surface elevation of Lake Youngs is 488 feet above sea level. The three reservoirs into which the transmission mains vent by gravity on the hydraulic gradient, have their surface elevations at 420 feet above sea level. The reservoirs at this elevation are controlling, in that substantially all incoming water flows into them. They also form the storage for the intermediate zone.

The city is divided into three general zones of distribution:

Low zone up to 225 feet elevation;

Intermediate zone between the 225- and 325-foot elevation;

High zone all above the 325-foot elevation.

The low and intermediate zones are supplied by gravity, the high zone by pumping.

1963 Supply & Distribution System Payment Methods

From each of the 9 reservoirs, 6 tanks and 9 standpipes, which have a combined capacity of 360 million gallons, large size mains run and are connected to and form part of, the distribution system.

The distribution system consists in the main of cast iron pipe, with some small amount of steel and wood pipe. There is, however, a considerable footage in the aggregate of small steel pipe, servicing small areas where the demand does not warrant the installation of cast iron pipe.

The distribution system, consisting of 1,33 $\frac{1}{4}$ miles of pipe, is paid for largely by property owners, up to and including pipes of 8-inch diameter in the residence areas, and up to 20-inch in the business and industrial areas.

Feeder mains and trunk mains larger in size are paid for by the department. There are 12,808 hydrants connected to the distribution system.

HIGHLIGHTS
SEATTLE WATER DEPARTMENT

- June 6, 1889 - Seattle business district burned. Water supply from Lake Washington inadequate to control fire.
- July 8, 1889 - Election carried overwhelmingly to bring gravity supply from Cedar River.
- Jan. 26, 1890- City purchased private water company.
- Feb., 1901- First water to City from Cedar River. Entire supply to City and adjacent communities from Cedar River to 1963.
- 1931 - A.D. - City established policy to serve areas outside of City Limits.
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- 1933 - 30" - 24" & 20" supply main to King Co. line at N. 205th & Fremont Ave.
- 1948 - 48" in 24th Ave. So. to S. 160th St.
- 1950 - 42" & 30" to N. 125th & Aurora via Haller Lake.
- 1952 - 16" & 24" to Kenmore.
- 1954 - 60" in So. 160th to 24th Ave. So.
- 1957 - 36" to serve East Side of Lake Washington & Mercer Isle.
- 1960 - Above extended to Kirkland.
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- 1963 - 24" in Des Moines Way from S. 160th to S. 210th.
- 1963 - 60" Tolt River Supply 90 million gals. per day cap.
- 1964 - 48" extended from Kirkland to Tolt River Supply

1997 Seattle Water Department becomes major part of
Seattle Public Utilities

THE END
Dave & Eric
Thank You
for
Coming