

Water Treatment Plant

Historical Timeline



1874

The citizens of the the Village of Evanston, with a population of 3500, started to build a communal water system. The system consisted of a 16 inch intake pipe extending 1200 feet into the lake, a small Holly steam engine, capable of pumping 2 million gallons per day, a hand fired boiler, and a few miles of cast iron water main. The original cost of the steam engine and boiler was \$24,000. During the first year of operation the plant pumped 95 million gallons of water.



1888

A second Holly engine was installed having a capacity of 5 mgd. The village officials had originally intended to remove the first engine when the new one was installed, but fortunately changed their minds because, within a few years, the rapidly growing population was using full capacity from both engines.

1892 the Village of south Evanston was annexed and became a water user.



1897

The pumping station was enlarged, and a third Holly engine having a capacity of 12 mgd was installed at a cost of \$35,000.



1914

A 12 mgd filter plant was built on the present site. It was the first water treatment plant to be constructed along the shores of Lake Michigan and resulted in a rapid decline in the typhoid rate in the city causing an influx of families into Evanston because of its superior water supply. It had six rapid sand filters rated at 2 mgd and, as part of the filter plant construction, two steam turbine driven low lift (raw water) pumps were installed.

1911

The feeding of hypochlorite of lime was initiated as a disinfectant.

1921

Chlorine was introduced to control typhoid fever, cholera, and dysentery.



1924

The filter capacity was doubled by adding six more 2 mgd rapid sand filters bringing the total capacity to 24 mgd.

1926

The first electrically driven high lift pump was installed for stand-by duty.

1932

A 1.5 million gallon elevated tank was erected in southwest Evanston to improve the distribution system.

1934

Wilmette built its own water plant. A 5 million gallon underground reservoir was added to the Evanston system to provide storage for emergencies.

1935

A one million gallon elevated tank was added to the distribution system in northwest Evanston.

1944

Skokie requested a water supply and a 24 inch feeder main was extended to the Skokie village limits on Church Street and Evanston began supplying water by direct pressure.

1947

Evanston was the first city in Illinois to fluoridate its



1948

The rapid growth in Evanston and Skokie made expansion of the entire plant imperative and construction of the new facilities was started and financed by a \$2,890,000 Water Revenue Bond issue. The expansion included a new all-electric high lift pumping station, new mixing and settling basins, a chemical building and laboratory, dry chemical feeders, and the addition of six 4 mgd filters, bringing the total filter capacity to 48 mgd.



1950

The end of an era - the old steam plant was shut-down, giving way to electrically driven pumps with two gasoline driven stand-by engines.



1956

The population growth continued and it was necessary to construct a new 48-inch intake, two suction wells, a new low lift pumping station, and additional feeder mains, including a new 36" feeder main to supply Skokie. A 100 KW 480 volt generator was added to the plant for emergency service in the event of a power failure.

1961 and 1962

Two 25 mgd high lift pumps were added.

1963-1964

Two additional mixing and settling basins, a flash mix basin, and liquid chemical feed facilities were constructed. Another 24 million gallon per day filter addition brought the total filter capacity to a rating of 72 mgd. Two washwater pumps with all automatic filter washes and a new control room for the filter plant were also added. Another 36" feeder main to Skokie was added to supply the increasing demand.

1967

Anthracite capping was added to the twelve 4 mgd filters thereby greatly increasing the filter runs.

1968

Traveling intake screens were installed in the north and south suction wells to remove algae and prevent trash from entering the low lift pumps. A new 25 mgd low lift dual drive gasoline-electric pump was installed.



1971

A new 20 mgd high lift pump powered by a 700 hp natural gas engine was installed. The necessity to add additional non-electric power units, as the water system expanded, became apparent to meet emergency

1973

Evanston, in compliance with anti-pollution standards, eliminated all water plant waste discharge to Lake Michigan. A one million gallon detention tank with three pumps was constructed which received the wash water and then mixed it with the incoming raw water so that the waste water would be recycled through the system. A sludge pump and basin sludge drain which discharged to a large sanitary sewer was also installed .

1975

A new 54" intake and suction well were constructed bringing the total intake capacity to 150 mgd.

1980

Evanston signed a 40-year contract to provide water to the Northwest Water Commission, consisting of the municipalities of Arlington Heights, Palatine, Buffalo Grove, and Wheeling, beginning in early 1984.

1980-1981

Embarked on a 13.2 million dollar Capital Improvement Program to update the Water Department. Phase I included: 25,427' of new water main at various locations, ranging in size from 6" to 24"; construction of a new material building and pumping station at the southwest water storage tank; installation of three new boilers, two 50 hp and one 20 hp; installation of 5 KV switchgear and motor starting equipment for low lift (raw water) and high lift (finished water) pumps; updating slow mix equipment in settling basins #1 and #2; installation of two new 30 mgd low lift pumps; installation of a new 500 KW emergency generator.

1982-1983

Phase II of the Capital Improvement Program included: installation of new instrumentation; construction of a new chemical building and chemical feed system; upgrading of six 1914 and six 1924 filters to 3 mgd rate; replacing the 1.5 mg elevated storage tank in southwest Evanston with a 5 mg standpipe.

1985

Phase III of the Capital Improvement Program included: replacement of the 1 mg elevated storage tank in northwest Evanston with a 7.5 mg standpipe; installation of a new 22 mgd high lift

1988

Installed new sludge pumps, samplers, and an 8" basin sludge force main to the Metropolitan Water Reclamation District interceptor sewer. Installed two additional double unit electronic chlorine cylinder scales.

1985-1986

Evanston began supplying water to the Northwest Water Commission. Two 48" diameter suction pipes from the 5 mg reservoir to the east end of the high lift suction tunnels were installed. Dehumidifier equipment was installed in the west filter pipe gallery. Electro-pneumatic filter controls were replaced with electronic microprocessor units.



1990-1991

A new 15 mgd high lift pump was installed to replace a 6 mgd and an 8 mgd pump. Two 48" diameter isolation valves were added to the west high lift suction lines. Modified west filter effluent piping and increased 16" diameter inlet piping and valves to 24" diameter to increase flow through the filters. Updated slow mix equipment in basins #3 and #4 including drive units. The Commonwealth Edison electrical sub-station was upgraded and new 4KV switchgear was installed in the pumping station to meet the increased electrical demand.

1992

Chlorine feed system was installed into the intakes for Zebra Mussel control. Also began feeding a blended polyphosphate to prevent the leaching of lead from home plumbing.

1994

Constructed a new chlorine storage and handling building.

1997-1999

Gasoline engines are replaced with natural gas to eliminate need for underground storage tank and improve

2004

Installed a chlorine scrubber to provide protection to surrounding residents in the event of a chlorine leak at the water plant.

2009

Installed an innovative heating system on one of the water plant's three Lake Michigan water intakes to prevent the formation of anchor ice, which can reduce the capacity or completely block the intakes in the winter. The zebra mussel control system was also replaced on this intake at the same time.

2012

Rehabilitated the 1964 Filter Addition (Filters 19-24) with new media, underdrains, and backwash equipment. The 1963 Filter Building structure and roof were also rehabilitated to address structural deterioration in the (then) nearly 50-year-old plant addition.

2002

Completed installation of automatic meter reading system (AMR), which enabled remote reading of water meters throughout the City and drastically reduced the amount of time and number staff members needed to read meters for water billing.

2008

Expanded and modernized the water plant administrative offices and expanded the filter plant's on site equipment repair shop.

2010

Installed a 25 kW solar energy facility on the high lift pumping station roof.

2013

- Modified electrical distribution equipment and settings on protective devices throughout the water treatment plant to reduce arc flash hazards.
- Conducted comprehensive maintenance and evaluation of electrical Switchgears.

2014

- Replaced five roofs: Boiler Room, Low Lift Pumping Station, Chemical Building, and 1948 Filter Building (2 roofs).
- Replaced master flow meter on the 48" diameter feeder main to Evanston and Skokie.

2015

- Performed Improvements to the 48" raw water intake.
- Replaced chlorination equipment.

2016

- Replaced four roofs: 1964 Filter Building Clerestory, 1948 Filter Building Clerestory, Filter Cross Corridor & Chlorine Building.

2017

- Completed multiple improvements to address reliability and redundancy issues at the water treatment plant.

2018

- Completed exterior door improvements.
- Replaced alum feed pumps.
- Installed new flushing water system in Settling Basin 1.

2019

- Installed Plant Service Water Supply Booster Pump.
- Installed West Filter Rate Controller with Master Meter.
- Installed flushing water supply to Settling Basin 2.
- Completed Milburn gate automation.

2020

- Replaced the City's 5 million gallon finished water clearwell to address structural deterioration. The project included a new 10 MGD high lift pump.

