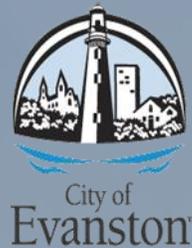


2017 Annual Report



Evanston Public Works Agency Water Production Bureau Water and Sewer Utilities



Committed to serving the community for 143 years

2017 Executive Summary

Evanston Public Works Agency manages **Water** and **Sewer** operations for the City of Evanston. The Public Works Agency also coordinates with ComEd, Nicor, AT&T, and other private utilities on behalf of Evanston residents and businesses to help resolve service issues and improvement needs.



WATER UTILITY

421,258 Residents supplied
51,744 Businesses supplied
in Evanston and 6 other communities



SEWER UTILITY

Responsible for operation and maintenance of:
Combined, Relief, and Storm sewer systems



BUDGET

\$29.4 million - Water Fund

\$14.6 million - Sewer Fund

57.25 full-time equivalents (FTE) staff

General Information



14,821 Million Gallons – Total Water Pumped in 2017
58 Million Gallons – Maximum Pumpage in One Day
June 13th – Day When the Maximum Pumpage occurred



545 Fire Hydrants Replaced/Repaired



0.9 Miles of Water Main Installed/Replaced/Rehabilitated

74 Water Main Valves Installed/Replaced/Rehabilitated

2.8 Miles of Sewer Main Installed/Replaced/Rehabilitated

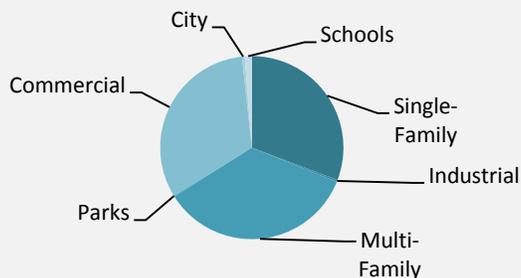
116 Sewer Structures Installed/Replaced/Repaired

13.4 Miles of Sewer Main Inspected

48.3 Miles of Sewer Main Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



11.4 Million kWh of Electric Power Used

126,267 Therms of Natural Gas Used

\$63.77 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)



CROSS CONNECTION CONTROL

4,364 Backflow Prevention Devices Certified in 2017

Programs and Initiatives

Water Quality – Lead and Copper Tested in Homes and Drinking Fountains

- Sampled water from 30 homes with lead service lines and analyzed them for lead and copper content. All results were below the action EPA levels (15 parts per billion or ppb).
- Fourteen additional voluntary samples were taken for lead only. All results were below the action level.
- Sampled water from 59 park drinking fountains. Eleven fountains tested above 15 ppb and were shut off. Results were used to form and implement a strategy for addressing high lead levels and a database was created for all park drinking fountains. Eight fountains with the highest lead levels were remediated and retested to confirm the resulting lead levels were below the action levels.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

156 miles of water main were surveyed, 3 water service leaks and 2 water main breaks were found. This resulted in 9.9 million gallons/year of water savings.

Exchanged and Replaced 20-Year-Old Meters with New Meters

Exchanged and replaced over 5,000 old meters to obtain better resolution of the meter reading. A new customer portal, WaterSmart, was introduced which allows customers to monitor and receive alerts of their water usage. Customers can set their usage alerts to trigger between 1X and 5X of normal usage.

Plant Improvements

Reliability improvements completed to address reliability and redundancy issues at the Water Treatment Plant.



IMPROVEMENTS INCLUDED

- Rehabilitating shorewells
- Installing a high lift influent valve vault
- Installing additional electrical panels for the heated intakes
- Upgrading filter valves
- Installing additional phosphate feeds
- Installing settling basin influent conduit connections
- Upgrading the washwater detention basin flash water supply

Accomplishments and Goals

2017 MAJOR ACCOMPLISHMENTS

Implemented a Computerized Maintenance Management System (CMMS)

Manages long-term maintenance and replacement of critical plant equipment and structures.

Wholesale Water

Executed a water supply agreement with Morton Grove and Niles and continued ongoing negotiations with Lincolnwood.

Large Diameter Sewer Rehabilitation Project

Performed engineering design and secured State low-interest loan funding, scheduled for 2018.

2018 MAJOR GOALS AND INITIATIVES

Wholesale Water

Execute a water supply agreement with Lincolnwood.

Complete Phase 1 of the Citywide Water Meter Replacement Program

Replacement of 5,789 water meters, approximately 40% of the total water meters.

Complete Modifications to the South Standpipe Pump Station

Modifications to be done to motor controls, electrical system, and pump station building.

Complete Mulford Street Large Diameter Sewer Lining

Perform engineering design and secure State low-interest loan funding for a sewer rehabilitation project scheduled for 2018.

Table of Contents

Introduction

Public Works Agency Annual Accomplishments and Performance Measures	1
Water Treatment Plant Data	5
Water Treatment Schematic	6
Water Works Improvements	7
Service Area and Customers	11
Pumpage to Distribution	12
Water Revenues	13
Water Operating and Maintenance Expenses	14

Pumping

Monthly and Average Daily Pumpage	16
Annual Pumpage	17
Average Daily per Capita Consumption	18
Maximum Day and Peak Hour Pumpage	19
Maximum Pumpage and Demand Days	20
Energy Costs	21

Filtration

Chemical Treatment: Chemicals Used and Cost	24
Annual Chemical Costs	25
Filter Operations	26
Bacteriological Water Analysis	27
Taste & Odor, Turbidity, Temperature and Fluoride	28
Chlorine Residual	29
pH, Alkalinity and Hardness	30
Detected Substances: 2016 Water Quality Data	31
Non-Detected Contaminants: 2016 Water Quality Data	33
Lead and Copper Statement	35
Definitions and General Explanations for Use with Water Quality Data	36

Distribution

Fire Hydrants: System Data and Maintenance	38
Water Distribution System Valves: System Data and Maintenance	39
Water Mains: System Data and Maintenance	40
Water Services: System Data and Maintenance	41
Breakdown of In-House Maintenance Costs	41
Water Main Improvements	42
Leak Detection Program	43
Cross Connection Control	44

Metering

Advanced Metering Infrastructure (AMI) System	46
Transmitter Tower Locations	47
Water Meter Inventory	48
Water Rates for Evanston Customers	48
Water Customer Classes and Metered Usage	49
Water Usage Breakdown for Evanston Customers	50

Sewer

Sewer Revenues	52
Sewer Operating and Maintenance Expenses	53
Major Combined Sewer System	54
Major Relief Sewer System	55
Major Storm Sewer System	56
Sewer Mains: System Data and Maintenance	57
Length of Sewer Mains by Type and Diameter	58
Sewer Structures: System Data and Maintenance	59
Breakdown of In-House Maintenance Costs	60
Sewer Mains Rehabilitated (Lined)	61

Evanston Water and Sewer Utilities Annual Accomplishments and Performance Measures

Introduction

The Evanston Public Works Agency manages water and sewer operations for the City of Evanston. The Water Utility is responsible for operation and maintenance of the Water Treatment Plant, which supplies water to over 400,000 people and 50,000 businesses in Evanston and six other communities. The Water Utility also operates and maintains more than 155 miles of water mains, 2,000 valves, and 1,500 fire hydrants in the Evanston distribution system. This division also manages leak detection and cross connection control programs to minimize water loss and ensure the safety of the community's water supply.

The Sewer Utility is responsible for operation and maintenance of the sewer conveyance systems in Evanston, including a combined sewer system, a relief combined sewer system, and a storm sewer system. These systems are comprised of over 200 miles of sewer mains ranging in size from less than 6-inch diameter to 120-inch diameter, including over 5,500 manhole structures and over 9,000 drainage structures.

The Public Works Agency also coordinates with ComEd, Nicor, AT&T, and other private utilities on behalf of Evanston residents and businesses to help resolve service issues and improvement needs.

The Department's total FY 2017 budget was approximately \$44 million (\$29.4 million Water Fund and \$14.6 million Sewer Fund). Public Works Agency staff includes 57.25 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2015	2016	2017
Total Water Pumped (millions of gallons)	13,424	14,519	14,821
Fire Hydrants Repaired or Replaced	64	345	545
Water Main Valves Repaired or Replaced	71	56	61
Water Main Replaced or Rehabilitated (miles)	0.89	2.27	0.87
Large Diameter Sewer Rehabilitated (feet)	5,032	1,908	0
Small Diameter Sewer Rehabilitated (feet)	6,298	5,845	13,921
Sewer Mains Inspected (feet of pipe)	96,077	80,094	70,782
Sewer Mains Cleaned (feet of pipe)	150,406	225,966	254,962
Sewer Structures Repaired or Replaced	91	98	112

2017 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 400,000 customers in seven communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Major Water Treatment Facility Improvements

Assured the quality and reliability of the potable water supply by completing major water treatment plant improvements including chemical feed and treatment process reliability improvements, and initiation of finished water storage improvements to address structural deterioration the City's largest clearwell built in 1934.

Implemented a Maintenance Management System

Implemented a Computerized Maintenance Management System (CMMS) at the water treatment plant to more effectively manage long-term maintenance and replacement of critical treatment plant equipment and structures.

Water Supply Expansion Project

Continued to develop and implement a strategy to expand Evanston's wholesale water customer base, including executing a water supply agreement with Morton Grove and Niles and continuing ongoing negotiations with Lincolnwood.

Main Replacement and Improvement

Improved water distribution system reliability and reduced water loss by continuing the water main replacement and water main leak detection programs. Water main replacement was supplemented with water main lining where feasible, to improve upon our historical 1% annual water main renewal rate, and to survey the entire distribution system for leaks on an annual cycle.

Coordinated Efficient Project Funding

Coordinated capital improvement projects with the Street Resurfacing Program and with TIF District improvement projects to ensure cost-effective and efficient use of capital improvement funding.

Designed and Funded Large Diameter Sewer Rehabilitation

Performed engineering design and secured State low-interest loan funding for a large diameter sewer rehabilitation project scheduled for 2018.

Small Diameter Sewer Rehabilitation

Continued the annual small diameter sewer CIPP rehabilitation program at a rate of at least 1% of the combined sewer system rehabilitated per year.

Arterial Street Sewer Structure Rehabilitation

Continued the sewer structure rehabilitation program to address deterioration of sewer structures on arterial streets.

Coordination with Street Resurfacing Program

Continued to coordinate the inspection and repair of sewer mains and drainage structures in advance of the street resurfacing program.

Continue Best Management Practices for Sewer Mains

Continued preventative maintenance cleaning and inspection of sewer mains and drainage structures.

Combined and Storm Sewer Regulatory Inspections

Continued to perform inspection of combined and storm sewer outfalls in accordance with IEPA requirements.

Increase Storm Water Management Initiatives

Increased storm water management initiatives in compliance with requirements for National Pollution Discharge Elimination System (NPDES) permit and Municipal Separate Storm Sewer System (MS4) permit.

2018 Major Goals and Initiatives

Maintain a High Quality of Service

Be a leader in the public drinking water industry by providing high quality service to over 400,000 customers in seven communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Supply Expansion

Continue to develop and implement a strategy to expand Evanston's wholesale water customer base, including executing a water supply agreement with Lincolnwood.

Water Distribution and Expansion

Improve water distribution system reliability and reduce water loss by continuing the water main replacement and water main leak detection programs. Goals are to supplement water main replacement with water main lining where feasible, to improve upon our historical 1% annual water main renewal rate, and to survey the entire distribution system for leaks on an annual cycle.

Coordination for Efficient Project Funding

Coordinate capital improvement projects with the Street Resurfacing Program and with TIF District improvement projects to ensure cost-effective and efficient use of capital improvement funding.

Water Meter Replacement

Complete Phase 1 of the citywide Water Meter Replacement Program with the replacement of 5,789 water meters, approximately 40% of the total water meters.

Complete South Standpipe Modifications

Complete modifications to the South Standpipe Pump Station motor controls, electrical system and pump station building.

Complete Large Diameter Sewer Rehabilitation

Complete Mulford Street Large Diameter Sewer Lining awarded in 2017. Perform engineering design and secure State low-interest loan funding for the Greenleaf Street Large Diameter Sewer Rehabilitation project scheduled for 2018.

Continue Small Diameter Sewer Rehabilitation

Continue the annual small diameter sewer CIPP rehabilitation program at a rate of at least 1% (1.34 miles) of the combined, small diameter sewer system rehabilitated per year.

Continue the Sewer Structure Rehabilitation

Continue the sewer structure rehabilitation program to address deterioration of sewer structures on arterial streets.

Continue Coordination with Street Resurfacing Program

Continue to coordinate the inspection and repair of sewer mains and drainage structures in advance of the street resurfacing program.

Continue Preventative Measures for Sewer Mains

Continue preventative maintenance cleaning and inspection of sewer mains and drainage structures.

Combined and Storm Sewer Inspections

Continue to perform inspection of combined and storm sewer outfalls in accordance with IEPA requirements.

Increase Stormwater Management Initiatives

Increase stormwater management initiatives in compliance with requirements for National Pollution Discharge Elimination System (NPDES) permit and Municipal Separate Storm Sewer System (MS4) permit.

Water Treatment Plant Data

Intakes

36/42" – 5,946' long, 28' deep

48" – 5,300' long, 28' deep

54" – 5,340' long, 28' deep

Suction Wells

2 – 22' diameter x 74' deep with traveling screens

1 – 20' diameter x 52.5' deep

Low Lift Pumps

2 – 30 mgd, electric motor driven

3 – 15 mgd, dual drive, electric/natural gas

1 – 30 mgd, dual drive, electric/natural gas

Total capacity of 135 mgd

Emergency standby capacity of 75 mgd

Flash Mix Basin

14.75' x 14.75' x 31.58' deep

Single vertical shaft mixer

Counter-flow rotation

Application point for alum, chlorine, fluoride, polymer, and carbon

Rated capacity 108 mgd w/ partial bypass

Slow Mix/Settling Basins

Four double-deck basins with series flow

2 – 2.865 MG capacity, five 60' shafts per basin, 4 paddle wheel sections

2 – 4.3 MG capacity, eight 60' shafts per basin, 4 paddle wheel sections

Retention time at 108 mgd (flash mix capacity) is 3 hours and 11 minutes

Treated Water Elevated Storage

South – 5.0 MG, 640 Hartrey Avenue

North – 7.5 MG, 2536 Gross Point Road

Filters

Anthracite-capped rapid sand filters

12 – 3.19 mgd, 738 ft² each, surface loading rate of 3 gpm/ft^s

12 – 10.0 mgd, 1,391 ft² each, surface loading rate of 5 gpm/ft²

Total rated capacity of 134 mgd

Automatic surface and backwash system on all 24 filters

Treated Water Ground Storage

8 clearwells beneath filters – 4.4 MG total

1 clearwell beneath NU parking lot – 5.0 MG

Total Plant Storage – 9.4 MG

High Lift Pumps

1 – 15 mgd, electric motor driven

2 – 25 mgd, electric motor driven

1 – 10 mgd, dual drive, electric/natural gas

2 – 15 mgd, dual drive, electric/natural gas

1 – 22 mgd, dual drive, electric/natural gas

1 – 20 mgd, natural gas engine

Total capacity of 147 mgd

Emergency standby capacity of 82 mgd

Wash Water Pumps

2 – 20 mgd

2 – 10 mgd

Detention Tank

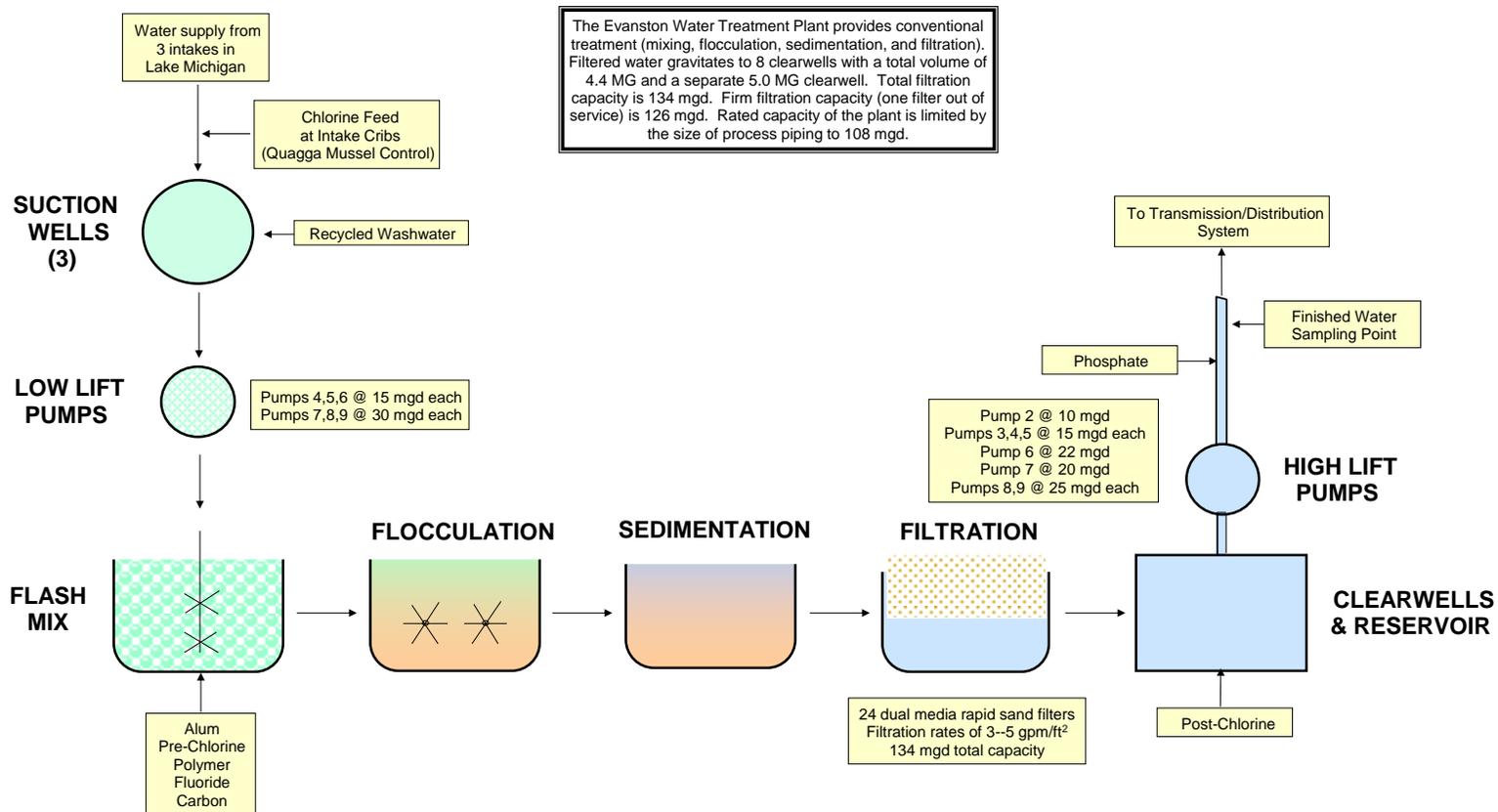
80' x 192' x 12' deep, divided in 2 sections

Total capacity of 1.1 MG

1 – submersible sludge pump at 700 gpm

Legend: MG = million gallons; mgd = million gallons per day; gpm = gallons per minute

Water Treatment Schematic



The Evanston Water Treatment Plant provides conventional treatment (mixing, flocculation, sedimentation, and filtration). Filtered water gravitates to 8 clearwells with a total volume of 4.4 MG and a separate 5.0 MG clearwell. Total filtration capacity is 134 mgd. Firm filtration capacity (one filter out of service) is 126 mgd. Rated capacity of the plant is limited by the size of process piping to 108 mgd.

Volume (MG)	0.109	2.384	13.516	1.730	9.560*
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Notes:
*based on 8.0' depth

Water Works Improvements (1874 to 2017)

- 1874** Evanston Community Water System established
- 1913** Constructed 12 mgd filter plant
- 1923** Expanded filter plant to 24 mgd
- 1934** Constructed 5.0 million gallon underground reservoir at plant site
- 1944** Contracted to supply water to Skokie
- 1949** Constructed high lift (finished water) pumping station
Expanded filter plant to 48 mgd
Constructed slow mix basins 1 and 2
- 1956** Constructed 48" intake and low lift (raw water) pump station
Constructed 36" feeder main to Skokie
- 1964** Expanded filter plant to 72 mgd
Constructed additional 36" feeder main to Skokie
Constructed slow mix basins 3 and 4
- 1971** Installed 20 mgd high lift pump and natural gas engine
- 1974** Constructed filter wash water detention basin, 1.1 MG capacity
- 1976** Constructed 54" intake, 5,340 feet in length
Extended 48" intake to 5,300 feet in length
- 1981** Constructed material storage building at south water tank yard
Installed 3 new boilers (2 – 50 HP and 1 – 20 HP)
Replaced 5 kV switchgear and motor starter equipment for low lift pumps
Upgraded slow mix equipment in basins 1 and 2
- 1982** Installed two 30 mgd low lift pumps
Replaced 5 kV motor starter center for high lift pumps
- 1983** Constructed new chemical building and chemical feed system
Installed a 500 kW emergency generator
Rehabilitated six 1914 and six 1924 filters to increase rate to 3 MGD per filter
- 1984** Constructed 5 MG standpipe with booster station to replace the 1.5 MG elevated tank in southwest Evanston

- 1985** Began selling water to Northwest Water Commission at the rate of 10 MGD
Installed dual drive 22 MGD high lift pump and new piping
Installed two 48" diameter pipes from reservoir to east side of high lift suction tunnel
Completed system automation which provided a microprocessor-based digital control system to perform control and supervisory functions
- 1986** Constructed a 7.5 MG standpipe with booster station to replace the 1.0 MG elevated tank in northwest Evanston
Began pumping to Northwest Water Commission reservoir in Des Plaines
- 1988** Installed two 700 gpm sludge pumps with automatic samplers in the settling basins along with 3,400 feet of 8" diameter sludge main from the Filtration Plant to the MWRD interceptor at Lincoln Street and Asbury Ave
- 1989** Completed filter control upgrade to microprocessors
- 1990** Turndown and extension of 48" raw water intake lines into North and South suction wells
Upgraded west filter influent valves from 16" to 24"
- 1991** Upgraded electrical substation and switchgear to 3,750 kVA
Upgraded west filter effluent piping
- 1992** Installed chlorine feed system to intakes for zebra/quagga mussel control
Installed a 15 MGD high lift pump to replace one 8 MGD pump and one 6 MGD pump
Installed two 48" diameter butterfly valves on suction piping from reservoir to high lift suction wells
Installed hydrofluosilicic acid tank and feed system in garage #6
Installed 60" diameter flash mix bypass pipe to influent duct of settling basins
Replaced slow mix equipment and flushing system in basins 3 and 4
Replaced 480 V filter plant switchgear
Installed blended phosphate system and initiated blended phosphate treatment for corrosion control
- 1994** Constructed new chemical storage and handling building
- 1995** Replaced Low Lift Pump #6 gasoline engine with natural gas engine
- 1996** Replaced 1949 filter building roof
Constructed loading dock on 1913 filter building
- 1997** Replaced High Lift Pump #2 gasoline with a natural gas engine
- 1998** Replaced Low Lift Pump #5 and #7 dual drive gasoline engines with natural gas fueled engines

- 2000** Installed individual effluent turbidimeters on all 24 filters
- 2001** Converted High Lift Pump #3 to dual drive
Replaced filter bottoms and rehabbed six filters in 1948 filter addition
- 2002** Completed installation of automatic fixed radio meter reading system
Replaced effluent settling basin sluice gates with rectangular butterfly valves
- 2003** Installed uninterruptible power supply to filtration and pumping equipment
- 2004** Constructed garages east of the settling basins
Constructed an access way to the chemical building from filtration division
Installed a scrubber
- 2005** Replaced Low Lift Pump #4 gasoline engine with natural gas engine
- 2006** Replaced Low Lift Pump #7
- 2008** Renovated administrative offices
Expanded filter shop area
- 2009** Implemented AQUAS (Harris) Utility Billing System
Installed anchor ice and zebra mussel control systems in 54" intake
- 2010** Installed a 25 kW solar energy facility on the high lift pump station roof
- 2012** Rehabilitated Filters 19-24 with new media, underdrains, and backwash equipment
Rehabilitated the 1963 filter building structure and roof
Replaced all windows in the high lift pump station
Replaced electrical switchgear in high lift pump station
- 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** Improvements to one of the water plant intakes, upgrade/replacement of the City's automatic meter reading and billing system, and chlorination equipment replacement.
- 2016** Completed standpipe painting and replaced four roofs (1964 Filter Building Clerestory, 1948 Filter Building Clerestory, Filter Cross Corridor & Chlorine Building).

2017 Water treatment plant reliability improvements completed to address reliability and redundancy issues at the water treatment plant. Improvements included rehabilitating shorewells, installing a high lift influent valve vault, installing additional electrical panels for the intake heaters, upgrading filter valves, installing a new phosphate feed system, installing settling basin influent conduit connections, and upgrading the yard piping that feeds the washwater detention basin clean out lines and shorewell screens.

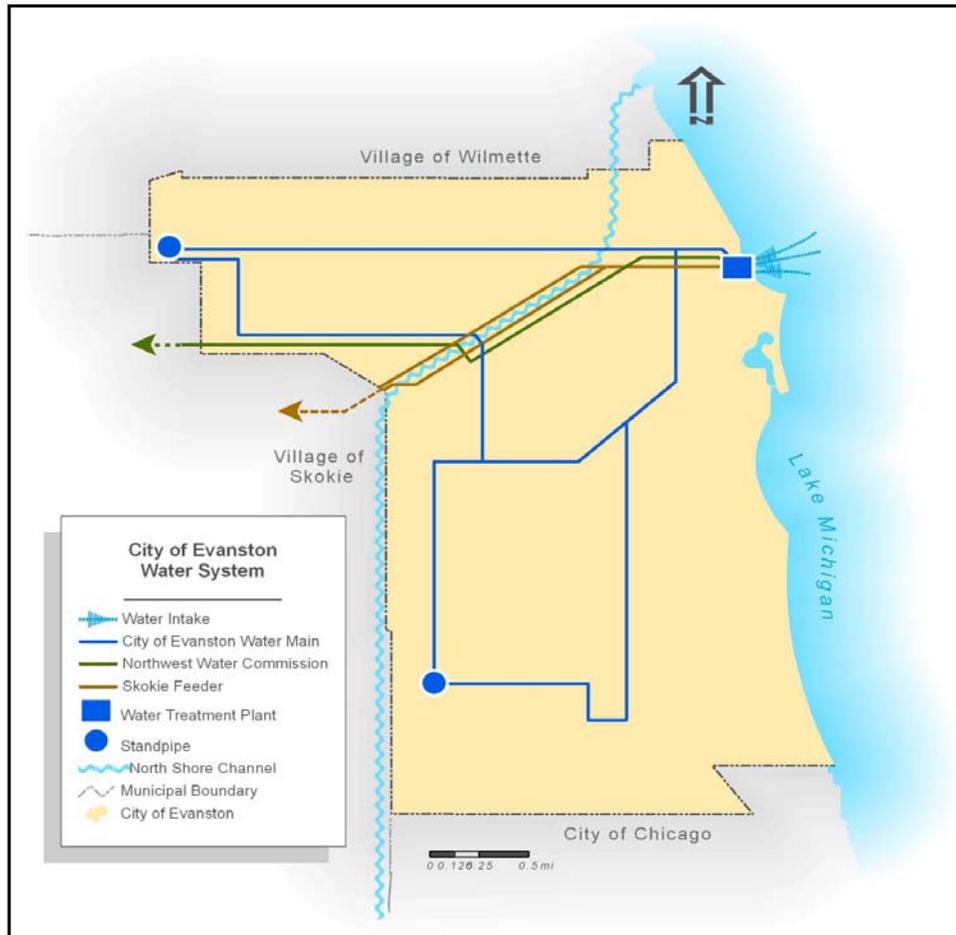
Notes: MG = million gallons
mgd = million gallons per day
HP = horsepower
kV = kilovolt
kW = kilowatt
kVA = kilovolt-ampere

Service Area & Customers

	Area (Square Miles)	2017 Persons*	2017 Businesses**
Evanston	7.8	74,895	8,459
Skokie	10	64,270	10,120
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	75,525	8,255
Buffalo Grove	9.5	41,346	5,266
Palatine	13.6	68,766	6,867
Wheeling	8.7	38,315	4,611
Des Plaines	14.4	58,141	8,166
Total Served	80.6	421,258	51,744

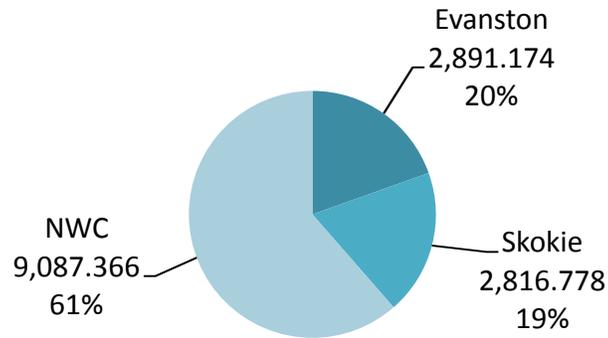
* U.S. Census Bureau, 2016 Estimate

** U.S. Census Bureau, 2012 Estimate



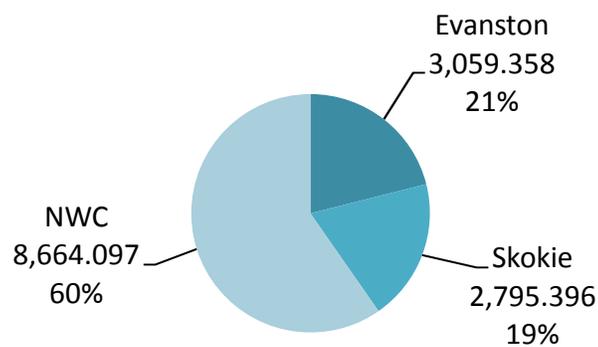
Pumpage to Distribution

2017 Pumpage to Distribution (MG)



2017 Total Pumpage: 14,821,364,000 gallons

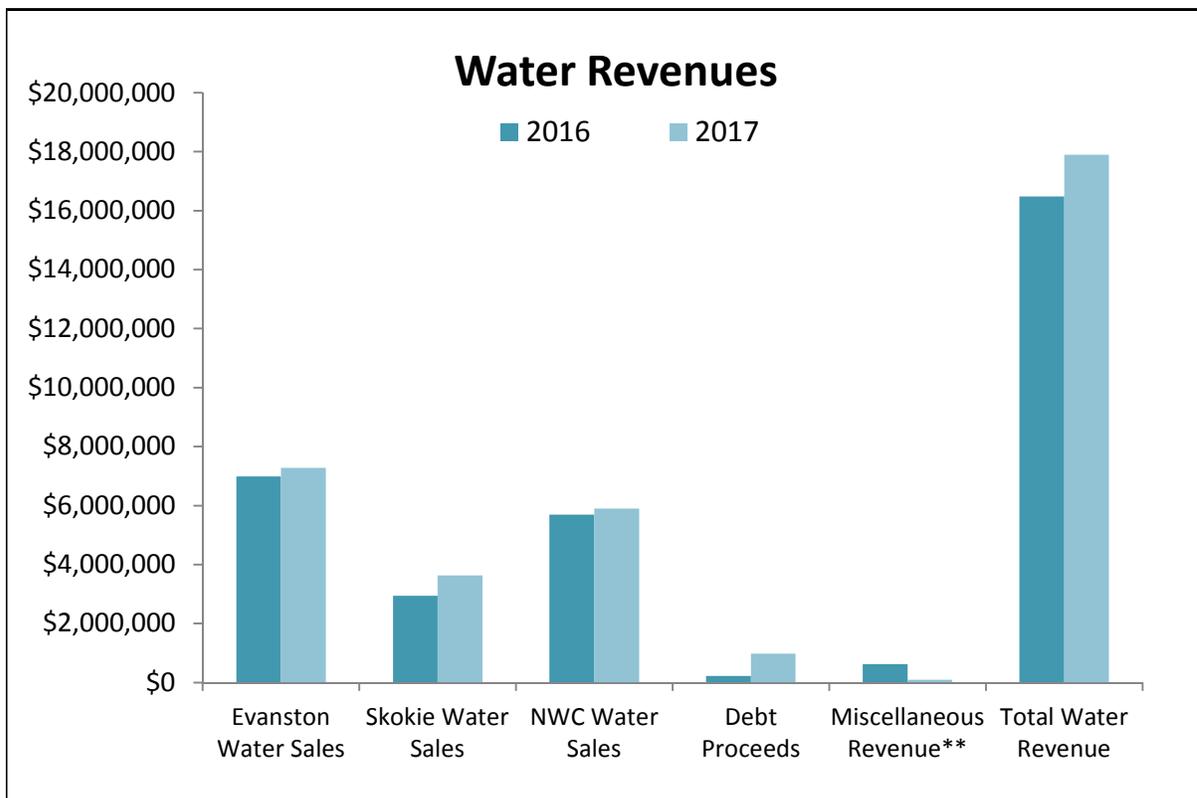
2016 Pumpage to Distribution (MG)



2016 Total Pumpage: 14,518,851,000 gallons

Water Revenues*

	2016	2017
Evanston Water Sales	\$6,987,878	\$7,280,260
Skokie Water Sales	\$2,941,912	\$3,635,940
NWC Water Sales	\$5,695,812	\$5,898,634
Debt Proceeds	\$230,000	\$980,000
Miscellaneous Revenue**	\$629,414	\$100,038
Total Water Revenue	\$16,485,016	\$17,894,872

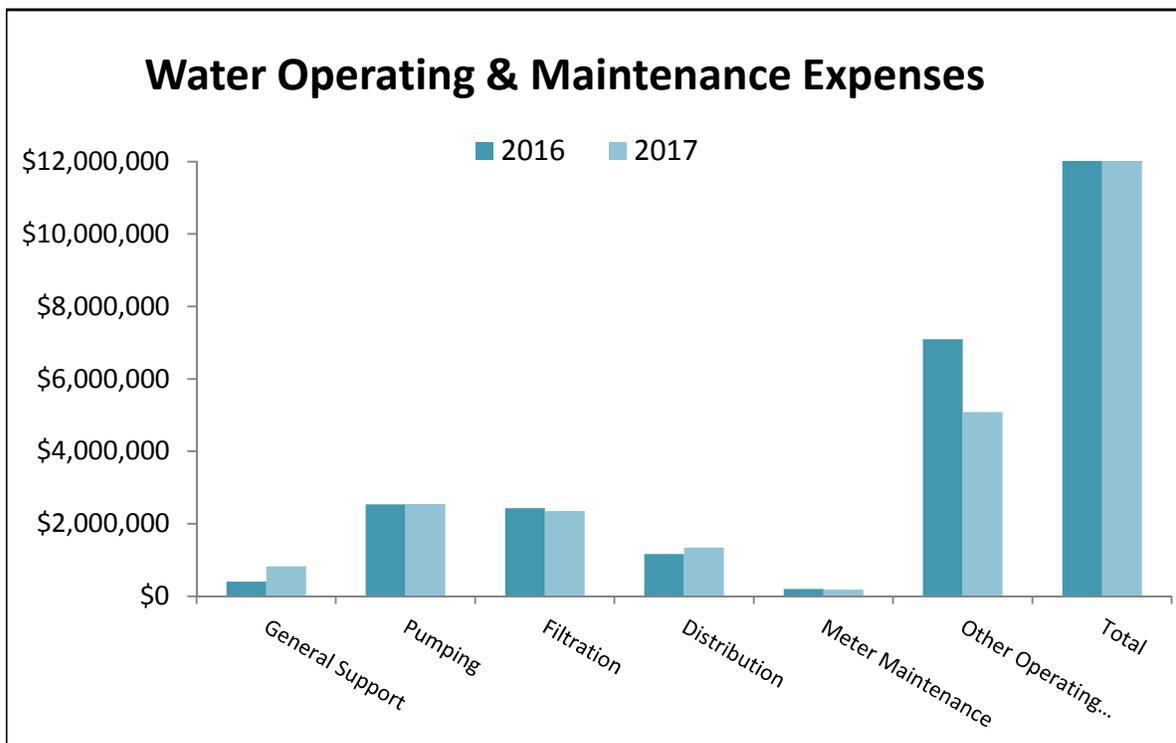


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <http://www.cityofevanston.org/transparency/budget-financial-reports/>.

** Miscellaneous Revenue includes cross connection control fees, investment earnings, property sales and rentals, fees, outside work, grants, development fees, phosphate sales, and merchandise sales.

Water Operating & Maintenance Expenses*

	2016	2017
General Support	\$397,716	\$823,317
Pumping	\$2,533,001	\$2,545,715
Filtration	\$2,427,538	\$2,354,333
Distribution	\$1,162,091	\$1,345,255
Meter Maintenance	\$203,818	\$181,466
Other Operating Expenses**	\$7,097,052	\$5,084,840
Total	\$13,821,215	\$12,334,926



* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <http://www.cityofevanston.org/transparency/budget-financial-reports/>.

**Other Operating Expenses include capital outlay, interfund transfers (general and insurance), and other operating expenses.

Pumping

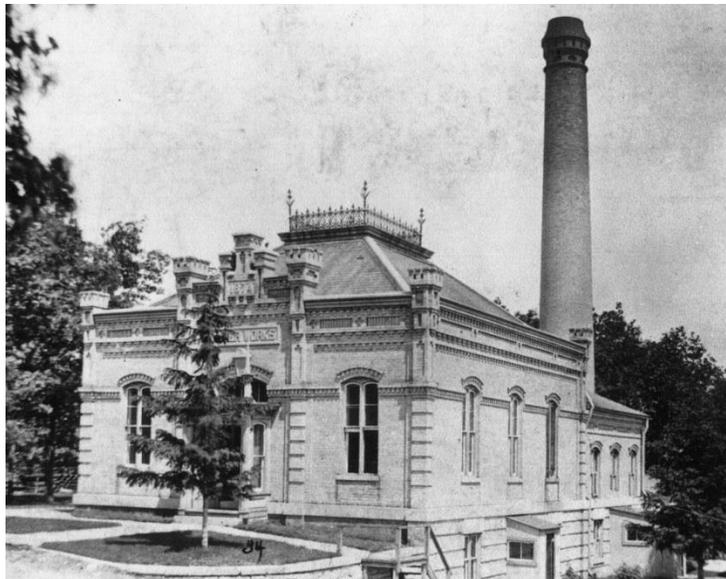
Evanston's Pumping Division manages the City's three Lake Michigan water supply intakes, pumping of raw water to the start of the water treatment process; pumping of treated water to retail customers in Evanston as well as wholesale customers; and operation and maintenance of Evanston's treated water storage facilities and remote water pumping stations. This division also monitors water storage tanks in the Village of Skokie, as well as controlling the rate of water supply to the Northwest Water Commission.



High Lift Pumping Station at the Evanston Water Treatment Plant

There is at least one pump operating at the Evanston Water Treatment Plant at all times, to ensure that a sufficient quantity of water is always available for public consumption and firefighting. There is always at least one water operator present at the Pumping Station to control water supply and pressure and respond to emergencies.

Evanston has been pumping drinking water from the site of the existing water treatment plant on Lincoln Street since 1874. The original "water works" consisted of a coal-fired steam engine and a single pump with a capacity of 2 million gallons per day. Construction of a pumping station to serve the entire City drastically improved Evanston's ability to fight fires and allowed the City to reliably deliver Lake Michigan water to homes and businesses on demand for the first time.



Evanston's original pumping station in 1874

2017 Monthly Pumpage (MG)

Month	Lake	Wash	Net	Finished	Pumpage To		
	Water Pumpage	Water Recycled	Raw Water Pumpage	Water Pumpage	Evanston	Skokie	N.W.C.
Jan-17	1,187.739	14.825	1,202.564	1,203.918	245.883	221.953	736.081
Feb-17	1,027.102	13.568	1,040.670	1,043.154	212.506	189.867	640.782
Mar-17	1,119.706	16.476	1,136.182	1,140.179	231.033	206.887	702.259
Apr-17	1,125.548	24.424	1,149.972	1,129.812	230.833	201.181	697.798
May-17	1,231.047	21.010	1,252.057	1,245.323	254.041	221.478	769.804
Jun-17	1,382.164	27.785	1,409.949	1,404.005	285.715	254.908	863.382
Jul-17	1,337.769	27.766	1,365.535	1,362.898	279.593	252.597	830.707
Aug-17	1,354.902	25.817	1,380.719	1,380.521	277.339	258.245	844.937
Sep-17	1,358.115	27.269	1,385.384	1,381.744	276.543	260.999	844.202
Oct-17	1,121.285	21.826	1,143.111	1,240.721	219.731	238.000	756.945
Nov-17	1,090.763	15.143	1,105.906	1,113.799	181.036	253.364	679.399
Dec-17	1,157.523	16.838	1,174.361	1,175.290	196.921	257.299	721.070
Total	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366

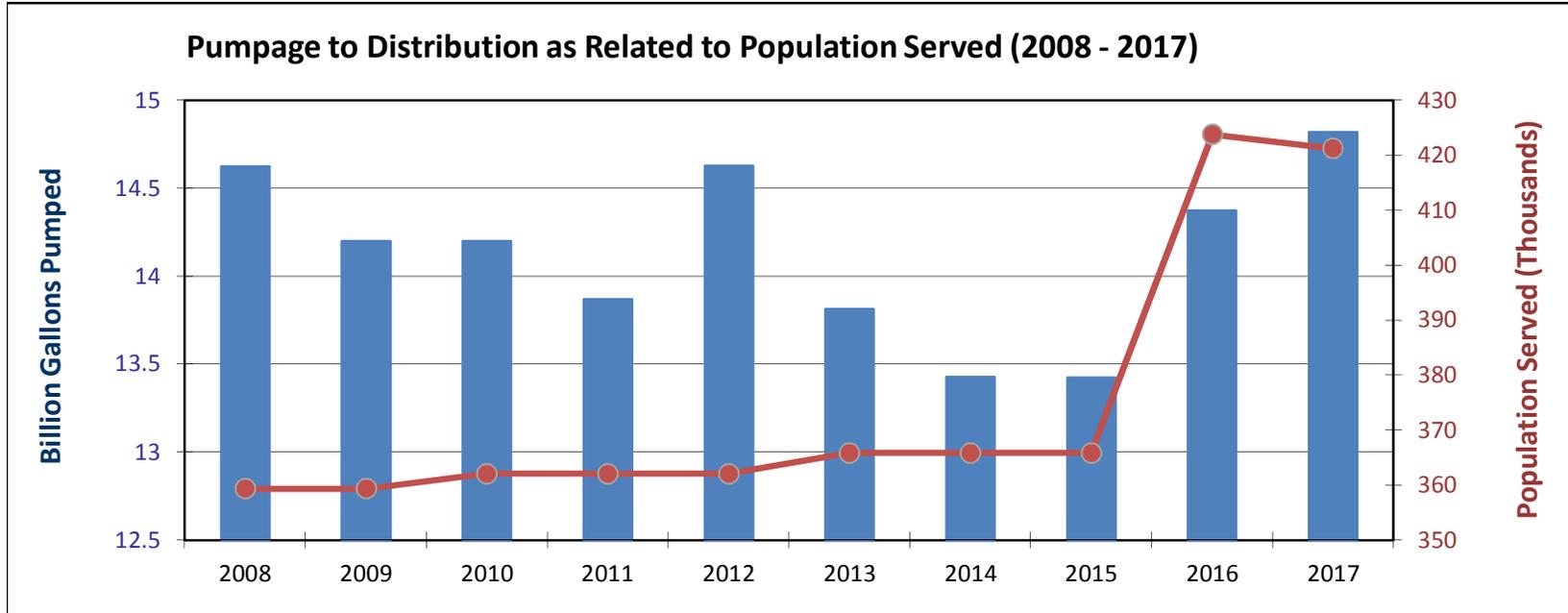
2017 Average Day Pumpage (MGD)

Month	Lake	Wash	Net	Finished	Pumpage To		
	Water Pumpage*	Water Recycled	Raw Water Pumpage	Water Pumpage	Evanston	Skokie	N.W.C.
Jan-17	38.314	0.478	38.792	38.836	7.932	7.160	23.745
Feb-17	36.682	0.485	37.167	37.256	7.590	6.781	22.885
Mar-17	34.400	0.531	36.651	36.780	7.453	6.674	22.654
Apr-17	33.939	0.814	38.332	37.660	7.694	6.706	23.260
May-17	39.711	0.788	37.096	40.172	8.195	7.144	24.832
Jun-17	46.072	0.926	46.998	46.800	9.524	8.497	28.779
Jul-17	43.154	0.896	44.050	43.964	9.019	8.148	26.797
Aug-17	43.707	0.833	44.539	44.533	8.946	8.330	27.256
Sep-17	45.271	0.909	46.179	46.058	9.218	8.700	28.140
Oct-17	36.170	0.704	36.875	40.023	7.088	7.677	24.418
Nov-17	36.359	0.505	36.864	37.127	6.035	8.445	22.647
Dec-17	37.339	0.543	37.883	37.913	6.352	8.300	23.260
Average	39.709	0.692	40.401	40.606	7.921	7.717	24.897

Note: "Pumpage to Evanston" includes process and domestic water uses at the water treatment plant.

Annual Pumpage (MG)

Year	Lake Water Pumpage	Wash Water Recycled	Total Raw Water Pumpage	Finishec Water Pumpage	Pumpage To		
					Evanston	Skokie	N.W.C.
2017	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366
2016	14,201.170	231.020	14,432.190	14,375.415	3,059.358	2,795.396	8,664.097
2015	13,471.823	200.285	13,672.108	13,423.806	2,790.010	2,786.896	7,846.900
2014	13,416.872	239.547	13,656.419	13,427.979	2,719.978	2,766.348	7,941.653
2013	13,925.102	247.609	14,172.711	13,814.461	2,930.278	2,787.256	8,096.927
2012	14,817.637	322.302	15,110.465	14,627.115	2,939.417	3,068.004	8,619.694
2011	13,939.618	212.426	14,152.042	13,941.167	2,991.848	2,866.652	8,082.667
2010	14,087.849	218.251	14,306.100	14,268.257	2,701.569	3,094.554	8,472.134
2009	14,363.047	193.841	14,556.888	14,350.335	3,140.898	2,829.824	8,379.613
2008	14,872.552	134.595	15,007.147	14,693.877	3,142.816	2,961.341	8,589.720



Average Daily Per Capita Consumption

Year	Evanston		Skokie		NWC		Total	
	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)*	Population	Per Capita Use (gpcd)*
2017	74,895	106	64,270	120	282,093	88	421,258	96
2016	75,527	111	64,821	118	283,493	84	423,841	94
2015	75,570	101	65,176	117	225,137	95	365,883	101
2014	75,570	99	65,176	116	225,137	97	365,883	101
2013	75,570	106	65,176	117	225,137	99	365,883	103
2012	74,486	105	64,784	130	222,802	106	362,072	110
2011	74,486	107	64,784	121	222,802	99	362,072	105
2010	74,486	97	64,784	131	222,802	104	362,072	107
2009	74,360	110	63,333	122	221,364	104	359,057	108
2008	74,360	114	63,333	128	221,364	106	359,057	112

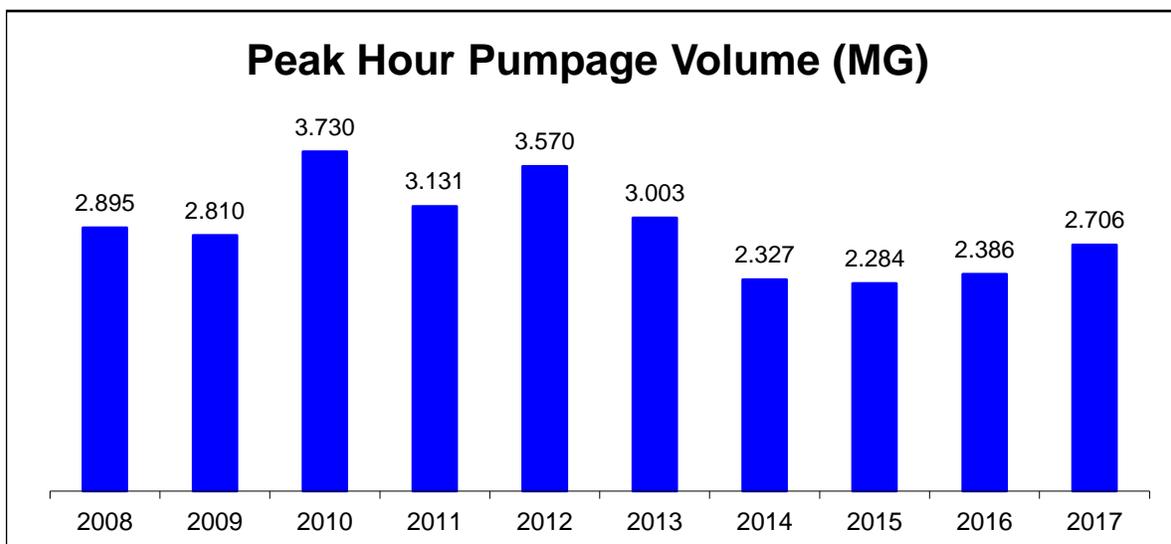
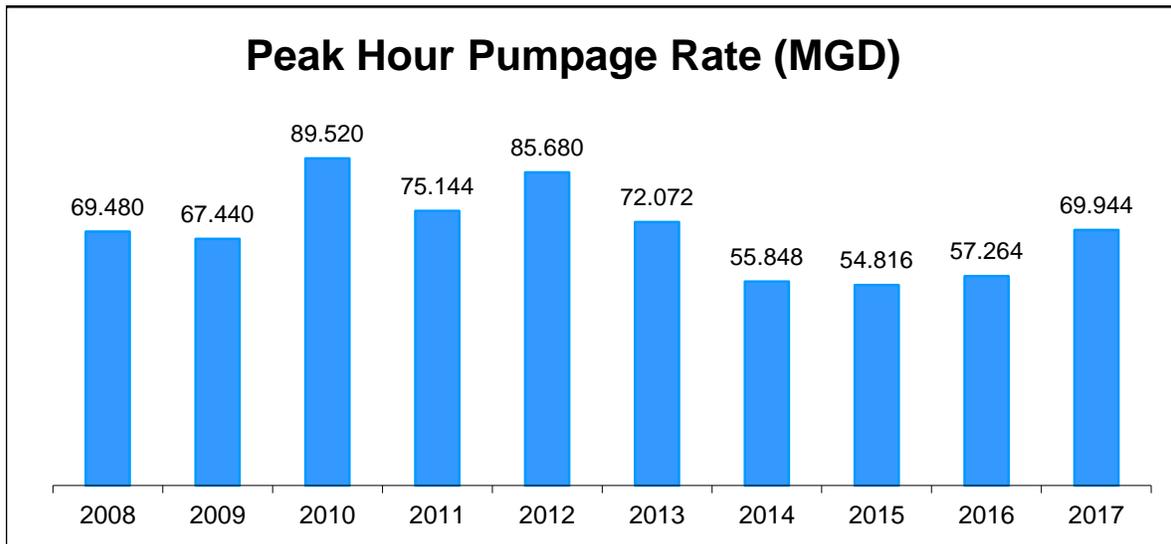
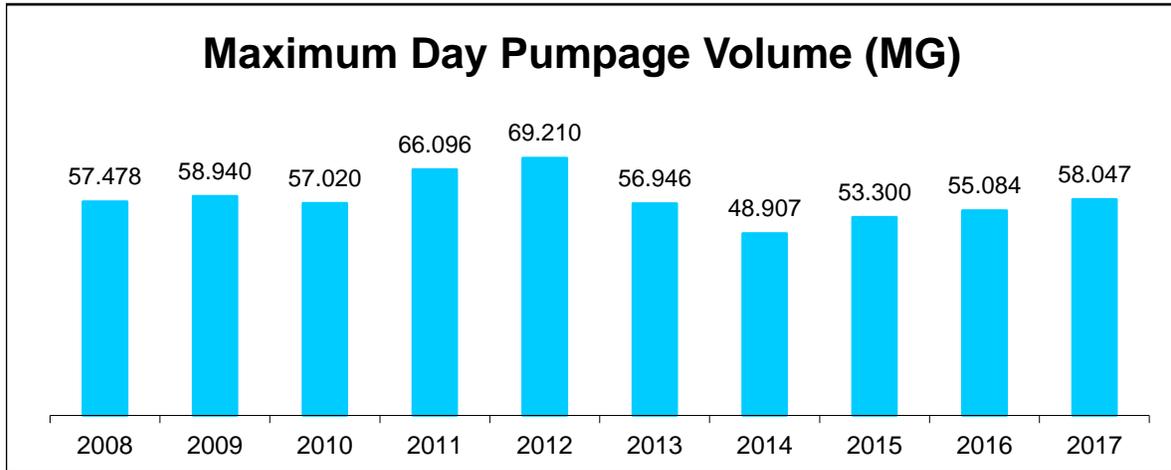
*In 2016 NWC began providing water to Des Plaines. Only a portion of the total population of Des Plaines consumes water provided by the City of Evanston.

Maximum Pumpage to Distribution

Year	Max Day Pumpage Volume (MG)	Peak Hour Pumpage Rate (MGD)	Peak Hour Pumpage Volume (MG)
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003
2012	69.210	85.680	3.570
2011	66.096	75.144	3.131
2010	57.020	89.520	3.730
2009	58.940	67.440	2.810
2008	57.478	69.480	2.895

Historical Maximum Day Pumpage: 95.154 MG on July 7, 1989

Maximum Day and Peak Hour Pumpage



Maximum Pumpage Days (MGD)

Year	Maximum Day Pumpage To			
	Distribution	Evanston	Skokie	NWC
2017	June 13th	June 13th	June 12th	June 14th
	58.047	11.931	10.927	39.371
2016	July 20th	July 20th	August 10th	July 22nd
	55.084	12.561	10.370	32.593
2015	August 14th	August 6th	August 14th	August 2nd
	53.300	11.852	10.950	30.414
2014	August 4th	August 15th	August 4th	August 4th
	48.907	9.875	10.870	30.871
2013	August 28th	August 28th	August 28th	August 27th
	56.946	12.585	11.209	33.374
2012	July 17th	July 17th	July 17th	July 6th
	69.210	18.580	13.579	43.775
2011	July 18th	July 18th	July 18th	July 19th
	66.096	12.614	13.724	40.820
2010	July 17th	July 29th	August 20th	July 19th
	57.020	13.643	12.957	34.661
2009	August 14th	August 13th	August 14th	August 6th
	58.940	13.992	11.495	34.725
2008	July 30th	July 30th	July 30th	July 29th
	57.478	11.788	11.495	33.670

Historical Maximum Day Pumpage to Distribution: 95.154 MG on July 7, 1989

Energy Costs

Electric Power - Kilowatt Hours (kWh) Used

Year	Total kWh	Total Cost*	Average Unit Cost per kWh	kWh Per Million Gallons Pumped
2017	11,361,088	\$902,245	\$0.079	767
2016	11,450,522	\$943,798	\$0.082	797
2015	10,365,952	\$810,030	\$0.078	772
2014	10,897,123	\$787,444	\$0.072	812
2013	11,529,489	\$779,226	\$0.068	835

* 2012 cost is higher than usual due to increased pumpage during a drought.

Natural Gas Used for Pumping and Emergency Engines*

Year	Therms	Total Cost**	Average Unit Cost per Therm
2017	126,267	\$42,845	\$0.339
2016	121,018	\$58,307	\$0.482
2015	132,575	\$86,033	\$0.649
2014	129,481	\$86,926	\$0.671
2013	124,954	\$83,901	\$0.671

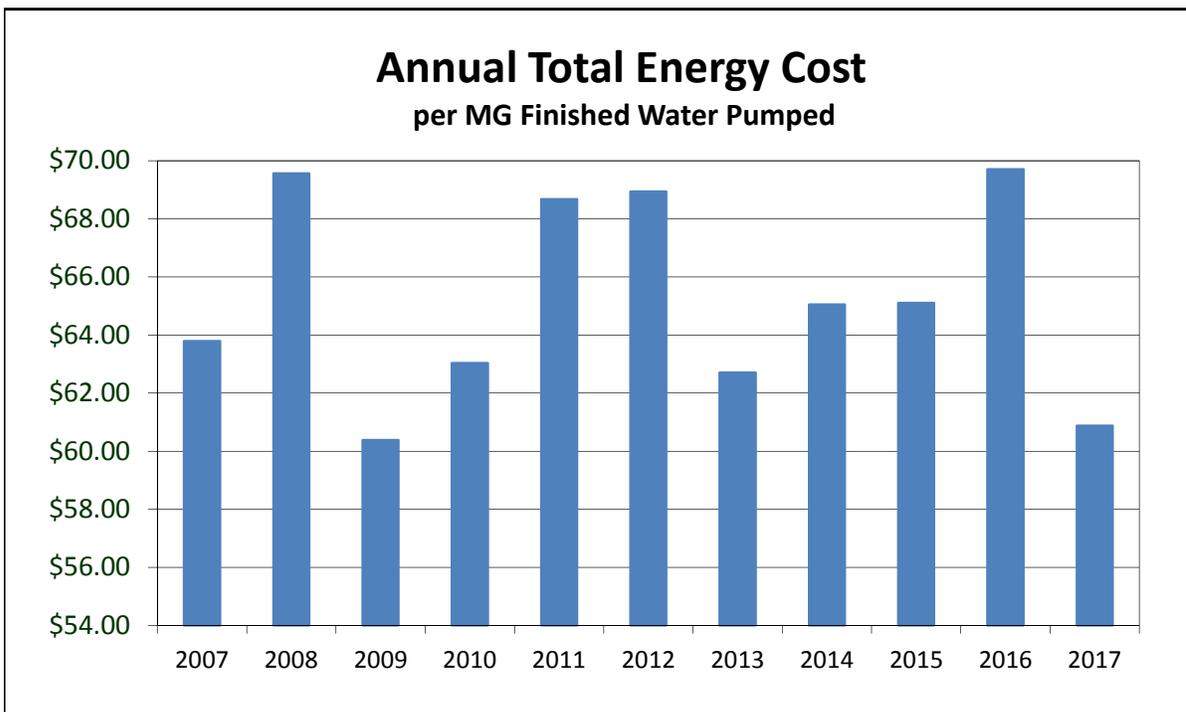
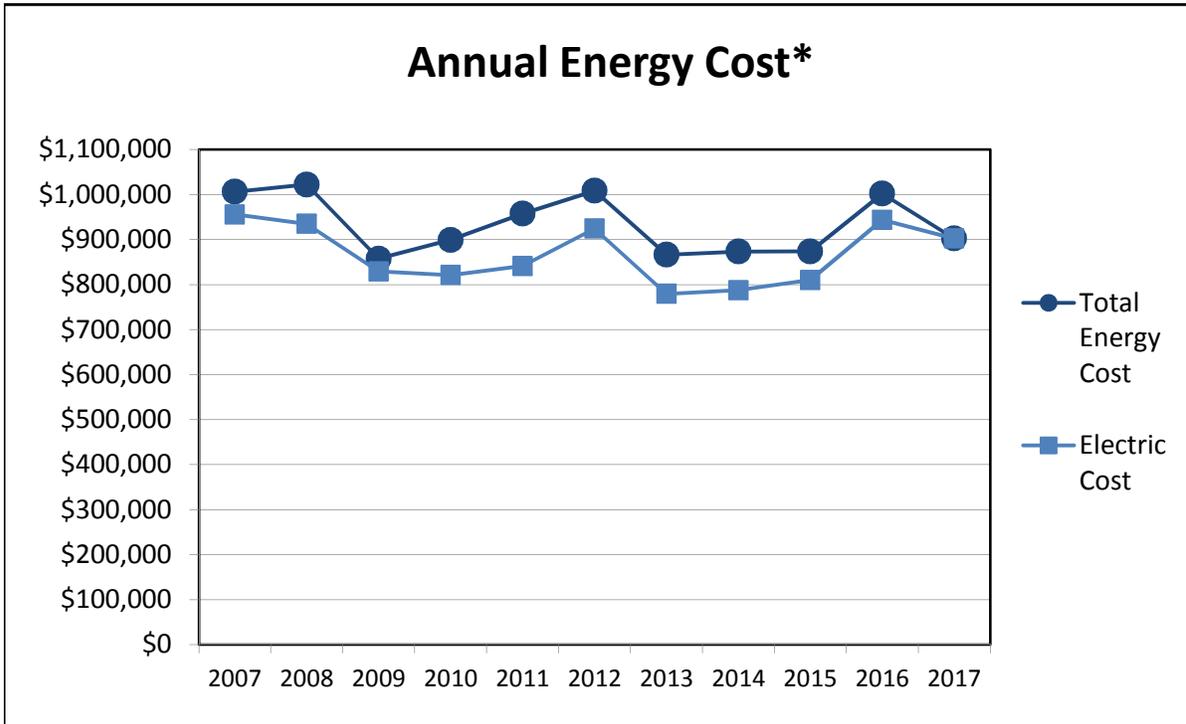
* Includes natural gas purchase and delivery charges.

** 2011 cost is elevated due to switchgear fire, which required extended emergency generator use.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2017	\$945,090	\$63.77
2016	\$1,002,105	\$69.71
2015	\$896,063	\$66.75
2014	\$874,370	\$65.12
2013	\$863,127	\$62.48

Energy Costs



* Energy costs increased in 2012 due to increased pumping during the summer drought.

Filtration

The Filtration Division manages the water treatment process, including chemical addition, sedimentation, filtration, and disinfection. This involves operation and maintenance of 5 chemical feed systems, 4 settling basins, 24 filters, and numerous pipes, valves, and instrumentation systems. There is always at least one state-certified water treatment operator at the filtration plant at all times, who monitors instrumentation and water quality testing results to ensure that the water is always safe to drink.



Filters 1 – 12 in operation at the Evanston Water Treatment Plant

This division also includes the City's Water Quality Laboratory, which monitors Evanston's drinking water for compliance with state and federal water quality regulations and completes regular reporting to the public and the Illinois Environmental Protection Agency to certify the quality of Evanston's water.

Full-scale water treatment began in Evanston in 1914. The process included settling basins with chemical addition to allow larger contaminants to drop out of the water by gravity, filtration to remove smaller contaminants, and disinfection with chlorine. The new treatment process virtually eliminated waterborne disease in Evanston. This process was state-of-the-art at the time, and Evanston was one of the first communities in the region to adopt full-scale water treatment with rapid sand filtration. Though only the filters from the 1914 treatment plant survive to this day, Evanston's water treatment process still follows the same steps.



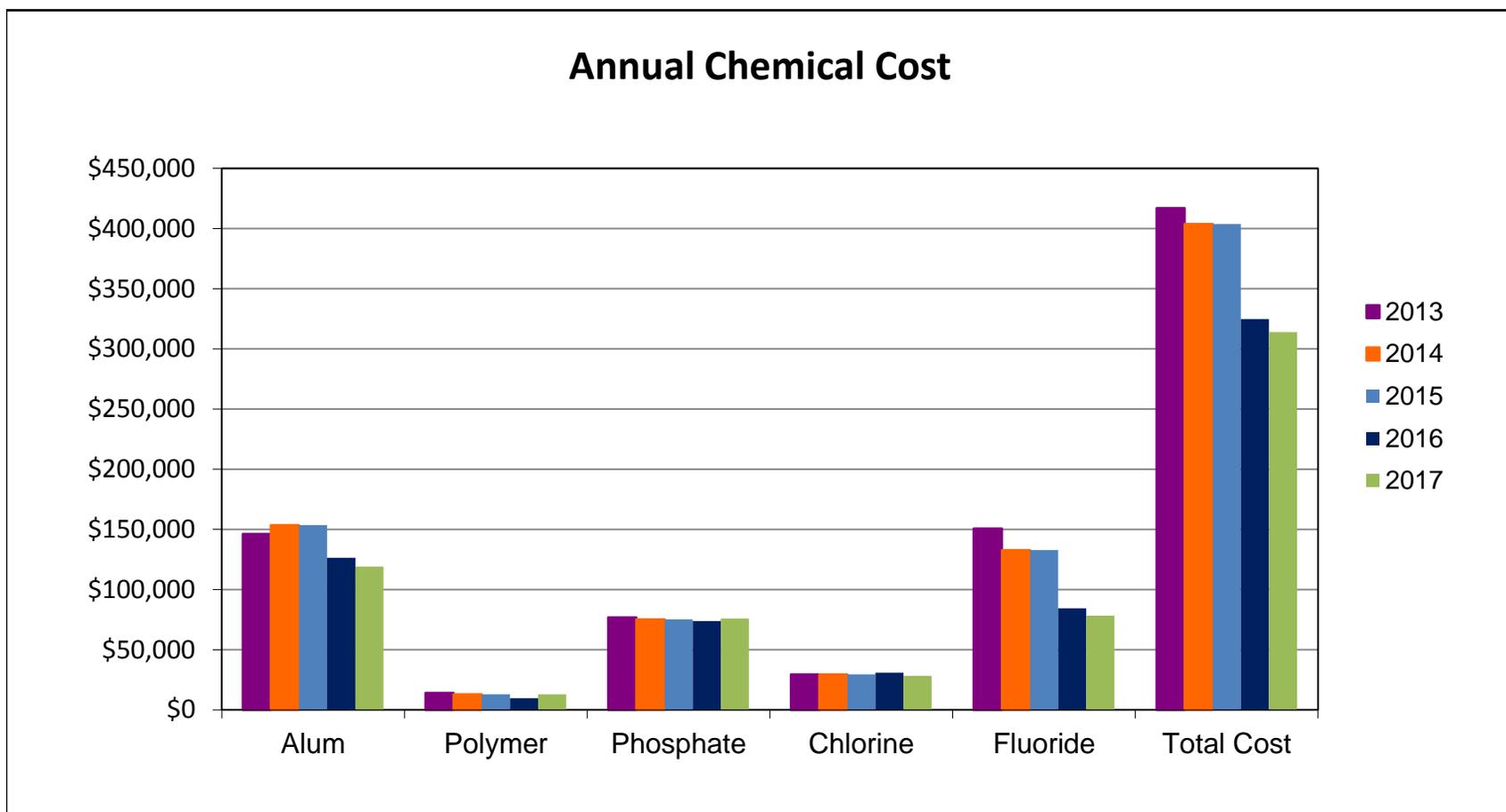
Filters 1 – 12, photo taken in 1924

Chemical Treatment: Chemicals Used and Costs

	Chemical Feed (lbs/MG)			Unit Cost	Pounds per Year	Total Cost	Cost per MG Treated
	Avg Daily	Max Day	Min Day				
Aluminum Sulfate							
2017	58.1	95.2	49.0	\$275.00 / dry ton	864,828	\$118,914	\$8.01
2016	56.0	90.6	39.8	\$346.15 / dry ton	798,936	\$126,232	\$8.75
2015	51.4	95.1	38.2	\$447.28 / dry ton	686,299	\$153,484	\$11.39
2014	48.1	90.3	39.4	\$447.28 / dry ton	653,896	\$146,237	\$10.71
2013	54.8	97.2	39.5	\$447.28 / dry ton	770,838	\$172,390	\$12.16
Chlorine							
2017	12.6	19.3	8.3	\$298.00 / ton	189,480	\$28,233	\$1.90
2016	12.2	16.2	8.9	\$316.00 / ton	177,845	\$30,781	\$2.13
2015	11.9	16.1	6.6	\$318.00 / ton	161,345	\$29,445	\$2.19
2014	11.7	18.4	8.1	\$365.00 / ton	161,480	\$29,470	\$2.16
2013	12.2	17.9	7.6	\$365.00 / ton	176,190	\$32,155	\$2.27
Activated Carbon*							
Hydrofluosilic Acid (Fluoride)							
2017	29.4	33.9	11.1	\$358.00 / ton	436,565	\$78,145	\$5.26
2016	28.3	31.1	0.0	\$412.00 / ton	409,596	\$84,377	\$5.85
2015	37.3	70.7	0.0	\$443.37 / ton	492,533	\$132,738	\$9.85
2014	41.0	45.6	0.0	\$519.00 / ton	558,523	\$150,522	\$11.03
2013	37.7	61.1	29.3	\$539.00 / ton	534,550	\$144,061	\$10.16
Polymer							
2017	2.9	5.1	2.2	\$596.00 / ton	43,014	\$12,818	\$0.86
2016	2.8	4.8	1.9	\$480.00 / ton	39,726	\$9,534	\$0.66
2015	2.5	5.5	1.9	\$578.00 / ton	33,903	\$12,883	\$0.96
2014	2.7	5.0	1.9	\$538.00 / ton	36,832	\$13,996	\$1.03
2013	3.3	6.1	2.3	\$760.00 / ton	46,584	\$17,702	\$1.25
Blended Phosphate							
2017	14.2	19.5	13.1	\$4.12 / gallon	211,332	\$75,778	\$5.10
2016	13.6	14.8	11.1	\$4.27 / gallon	198,430	\$73,678	\$5.11
2015	13.1	17.7	11.4	\$4.35 / gallon	173,430	\$75,103	\$5.57
2014	13.2	14.1	10.1	\$4.48 / gallon	177,169	\$76,722	\$5.62
2013	12.5	14.0	11.3	\$4.98 / gallon	173,141	\$74,978	\$5.29

* Carbon can be fed for taste and odor control, though this has not been necessary since 2005.

Annual Chemical Costs



Filter Operations

Filter Runs

Year	Avg Hours per Filter Run		Total Hours per Year	
	3 MGD	8 MGD	3 MGD	8 MGD
2017	208.9	191.8	102,660	93,663
2016	237.5	223.6	93,948	103,703
2015	238.6	229.0	80,514	103,404
2014	226.2	201.8	95,298	104,573
2013	224.5	200.6	95,958	101,536
2012	208.7	171.5	96,000	92,402
2011	229.1	197.3	96,336	88,162
2010	229.2	198.8	96,286	100,046
2009	253.8	239.2	97,313	94,790
2008	266.7	228.5	97,050	100,601

Filter Washes

Year	Total Washes per Year		Max # of Washes per Day	
	3 MGD	8 MGD	3 MGD	8 MGD
2017	525	519	6	6
2016	429	513	6	6
2015	347	462	5	5
2014	429	557	5	7
2013	427	524	7	7
2012	476	611	7	9
2011	430	486	5	6
2010	452	559	7	7
2009	387	409	6	5
2008	369	460	6	6

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2017	254.370	1.70	5.84
2016	239.545	1.60	9.65
2015	200.285	1.49	5.31
2014	243.089	1.78	6.20
2013	248.996	2.13	9.72
2012	321.030	1.49	5.14
2011	211.546	1.53	15.2
2010	223.704	1.02	4.54
2009	149.063	0.95	4.15
2008	145.593	1.15	4.86

Bacteriological Water Analysis (Membrane Filter Method)

Report of Evanston Water Quality Control Laboratory

The U.S. Environmental Protection Agency (EPA) standard is based on the presence or absence of total coliform bacteria in a water sample. Evanston is required to collect 80 water samples per month from the distribution system. The EPA requires that no more than 5% of these monthly samples test positive for the presence of total coliform.

Distribution System		Positive for	Positive for
Year	Number Sampled	Total Coliform	E.Coli
2017	978	1	1
2016	974	0	0
2015	989	3	0*
2014	987	4	1
2013	981	1	0

**In March 2015 Fecal Coliform was no longer tested due to regulation changes*

Additional Bacteriological Samples Analyzed for the Village of Skokie

Year	Number Sampled
2017 (Jan - Sept.)*	669
2016	889
2015	887
2014	892
2013	899

**as of Oct. 2017 Skokie Samples no longer analyzed*

Raw Water	Year	Number Sampled	Colony Count	
			Average	Maximum
	2017	729 (Twice Daily)	77	>200
	2016	732 (Twice Daily)	69	>200
	2015	730 (Twice Daily)	59	>200
	2014	728 (Twice Daily)	38	>200
	2013	730 (Twice Daily)	45	>200

After Primary Treatment	Year	Number Sampled	Colony Count	
			Average	Maximum
	2017	729 (Twice Daily)	0	0
	2016	732 (Twice Daily)	0	0
	2015	730 (Twice Daily)	0	0
	2014	729 (Twice Daily)	0	0
	2013	730 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples	Year	Number Sampled	Colony Count	
			Average	Maximum
	2017	1430 (4 times Daily)	0	0
	2016	1403 (4 times Daily)	0	0
	2015	1460 (4 times Daily)	0	0
	2014	1459 (4 times Daily)	0	0
	2013	1460 (4 times Daily)	0	0

Taste & Odor, Turbidity, Temperature and Fluoride Report of Evanston Water Quality Control Laboratory

Taste & Odor

Year	Number of Tests
2017	506
2016	503
2015	506
2014	498
2013	508

Turbidity (Expressed in Nephelometric Turbidity Units or NTU)

EPA standard is <0.3 NTU in 95% of samples and never >1 NTU in any single sample of finished water.

Year	Raw Water			After Primary Treatment			Plant Tap		
	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
2017	4.22	47.4	0.35	0.57	2.92	0.19	0.09	0.28	0.07
2016	7.26	60.0	0.32	0.63	7.70	0.11	0.08	0.61	0.07
2015	6.49	79.7	0.42	0.61	1.81	0.23	0.08	0.19	0.06
2014	4.11	61.4	0.17	0.66	2.20	0.21	0.08	0.24	0.07
2013	8.49	85.5	0.49	0.75	2.35	0.06	0.08	0.16	0.07

Raw Water Temperature

Year	Average	Maximum	Minimum
2017	11.6°C / 52.9°F	25.0°C / 77.0°F	0.9°C / 33.6°F
2016	11.1°C / 52.0°F	24.6°C / 76.3°F	1.0°C / 33.8°F
2015	10.2°C / 50.4°F	22.5°C / 72.5°F	0.9°C / 33.6°F
2014	10.0°C / 50.0°F	23.8°C / 74.8°F	0.8°C / 33.4°F
2013	11.2°C / 52.1°F	24.5°C / 76.1°F	0.8°C / 33.4°F

Fluoride Content (EPA target is 0.7 ppm)

Year	Plant Tap			Distribution		
	Avg	Max	Min	Avg	Max	Min
2017	0.71	0.78	0.28	0.72	0.80	0.65
2016	0.70	0.85	0.16	0.71	0.82	0.64
2015	0.94	1.11	0.21	0.98	1.18	0.75
2014	0.96	1.10	0.22	1.07	1.07	0.90
2013	0.97	1.11	0.90	0.98	1.09	0.90

Chlorine Residual (ppm)

Report of Evanston Water Quality Control Laboratory

Filter Influent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2017	0.79	1.16	0.55	0.94	1.33	0.68
2016	0.70	1.02	0.50	0.84	1.19	0.63
2015	0.68	1.06	0.46	0.81	1.21	0.11
2014	0.68	1.14	0.42	0.81	1.29	0.52
2013	0.64	0.92	0.35	0.77	1.06	0.49

Filter Effluent

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2017	0.71	1.06	0.50	0.84	1.20	0.60
2016	0.62	0.92	0.40	0.75	1.10	0.50
2015	0.59	0.92	0.39	0.93	76.00	0.49
2014	0.60	1.04	0.38	0.72	1.19	0.51
2013	0.55	0.83	0.30	0.67	0.97	0.40

Plant Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2017	0.75	1.02	0.57	0.91	1.21	0.71
2016	0.72	0.92	0.54	0.87	1.12	0.69
2015	0.69	0.93	0.5	0.84	1.13	0.62
2014	0.68	1.00	0.51	0.83	1.20	0.61
2013	0.66	0.88	0.46	0.80	1.07	0.60

Distribution Tap

Year	Free Residual			Total Residual		
	Avg	Max	Min	Avg	Max	Min
2017	0.49	0.76	0.23	0.66	0.94	0.40
2016	0.45	0.73	0.17	0.61	0.94	0.34
2015	0.44	0.78	0.17	0.60	0.92	0.30
2014	0.45	0.80	0.17	0.61	1.02	0.31
2013	0.45	0.78	0.18	0.61	0.99	0.34

Phosphate, pH, Alkalinity and Hardness

Report of Evanston Water Quality Control Laboratory

Phosphate (EPA standard is 0.15 - 0.50 ppm)

Year	Number of Tests	Plant Tap		
		Avg	Max	Min
2017	365	0.30	0.38	0.22
2016	365	0.28	0.41	0.17
2015	365	0.25	0.35	0.18
2014	365	0.24	0.3	0.2
2013	365	0.21	0.24	0.18

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2017	730	8.2	8.5	8.0	7.6	7.8	7.2
2016	732	8.3	8.6	7.8	7.6	7.8	7.2
2015	730	8.3	8.5	7.9	7.6	7.8	7.3
2014	729	8.3	8.6	8.0	7.6	7.7	7.3
2013	730	8.3	8.5	8.0	7.6	7.9	7.3

Alkalinity (ppm)

Year	Number of Tests	Raw Water			Plant Tap		
		Avg	Max	Min	Avg	Max	Min
2017	730	106	116	97	100	113	89
2016	732	106	114	93	99	110	84
2015	730	106	121	92	100	115	91
2014	730	109	134	92	102	130	91
2013	730	105	112	94	98	108	90

Hardness (ppm as CaCO₃)

Year	Number of Tests	Raw Water			Finished Water		
		Avg	Max	Min	Avg	Max	Min
2017	730	136	149	124	133	149	124
2016	732	136	149	119	134	154	119
2015	730	135	149	124	133	154	124
2014	730	135	149	104	133	149	97
2013	730	135	142	111	131	141	119

Detected Substances: 2017 Water Quality Data

Substance	MCLG	Highest Allowed (MCL)	Highest Level Detected	Range of Levels Detected	Violation	Source of Contamination
Turbidity (NTU) (Cloudiness)	NA	TT=Monitored by % exceeding 0.3 NTU and max allowed is 1 NTU	100% of samples meet 0.3 NTU; 0.19 NTU Highest single measurement	0.07 - 0.28	NO	Soil runoff
Fluoride (ppm)	4	4	0.7	Single Sample	NO	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate [measured as Nitrogen](ppm)	10	10	0.4	Single Sample	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium (ppm)	NA	NA	7.6	Single Sample	NO	Erosion from naturally occurring deposits
Barium (ppm)	2	2	0.02	Single Sample	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of Natural deposits
Combined Radium 226/228 (pCi/L)b	0	5	0.99	Single Sample	NO	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)b	0	15	0.16	Single Sample	NO	Erosion of natural deposits
Cotinine (ppb)	NOT REGULATED	NOT REGULATED	0.002	Single Sample	NO	Nicotine metabolite/waste water discharge
Tris(chloropropyl) phosphate (ppb)	NOT REGULATED	NOT REGULATED	0.01	Single Sample	NO	Flame retardant
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.16	Single Sample	NO	Artificial sweetener
Sulfate (ppm)	NOT REGULATED	USEPA National Secondary Standard of 250	22	Single Sample	NO	Naturally occurring, coagulant residual

Detected Substances: 2017 Water Quality Data

<i>Disinfectants and Disinfection By-Products</i>	<i>MCLG</i>	<i>Highest Allowed (MCL)</i>	<i>Highest Level Detected</i>	<i>Range of Levels Detected</i>	<i>Violation</i>	<i>Source of Contamination</i>
Total Trihalomethanes (ppb)	NA	80	30	13.7 - 46.1	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA	60	10	4.1 - 9.3	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	0.5	0.5 - 0.5	NO	Water additive used to control microbes

<i>Lead & Copper</i>	<i>MCLG</i>	<i>Action Level (AL)</i>	<i>90th Percentile</i>	<i>Range of Levels Detected</i>	<i>Violation</i>	<i>Source of Contamination</i>
Lead (ppb)	0	15	5	<1 - 11	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.18	<0.002 - 0.540	NO	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems

Additional Information About Your Water

<i>Measured Parameter</i>	<i>Evanston Average</i>	<i>Evanston Minimum</i>	<i>Evanston Maximum</i>	<i>Measured Parameter</i>	<i>Evanston Result</i>
pH (0-14 pH units)	7.6	7.2	7.8	Calcium (ppm)	34
Hardness (as mg CaCO ₃ /L)	133	124	149	Chloride (ppm)	17
Hardness (gpg)	7.8	7.3	8.7	Dissolved Solids (ppm)	160
Alkalinity (ppm)	100	89	113	Magnesium (ppm)	11
Raw Water Temperature °F	53	34	77	Potassium (ppm)	1.4

Non-Detected Contaminants

2017 Water Quality Data

Inorganic Contaminants	MCLG	MCL	EEA MRL	Level Found
ARSENIC (ppb)	none	50	1	ND
CADMIUM (ppb)	5	5	1	ND
CHROMIUM (ppb)	100	100	0.9	ND
CYANIDE (ppb)	200	200	0.02	ND
IRON (ppb)	n/a	1000	0.02	ND
MANGANESE (ppb)	n/a	150	2	ND
MERCURY (INORGANIC) (ppb)	2	2	0.1	ND
NICKEL	n/a	100	1	ND
SELENIUM (ppb)	50	50	2	ND
ANTIMONY (ppb)	6	6	1	ND
BERYLLIUM (ppb)	4	4	0.3	ND
THALLIUM (ppb)	0.5	2	0.3	ND
ZINC (ppb)	n/a	5000	5	ND
NITRITE (AS NITROGEN) (ppm)	1	1	0.01	ND
Synthetic Organic Contaminants				
ENDRIN (ppb)	2	2	0.01	ND
BHC- GAMMA (LINDANE)	200	200	0.02	ND
METHOXYCHLOR (ppb)	40	40	0.1	ND
TOXAPHENE (ppb)	0	3	1	ND
DIQUAT (ppb)	200	200	1	ND
DALAPON (ppb)	20	20	0.4	ND
ENDOTHALL (ppb)	100	100	9	ND
DI(2-ETHYLHEXYL)ADIPATE (ppb)	400	400	0.6	ND
OXAMYL (VYDATE) (ppb)	200	200	1	ND
SIMAZINE (ppb)	4	4	0.07	ND
DI(2-ETHYLHEXYL)PHTHALATE (ppb)	0	6	0.6	ND
PICHLORAM (ppb)	500	500	0.1	ND
DINOSEB (ppb)	7	7	0.1	ND
HEXACHLOROCYCLOPENTADIENE (ppb)	50	50	0.1	ND
ALDICARB SULFOXIDE	n/a	n/a	0.5	ND
ALDICARB SULFONE	n/a	n/a	0.7	ND
CARBOFURAN (ppb)	40	40	0.9	ND
ALDICARB	n/a	n/a	0.5	ND
ATRAZINE (ppb)	3	3	0.1	ND
ALACHLOR (LASSO)(ppb)	0	2	0.1	ND
HEPTACHLOR	0	100	0.04	ND
HEPTACHLOR EPOXIDE (ppt)	0	100	0.02	ND
DIELDRIN	n/a	1	0.1	ND
2,4-Dichloro-Phenoxyacetic Acid (2,4-D) (ppb)	10	10	0.1	ND
2,4,5-TP (SILVEX) (ppb)	50	50	0.1	ND
HEXACHLOROBENZENE (ppb)	0	1	0.1	ND
BENZO (A) PYRENE (ppb)	0	200	0.02	ND
PENTACHLOROPHENOL (PCP) (ppb)	0	1	0.04	ND
ALDRIN (ppb)	n/a	1	0.1	ND
POLYCHLORINATED BIPHENYLS (PCB) (ppb)	0	500	varies (0.26)	ND
TOTAL DDT (ppb)	n/a	50*	0.1	ND
1,2 DIBROMO3-CHLOROPROPANE (DBCP) (ppb)	0	0.2	0.01	ND
ETHYLENE DIBROMIDE (EDB) (ppb)	0	50	0.01	ND
CHLORDANE (ppb)	0	2	0.1	ND

Non-Detected Contaminants

2017 Water Quality Data

THM/HAA5	MCLG	MCL	EEA MRL	Level Found
MONOCHLOROACETIC ACID (ppb)	70	na	2.0	ND
MONOBROMOACETIC ACID (ppb)	na	na	1.0	ND

Unregulated Contaminants	MCLG	MCL	EEA MRL	Level Found
Bisphenol A (ppb)	na	na	0.1	ND
Nonylphenol, isomer mix (ppb)	na	na	0.5	ND
4-n-Octylphenol (ppb)	na	na	0.5	ND
4-tert-Octylphenol (ppb)	na	na	0.5	ND
Pentachlorophenol (ppb)	na	na	0.1	ND
Phenylphenol (ppb)	na	na	0.1	ND
Tetrabromobisphenol A (ppb)	na	na	0.1	ND
2,4,6-Trichlorophenol (ppb)	na	na	0.1	ND
Pharmaceutically Active Compounds Positive	na	na	varies	ND
Pharmaceutically Active Compounds Negative	na	na	varies	ND

MCL= Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

EEA MRL= Eurofins Eaton Analytical Minimum Reporting Level

ND = Not Detected

Lead and Copper Statement

Report of Water Quality Control Laboratory

There is no detectable lead in the water produced by the City of Evanston's water treatment plant. Lead enters the water from lead solder and/or lead pipes in water services, or through plumbing fixtures. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action levels of 15 ppb and 1.3 ppm, respectively.

Lead and copper sampling is performed every three years in compliance with state law. In June and July 2017, Evanston sampled water from 30 homes with lead service lines and analyzed them for lead and copper content. All results were below the action levels. The 90th percentile level for lead in these samples was 5 ppb. The 90th percentile level for copper was 0.18 ppm. In January 2017, fourteen additional voluntary samples were taken for lead only. All results were below the action levels. The 90th percentile for lead in these samples was 7.6 ppb.

In 2017, Evanston sampled water from 59 park drinking fountains. Eleven fountains tested above 15 ppb and were shut off. Results were used to form and implement a strategy for addressing high lead levels and a database was created for all park drinking fountains. Eight fountains with the highest lead levels were remediated and retested to confirm the resulting lead levels were below the action levels. In 2018, Evanston will begin implementation of a seasonal start-up plan including sampling water, remediating fountains with highest lead levels, high flow flushing, and replacing components known to contain lead. Additionally, five drinking fountains previously identified with high lead levels will be replaced.

Definitions and General Explanations

Action Level – The concentration of a contaminant, which, if exceeded, triggers treatment or other required actions by the water supply.

Disinfection By-Products – Total Trihalomethanes and Total Haloacetic Acids are used to regulate the amount of allowable by-products of chlorination.

EPA – Environmental Protection Agency

Fluoride – The Illinois Department of Public Health recommends a target of 0.7 ppm.

Lead and Copper – There is no detectable lead in the water provided to the Evanston community. Lead enters the water from lead solder, lead pipes, or plumbing fixtures. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 parts per billion (ppb) in 1992. The 90th percentile result of samples analyzed for lead and copper content in homes with lead pipes must be less than the action level of 15 ppb and 1.3 ppm respectively.

MCL – Maximum Contaminant Level, the highest level of a contaminant that is allowed in drinking water. A MCL is set as close to a MCLG as feasible using the best available treatment technology.

MCLG – Maximum Contaminant Level Goal, the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

mg CaCO₃/L – milligrams of calcium carbonate per liter.

mrem/yr – Millirems Per Year. A measure of radiation absorbed by the body.

MRDL – Maximum Residual Disinfection Level. The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG – Maximum Residual Disinfection Level Goal. The level of disinfectant in drinking water below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA – Not applicable.

NTU – Nephelometric Turbidity Units. A measure of the cloudiness of water.

pCi/L – Picocuries per liter. A measure of radioactivity.

ppm – Parts per million. A measure of the concentration of a substance in water. An equivalent unit of measurement is milligrams per liter (mg/L).

ppb – Parts per billion. A measure of the concentration of a substance in water. An equivalent unit of measurement is micrograms per liter (µg/L).

Sodium – There is not a state or federal MCL for sodium. Sodium levels below 20 mg/L (ppm) are not considered to be a public health issue.

TT – Treatment Technique. A required process to reduce the level of a contaminant.

Turbidity – A measurement of the cloudiness of the water caused by suspended particles. This is monitored because it is a good indicator of water quality as well as the effectiveness of the filtration and disinfection processes.

TOC – Total Organic Carbon. The Evanston Water Supply monitored the percentage of TOC removal quarterly and met all TOC removal requirements set by the EPA.

Distribution

The Distribution Division manages operation, maintenance, and repair of Evanston's water mains, valves, fire hydrants, and the City's portion of water service lines. This includes repairing water main breaks and water service leaks; and installing new valves, hydrants, and water mains to improve the operation and efficiency of Evanston's water distribution system. Annual maintenance programs administered by this division include water main leak surveying, valve exercising, and fire hydrant testing. The Distribution Division also performs routine water quality sampling in buildings throughout Evanston, and administers the City's cross connection control program. These two programs ensure that water remains safe to drink after leaving the water treatment plant.

Evanston has had a water distribution system since the 1870s, longer than most communities in the Chicago area. The original water mains were made of wood, with a transition to cast iron water mains by the 1890s. After completion of the water treatment plant in 1914, the plentiful supply of safe drinking water drew many new residents and businesses to Evanston. The distribution system underwent significant expansion over the next few years, and many of those 90 to 100+ year-old water mains are still in operation today. Evanston manages an annual water main renewal program to replace and rehabilitate old water mains as they develop maintenance problems.



A Distribution Division field crew installing a new fire hydrant connection on a 24" diameter water main, to improve the City's ability to clean and test this main.



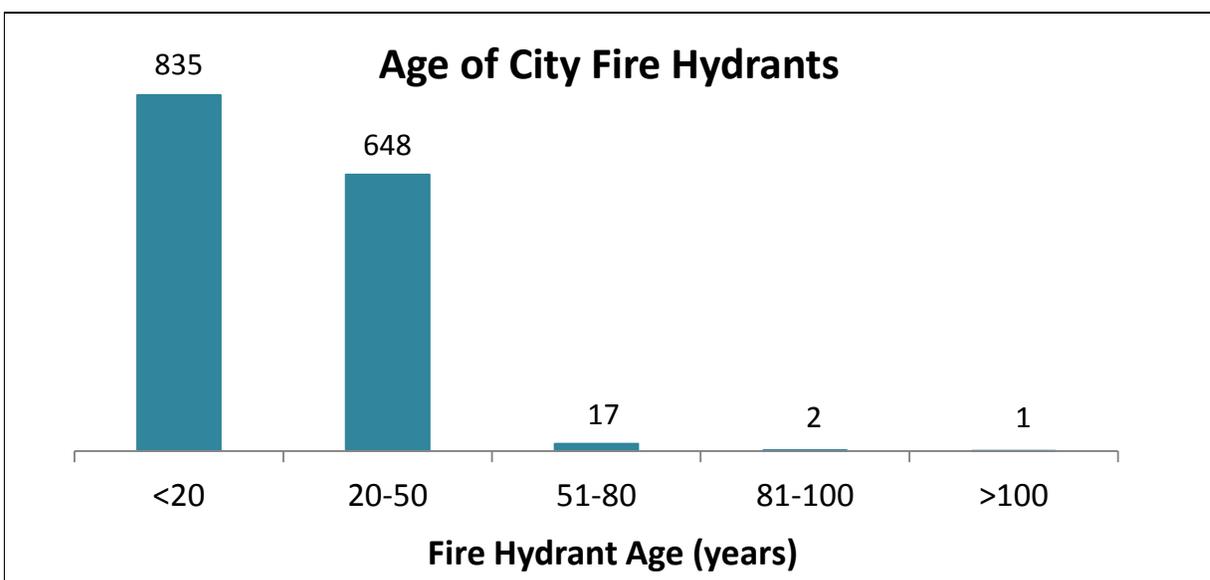
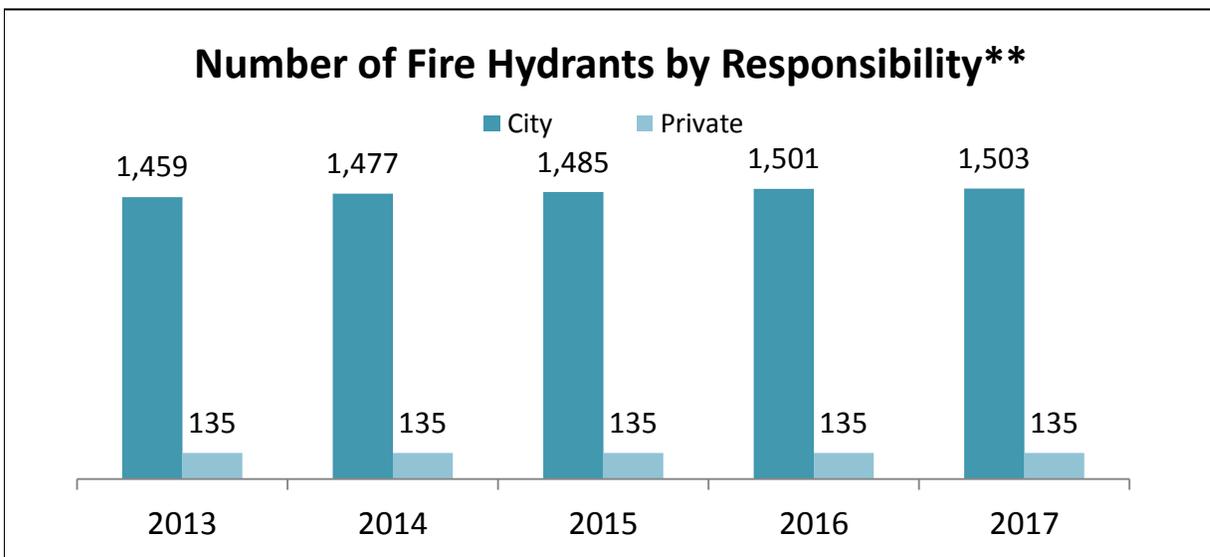
Pieces of wood water main from Evanston's original water distribution system.

Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2013	2014*	2015	2016	2017
Fire Department	1,417	1,100	1,477	1,428	1,453
Public Works Agency	22	0	0	13	11

Installation & Maintenance	2013	2014	2015	2016	2017
Installed (new)	18	12	11	18	2
Replaced	22	15	13	18	10
Repaired	175	315	51	327	535



* Testing was limited to avoid impacting water pressure during transmission main improvements.

** Changes due to hydrant removal/addition during water main improvements and utility atlas updates.

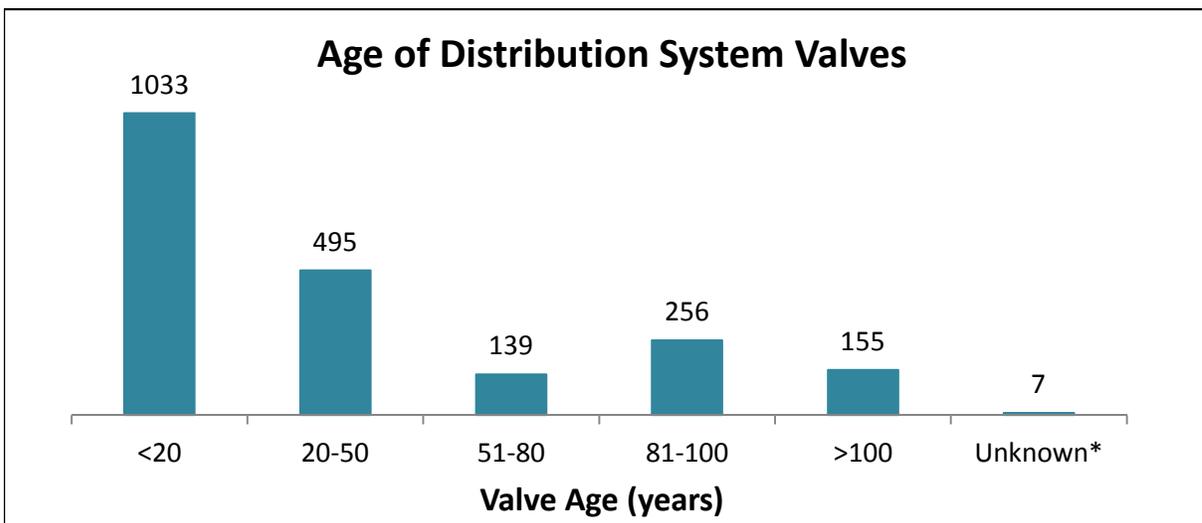
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2013	2014	2015	2016	2017
In-House	1,117	910	908	828	586
Contractor	0	0	0	0	0

Installation & Maintenance	2013	2014	2015	2016	2017
Installed (new)	14	14	13	27	13
Replaced	44	34	16	37	13
Repaired	41	19	55	19	48

Number of Valves by Size	2013	2014	2015	2016	2017
4" or smaller	28	23	23	23	22
6"	996	979	975	961	957
8"	492	507	513	521	532
10"	183	189	192	199	199
12"	243	243	244	252	252
14"	2	2	2	2	2
16"	46	50	50	50	50
18"	4	5	5	5	5
20"	2	2	2	2	2
24"	33	33	33	33	33
30"	12	12	12	13	13
36"	12	12	12	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,057	2,061	2,067	2,078	2,084



* Valves are buried beneath paved surfaces and are not accessible for field verification of age.

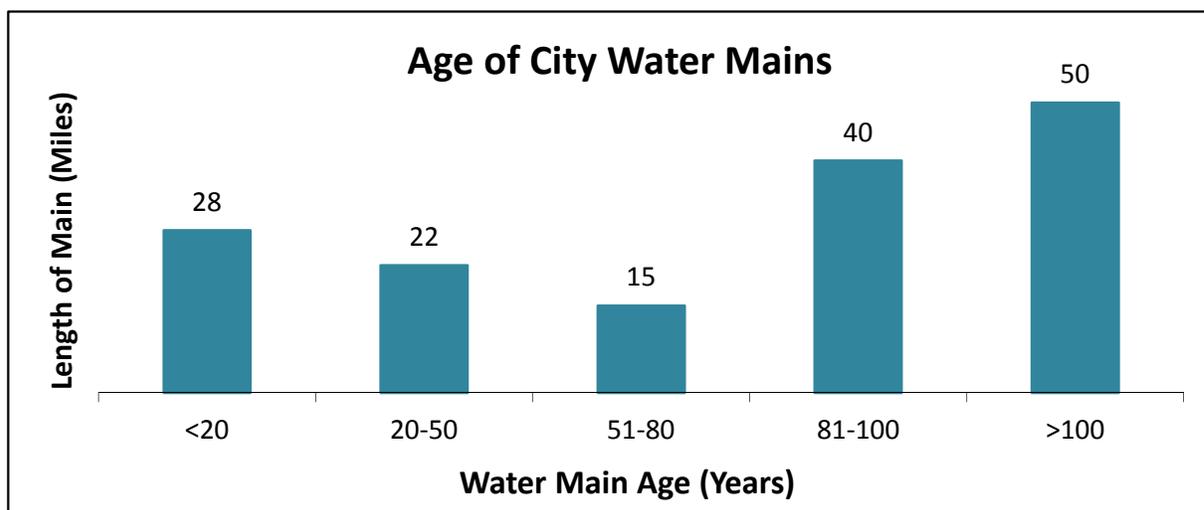
Water Mains

System Data and Maintenance

Improvements (lineal feet)	2013	2014	2015	2016	2017
Replaced by City	50	0	0	0	0
Replaced by Contractor	8,870	8,526	4,303	8,172	4,571
Rehabilitated by Contractor	0	569	395	3,802	0

Water Main Break Repairs	2013	2014	2015	2016	2017
Blow-Out	21	32	5	21	25
Shear Break	30	36	18	7	6
Damage	3	2	0	0	0
Total	54	70	23	28	31

Pipe Sizes (length in miles)*	2013	2014	2015	2016	2017
4" or smaller	1.67	1.37	1.37	1.37	1.37
6"	74.99	72.99	73.26	71.88	71.63
8"	28.35	28.81	28.93	29.01	28.87
10"	12.30	12.76	12.81	13.18	13.18
12"	17.73	17.51	17.66	17.95	17.95
14"	0.37	0.37	0.37	0.37	0.37
16"	6.25	6.26	6.26	6.26	6.26
18"	0.83	0.83	0.83	0.83	0.83
20"	0.56	0.56	0.56	0.56	0.56
24"	8.60	8.60	8.60	8.60	8.60
30"	1.69	1.69	1.69	1.69	1.69
36"	3.30	3.30	3.30	3.30	3.30
42"	0.04	0.04	0.04	0.04	0.04
48"	0.68	0.68	0.68	0.68	0.68
Total	157.35	155.77	156.36	155.72	155.33



* Changes due to water main removal/addition during improvement projects and utility atlas updates.

Water Services

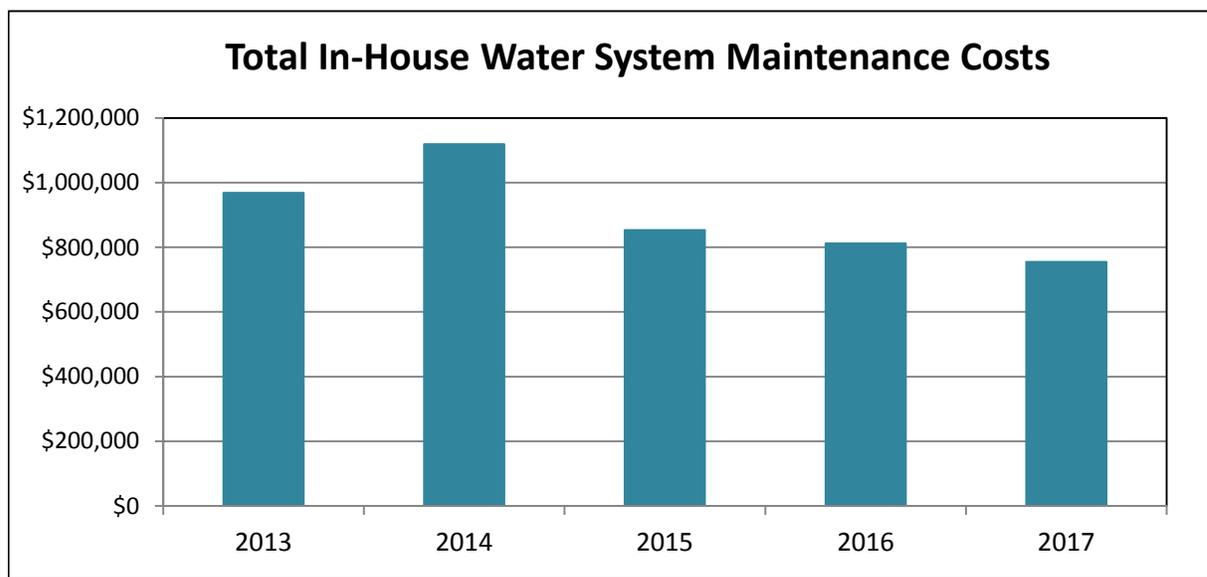
System Data and Maintenance

Water Service Accounts: 15,129*

Installation & Maintenance	2013	2014	2015	2016	2017
New Services Installed	2	19	13	3	7
Service Taps Replaced**	28	33	36	53	52
Services Replaced by Contractor	188	124	147	78	42
Service Leaks Repaired	34	36	22	21	12

Breakdown of In-House Maintenance Costs

	2013	2014	2015	2016	2017
Water Mains	\$213,075	\$322,859	\$83,864	\$109,939	\$123,158
Fire Hydrants	\$109,048	\$42,398	\$65,197	\$41,150	\$42,292
Water Services	\$159,592	\$293,347	\$166,275	\$133,658	\$97,085
Valves	\$128,645	\$43,665	\$148,309	\$65,263	\$18,027
Snow & Ice Removal	\$42,384	\$74,519	\$46,314	\$38,105	\$14,235
Assist Contractor	\$69,516	\$71,591	\$57,511	\$96,170	\$100,447
JULIE Locates	\$73,519	\$71,911	\$108,200	\$117,375	\$107,064
Equip/Facility Maint.	\$85,631	\$62,051	\$77,189	\$86,794	\$146,597
Assist Other City Depts.	\$11,364	\$25,509	\$8,878	\$26,713	\$24,749
Assist W&S Divisions	\$10,811	\$5,581	\$20,610	\$4,617	\$5,112
Safety & Training	\$18,883	\$17,207	\$22,639	\$31,543	\$26,268
Misc.	\$45,422	\$88,294	\$48,069	\$60,838	\$49,939
Total	\$967,890	\$1,118,932	\$853,054	\$812,166	\$754,972



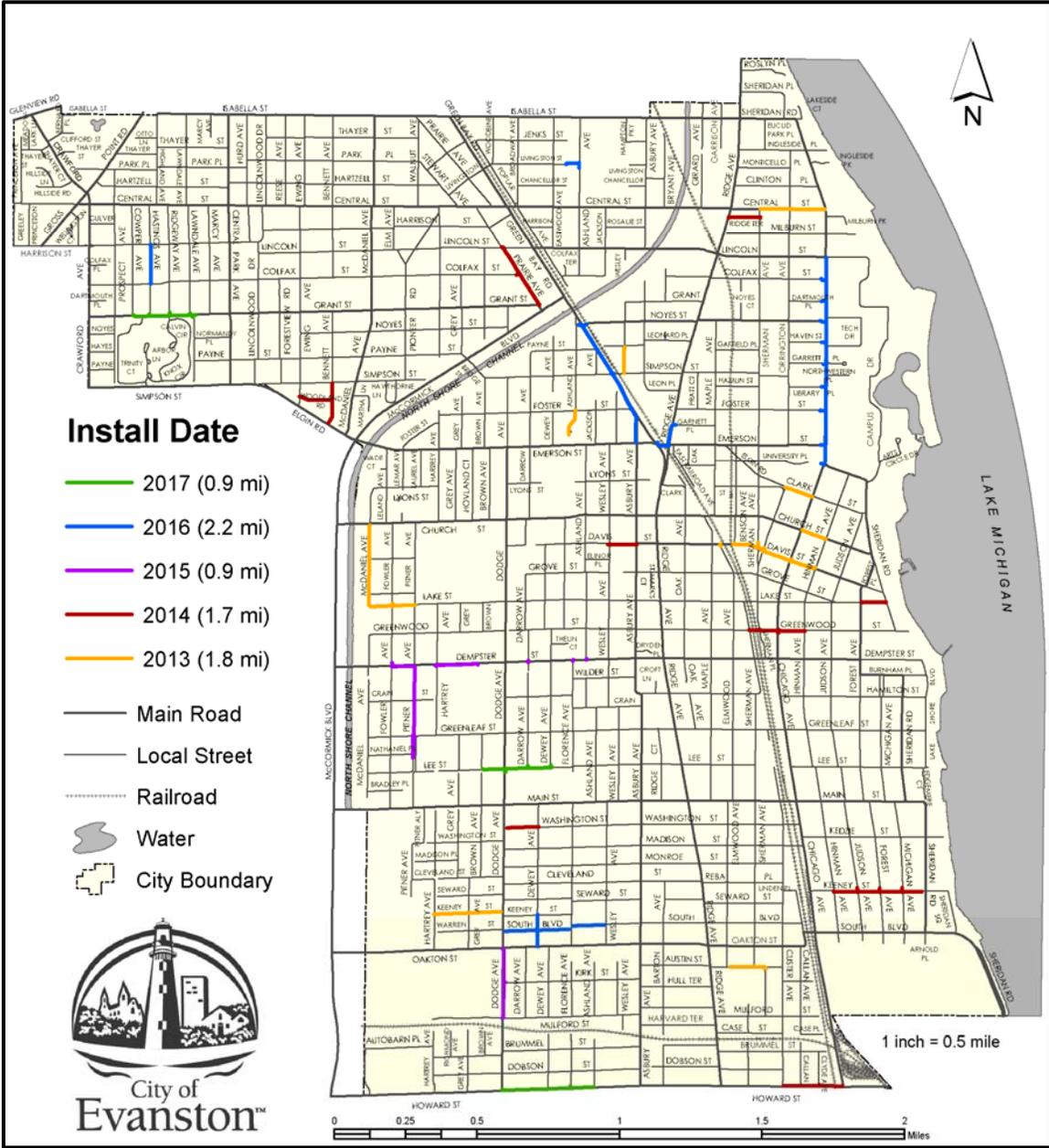
* Includes metered domestic water service accounts and unmetered fire service accounts.

** Differentiation of replacement of existing water services from new water service installations began in 2012.

Water Main Improvements

The Public Works Agency manages an annual water main improvement program, with the goal of renewing at least 1.5 miles of water mains annually (1% annual system-wide renewal rate). This program addresses water mains that have developed maintenance problems due to their age, as well as water mains that need to be enlarged to satisfy current fire flow requirements.

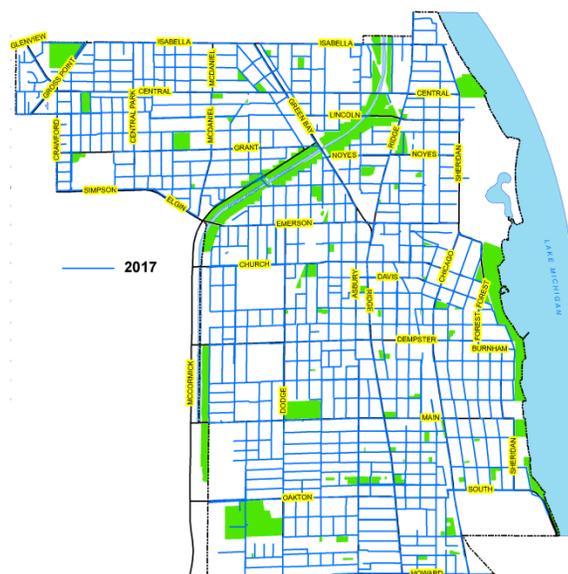
Water Mains Installed or Rehabilitated



Leak Detection Program

In 2013, the Public Works Agency developed a City-wide surveying program to catch water main leaks early and minimize our water loss. This saves operating costs to produce the water, conserves a vital natural resource, and allows more water mains to be repaired proactively rather than on an emergency basis.

The Public Works Agency uses leak noise loggers, small transmitters that sense the sound waves created by water escaping through a hole in a water main, to test water mains for leaks throughout the year. This proactive leak surveying program began in 2013, and water distribution crews were able to survey all 157 miles of Evanston's water mains in 2013-2014.



The 2017 survey found three leaks on building water service pipes and two breaks on water mains. These defects were all successfully repaired, and the estimated water savings is over 9.90 Million Gallons (MG) per year.

Year	Miles of Water Main Surveyed	Water Service Leaks Found	Water Main Breaks Found	Water Savings After Repairs
2014	98	4	1	6.26 MG/year
2015	135	3	2	9.90 MG/Year
2016	149	2	3	13.534 MG/Year
2017	156	3	2	9.90 MG/Year
Totals	538	12	8	39.594 MG/Year

In 2018 and future years, the Public Works Agency anticipates being able to survey the entire 157 miles of water mains in Evanston every year. This frequency is important since water main breaks and leaks can develop at any time; a water main that shows no signs of leakage one year can develop a large leak by the next year.

Cross Connection Control

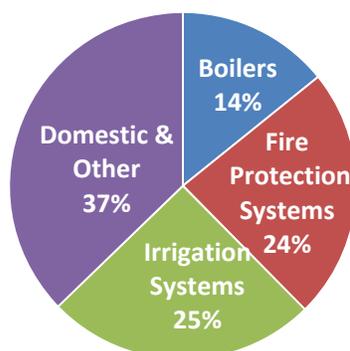
A cross connection is a point in a plumbing system where the potable (safe, drinkable) water supply is connected to a non-potable (polluted or untreated) source. A cross connection exists whenever the drinking water system is or could be connected to any non-potable source. If cross connections are not properly protected and there is a drop in pressure, untreated sources and dirt can be pulled into household plumbing systems.

The State of Illinois and the City of Evanston require mandatory backflow protection on certain households and facilities where high health-hazard-type cross connections are normally found. Underground lawn sprinkling systems, fire protection systems, hospitals and health clinics, mortuaries, laboratories, food and beverage processing and car washes are just a few of the locations where backflow prevention is necessary to protect the quality of our public water supply.

In 2008, the Public Works Agency hired a plumbing inspector to manage the City's cross connection control program. Since that time, over 4,000 backflow prevention devices have been added to the City's inventory and are now regularly inspected for compliance with State and City codes. An annual tracking system enables the City to ensure these devices are properly maintained throughout their life cycle. This helps keep the high quality drinking water produced by the City's water treatment plant safe to drink after entering the water distribution system.

Year	Backflow Prevention Devices Certified Annually
2013	3,356
2014	3,644
2015	4,039
2016	4,241
2017	4,364

Breakdown of Backflow Prevention Devices Certified in 2017



Metering

The Meter Division manages water meter reading and billing for Evanston's 14,537 retail water and sewer customers, working with the City's Collector's Office to process water/sewer bill payments and cross connection control fees. The Meter Division also coordinates with the Distribution Division to manage replacement of damaged and obsolete water meters, accuracy testing for large water meters, and water service shutoff and restoration.

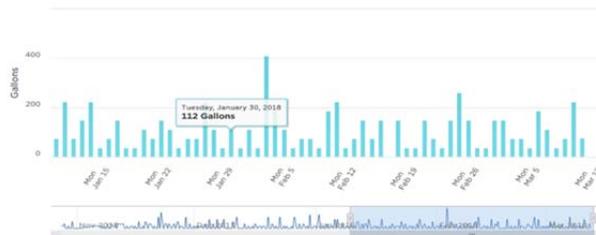
In 2013-2014, the Meter Division managed Evanston's migration to a new Advanced Metering Infrastructure (AMI) system, which has improved accuracy and efficiency of the water metering and billing processes. The AMI system also generates automated hourly meter reads and leak alerts for customers to help reduce water loss. Current technology allows meter readings to be taken automatically every hour, with once-daily, wireless upload of readings to a computerized billing system.

In 2017 a contractor was hired to exchange and replace out 5300 old meters that are 20 years old and to obtain better resolution of the meter reading.

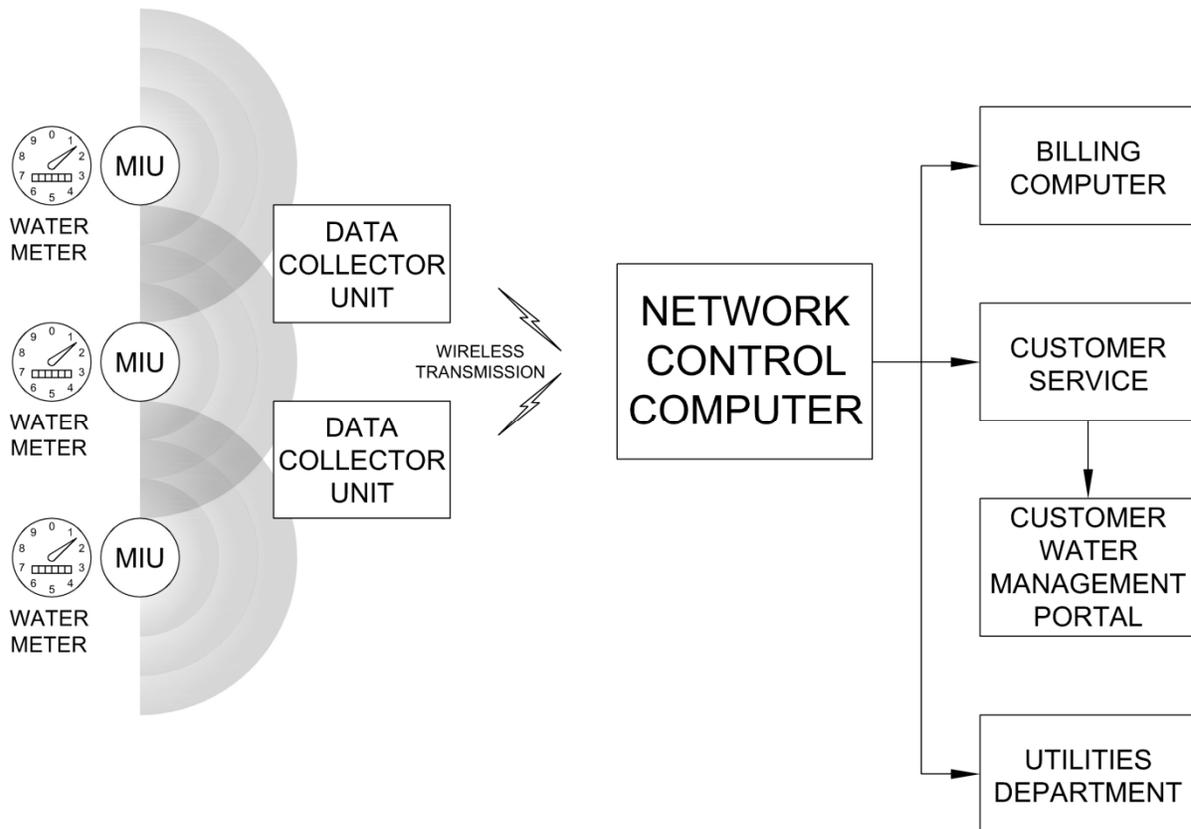


A Public Works Agency employee installs a new remote water meter reading unit on the exterior of a home as part of the Advanced Metering Infrastructure (AMI) project. This unit makes it possible for meter readings to be transmitted via wireless network without City staff having to visit each property to manually read the meters.

Introduced to our customers is the new Customer portal, WaterSmart which allows customers to monitor and receive alerts of their water usage. Customers can set their usage alerts to trigger between 1X and 5X of normal usage.



Automatic Metering Infrastructure (AMI) System



How it works:

- A Meter Information Unit (MIU) is attached to every water meter in Evanston. The MIU takes a meter reading once an hour and stores these readings for a full day. Each MIU broadcasts the readings once a day using a wireless transmitter.
- The Data Collector Unit (DCU) receives the meter readings from the MIUs. Evanston currently has 6 DCUs located on various buildings throughout the community. Each DCU sends its meter reading information to the Network Control System at the Water Treatment Plant on a daily basis.
- The Network Control System supports customer service and system management activities. It transfers the meter readings to the billing system to generate bi-monthly water and sewer bills for Evanston customers.
- The Network Control System monitors fluctuations in water usage, and sends leak alerts to the network administrator if a customer's real-time meter readings are significantly higher than historical usage trends.
- The AMI system includes an online portal where Evanston customers can monitor their water usage, compare usage trends under various weather conditions, and set up leak alerts of their own.

Transmitter Tower Locations



Water Meter Inventory

Water is billed bi-monthly in units of 100 cubic feet (CCF). The minimum service charge every two months is based on water meter size as follows:

Meter Size	Number of Meters
5/8"	11495
3/4"	1039
1"	1104
1.5"	263
2"	475
3"	59
4"	26
6"	3
8"	4
Total	14468

Water Rates for Evanston Customers

Water is billed bi-monthly in units of 100 cubic feet (CCF). The minimum service charge every two months is based on water meter size as follows:

Meter Size	Minimum Charge Effective 1/1/2017
5/8" & 3/4"	\$8.25
1"	\$16.46
1 1/2"	\$30.81
2"	\$48.52
3"	\$85.45
4"	\$136.88
6"	\$241.38
8"	\$408.63

The minimum demand charge includes the first five hundred cubic feet (500 CCF) of water consumed every two months, which is roughly equivalent to 3,740 gallons of water.

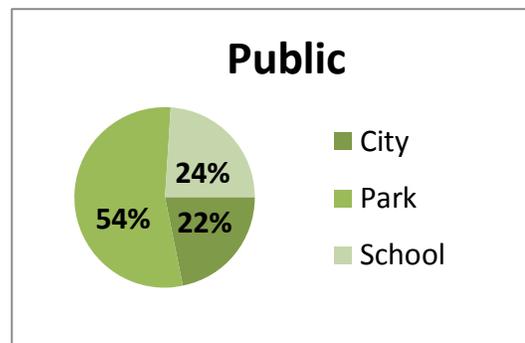
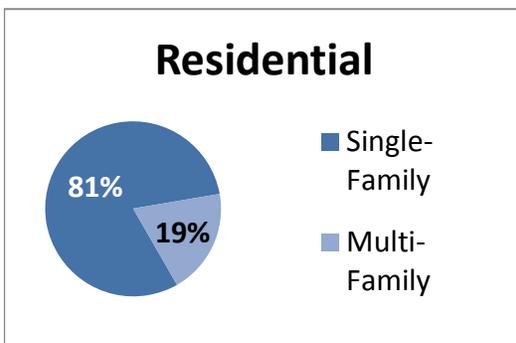
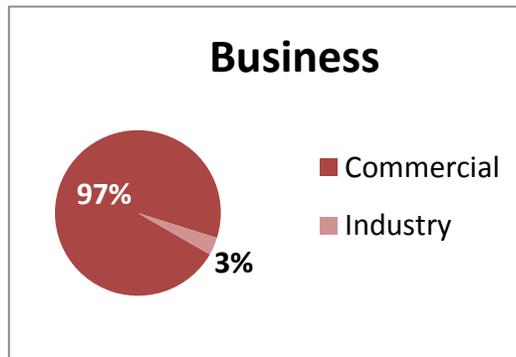
Water usage over the minimum is billed at \$2.31 per CCF effective 1/1/2017. This is equivalent to a rate of \$3.08 per 1,000 gallons.

Water Customer Classes and Metered Usage

Billed by Category and Water Usage for 2017

Category	Number of Accounts	2017 Usage (CCF)*
Metered Water Services		
Single-Family	10,750	1,070,119
Multi-Family	2,594	1,215,640
Commercial	948	1,115,236
Industry	34	12,777
City	31	16,776
Park	77	7,728
School	34	43,043
Subtotal	14,468	3,481,319
Unmetered Water Services		
Fire Services**	603	-
Totals	15,071	3,481,319

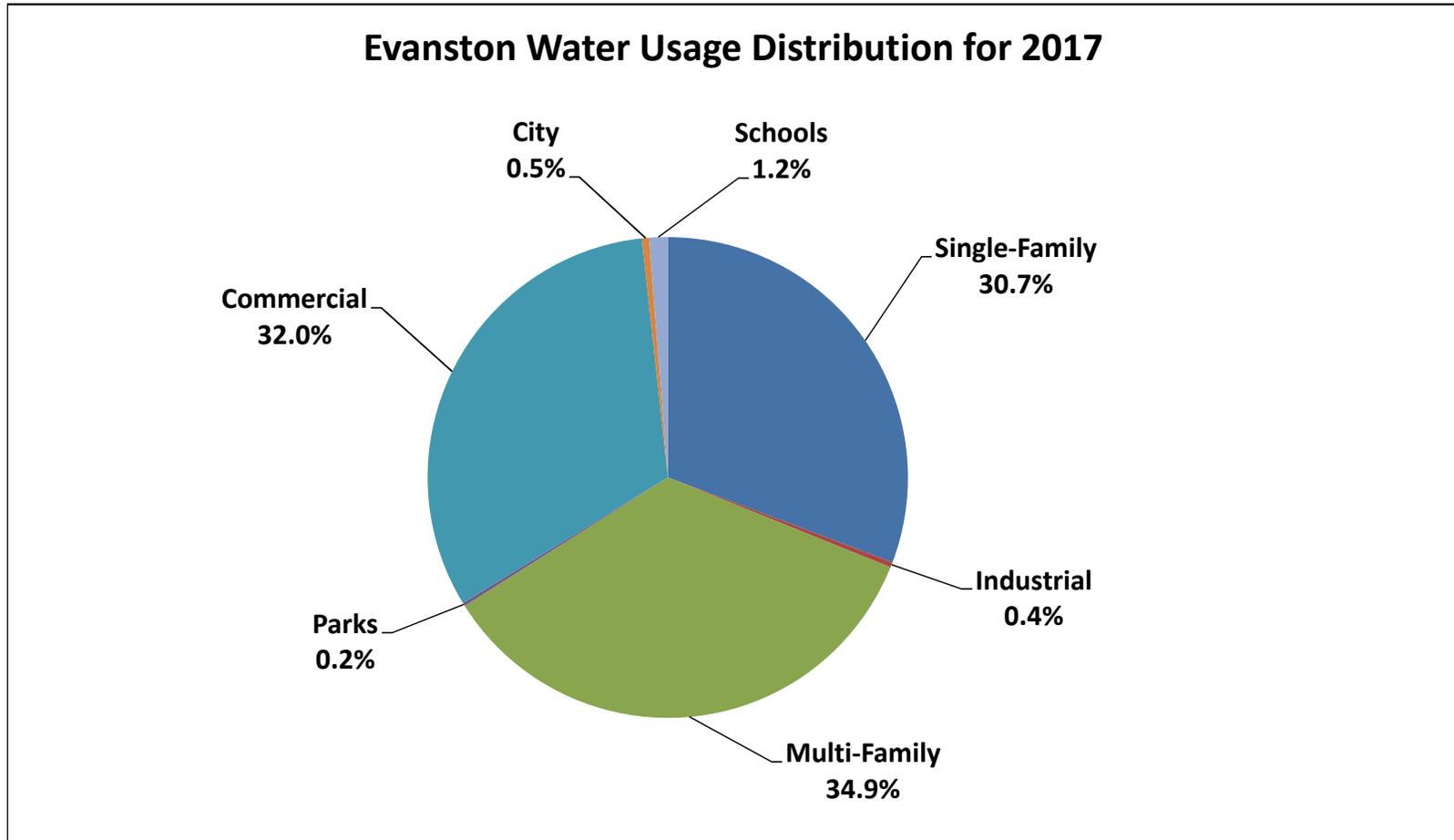
Water Service Accounts by Category:



* Water usage is metered in units of 100 cubic feet (CCF). 100 CCF is approximately 748 gallons

** Fire services are not metered. They are billed a flat charge twice per year.

Water Usage Breakdown for Evanston Customers



Sewer

The Sewer Division manages the operation, inspection, maintenance, and repair of the City's sewer mains and structures (sewer manholes, catch basins, and stormwater inlets). This includes proactive programs such as sewer main and drainage structure cleaning, root cutting, and televised internal sewer main inspection; as well as responding to all reports of sewer backups and flooding. This division also inspects work done by contractors including sewer main lining and manhole rehabilitation. Sewer Division staff conduct regular inspection of sewer outfalls and other facilities throughout Evanston for compliance with the City's sewer system operating permits with the Illinois Environmental Protection Agency.



Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

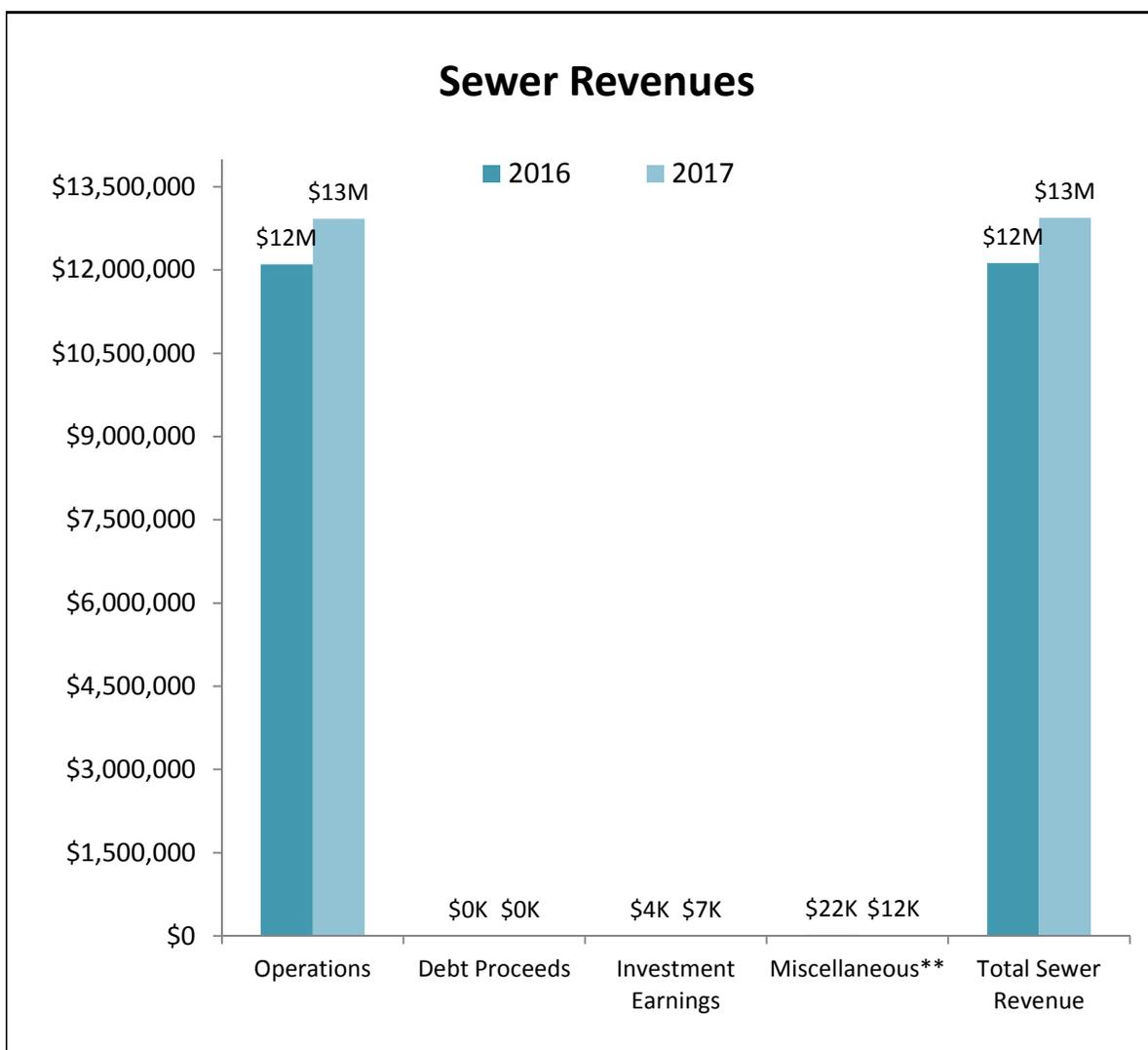
Much of Evanston's sewer system was constructed in the late 1800s to early 1900s. These pipes are far too small to convey both domestic sewage and stormwater runoff as they were intended to do. Beginning in the early 1990s, Evanston constructed a network of relief sewers, which are much larger and deeper than the original combined sewers. The relief sewers now convey most of the stormwater runoff, to avoid overwhelming the combined sewers during rain events. The relief sewers run to a number of drop shafts located along the North Shore Channel, where they discharge directly to the Metropolitan Water Reclamation District's (MWRD) deep tunnel system.



This drop shaft was one of the starting points for a tunneling machine that installed Evanston's relief sewers as a part of the Long Range Sewer Program in 1992 – 2008. Relief sewers are installed at depths of up to 60 feet to efficiently collect and transport large volumes of stormwater without impacting customers and other utilities.

Sewer Revenues*

	2016	2017
Operations	\$12,100,000	\$12,921,749
Debt Proceeds	\$0	\$0
Investment Earnings	\$4,450	\$6,500
Miscellaneous**	\$21,600	\$12,000
Total Sewer Revenue	\$12,126,050	\$12,940,249

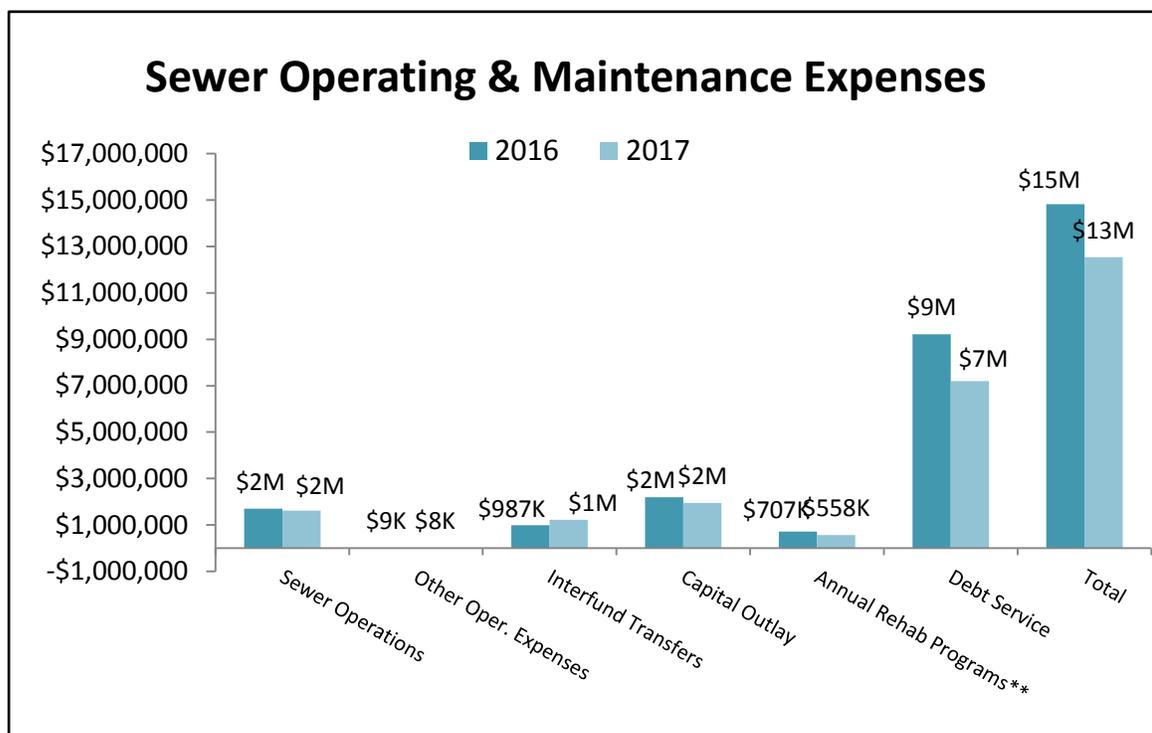


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <http://www.cityofevanston.org/transparency/budget-financial-reports/>.

** Miscellaneous Revenue includes fees, grants, and merchandise sales.

Sewer Operating & Maintenance Expenses*

	2016	2017
Sewer Operations	\$1,698,475	\$1,615,026
Other Oper. Expenses	\$8,500	\$7,676
Interfund Transfers	\$987,194	\$1,219,451
Capital Outlay	\$2,195,200	\$1,943,160
Annual Rehab Programs**	\$706,603	\$557,574
Debt Service	\$9,222,913	\$7,198,860
Total	\$14,818,885	\$12,541,747

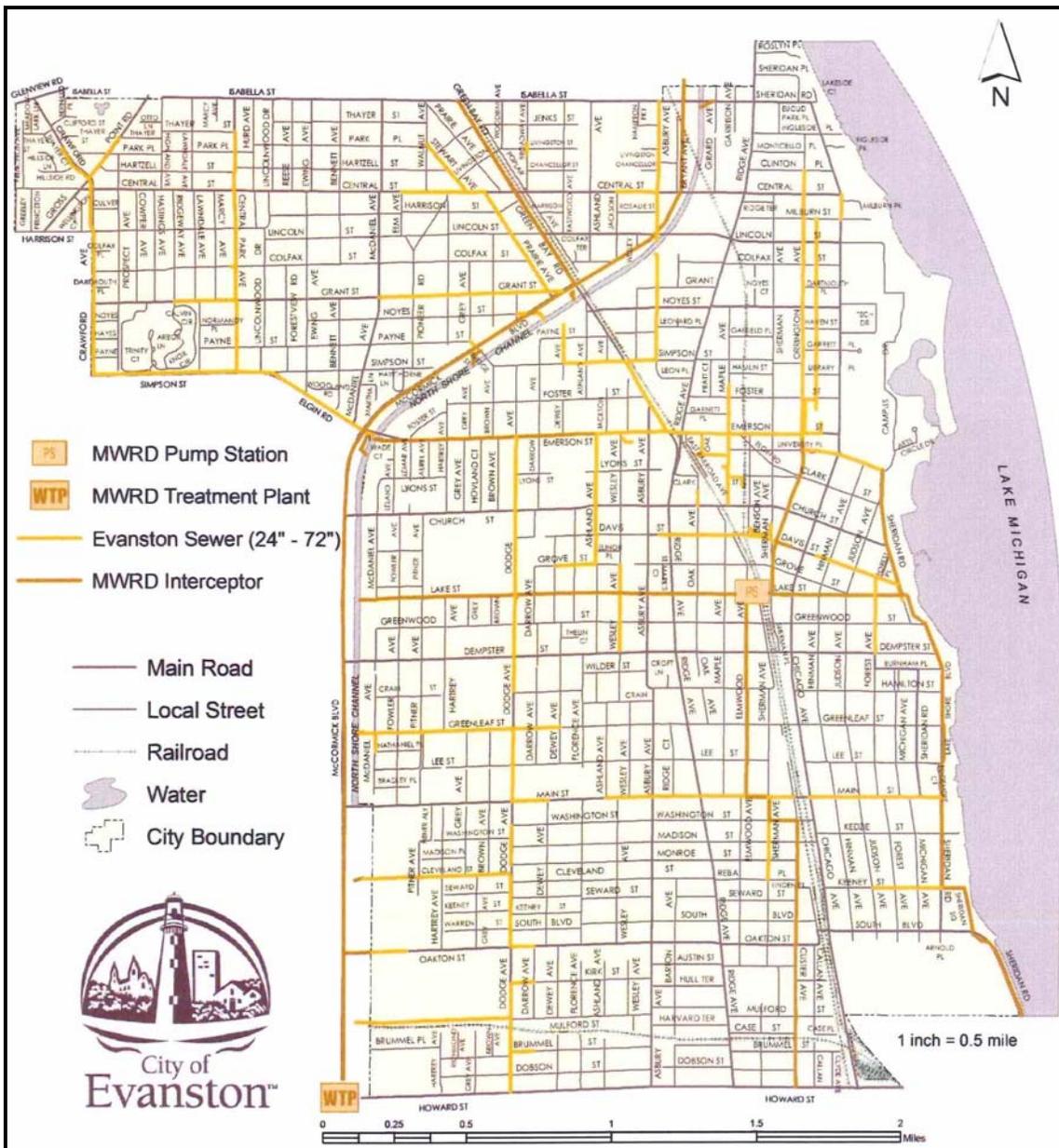


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, <http://www.cityofevanston.org/transparency/budget-financial-reports/>.

**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

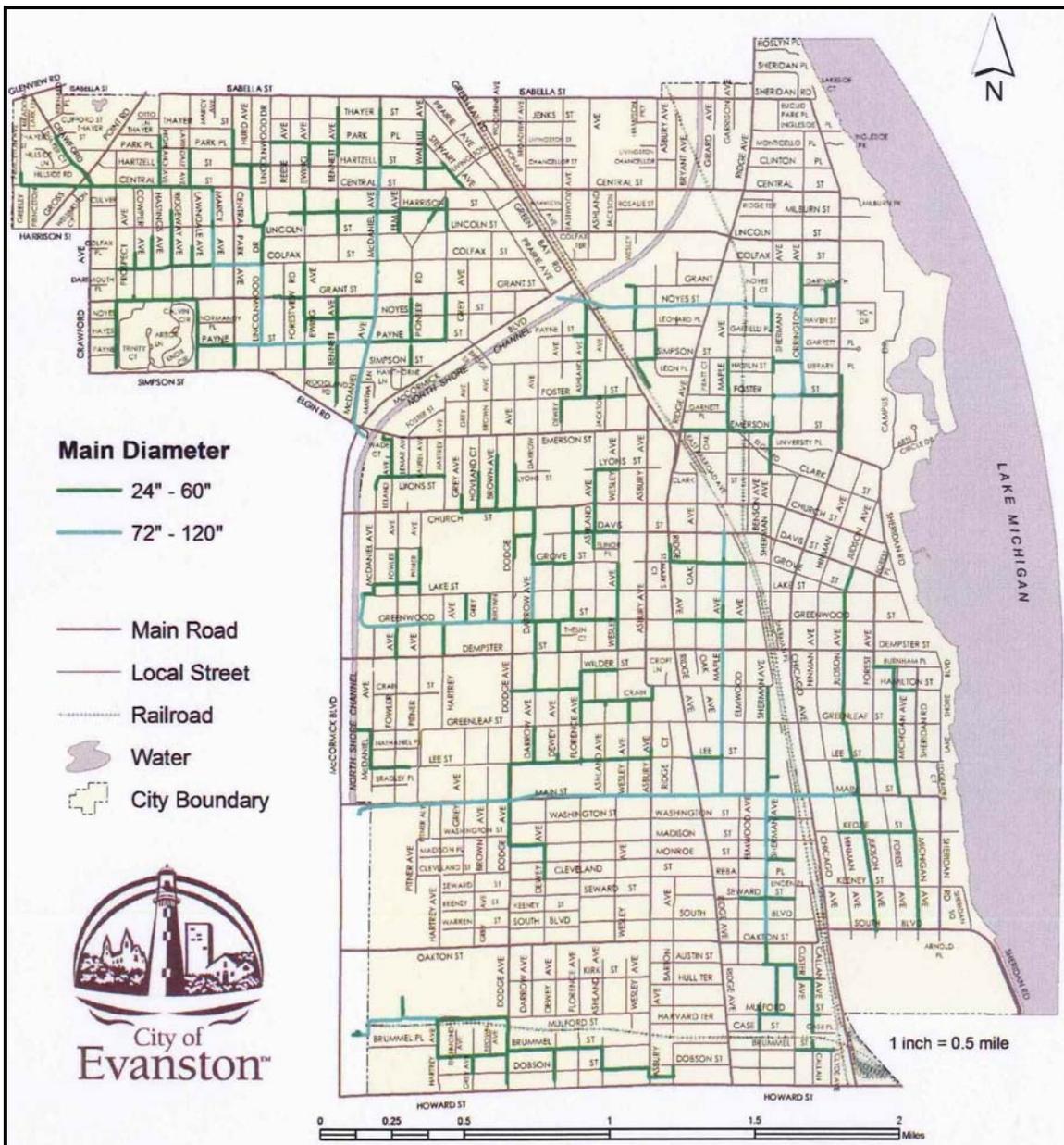
Major Combined Sewer System

The combined sewer system is Evanston's original sewage collection system. Much of this system was constructed in the late 1800s to early 1900s. The system was intended to capture and convey both domestic sewage and stormwater runoff, though as early as the early 1900s the City experienced flooding and basement backups during rain storms because the combined sewer pipes were not large enough to handle stormwater. In the early 1990s, Evanston began constructing a relief sewer system to convey the majority of the stormwater runoff and lessen the risk of basement backups.



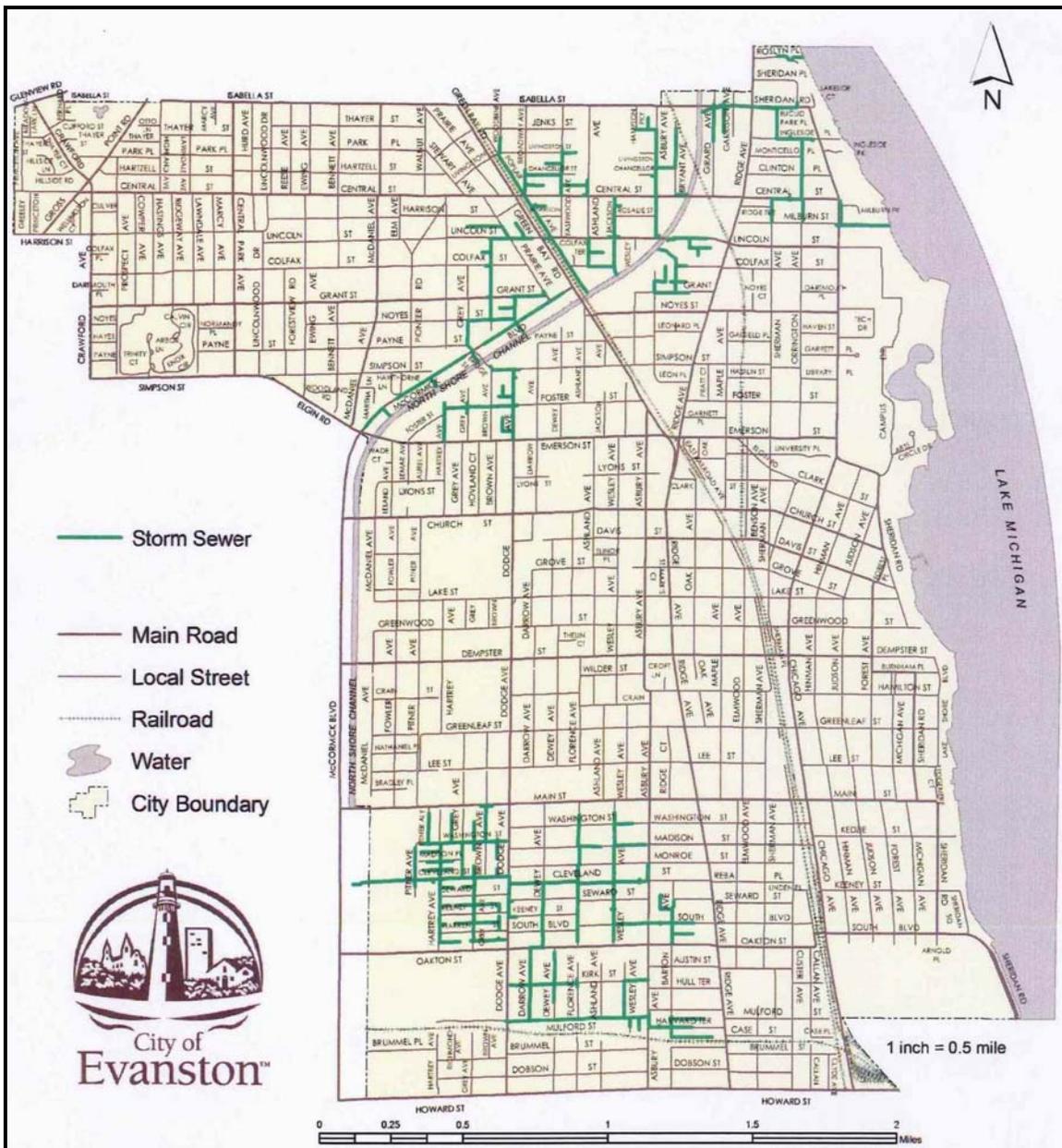
Major Relief Sewer System

Starting as long ago as 1902, property owners in Evanston experienced sewage backing up into basement during significant rain events. In 1990, the City Council approved a Long Range Sewer Improvement Program to mitigate property damage caused by basement backups. As part of this program, a network of large diameter relief sewers was constructed between 1991 – 2008 at a cost of \$210 million. These pipes are larger and deeper than the combined sewers, and convey stormwater runoff and sewage overflows to avoid overwhelming the combined sewers.



Major Storm Sewer System

The storms sewer system discharges directly to the North Shore Channel and Lake Michigan. It is only utilized during rain events to convey stormwater from the streets to the channel or the lake. Most of the storm sewers in southwest Evanston were installed in the late 1970s to early 1980s. The remainder of storm sewers in this area, as well as the storm sewers in north central and northeast Evanston, were installed between 1991-2008 as part of the Long Range Sewer Improvement Program. Evanston operates the storm sewer system under a special permit issued by the Illinois Environmental Protection Agency.

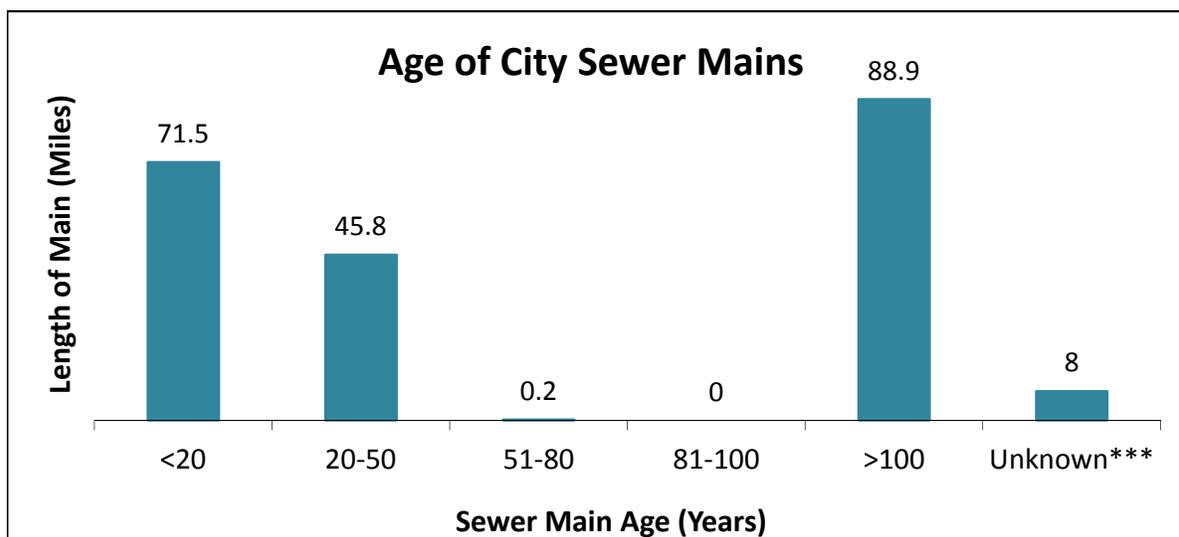


Sewer Mains

System Data and Maintenance

Sewer Length by Type	Pipe Length (miles)				
	2013	2014	2015	2016	2017
Combined Sewer	143.93	143.85	144.30	144.27	144.30
Relief Sewer	52.65	52.82	53.54	53.69	53.78
Storm Sewer	16.31	16.31	16.29	16.30	16.30
Total Length	212.89	212.98	214.13	214.26	214.38

Sewer Installation and Maintenance	Pipe Length (feet)				
	2013	2014	2015	2016	2017
Installed (new)	1,682	0	2,782	0	501
Replaced	0	0	0	0	178
CIPP Rehabilitation (Lining)	15,995	12,059	11,330	7,753	13,921
Spot Repair	4,804	780	2,143	2,943	1,048
Clean - Hydroflush	180,309	136,679	110,419	217,566	253,055
Clean - Root Cut	7,657	14,412	39,987	8,400	1,907
Inspection - General	21,421	26,570	45,777	28,492	19,881
Inspection - Televised	78,022	69,805	50,300	51,602	50,901
Inspection - Storm-related**	1,981	971	530	0	161



* Includes sewers installed as part of alley improvement projects.

** Inspection of City sewer mains as a result of sewer surcharge during or after a wet weather event, and inspection of storm sewer outfalls into the North Shore Channel.

*** Mains of unknown age were installed prior to detailed record keeping on sewer installations.

Length of Sewer Mains

By Type and Diameter

Diameter	Combined Sewer		Relief Sewer		Storm Sewer	
	Feet	Miles	Feet	Miles	Feet	Miles
<6"	2,926	0.55	243	0.05	0	0.00
6"	1,293	0.24	0	0.00	0	0.00
8"	21,710	4.11	10,961	2.08	1,933	0.37
9"	124,359	23.55	7,536	1.43	1,031	0.20
10"	109,488	20.74	29,467	5.58	10,994	2.08
12"	224,103	42.44	25,383	4.81	9,703	1.84
14"	1,019	0.19	0	0.00	0	0.00
15"	91,962	17.42	5,903	1.12	5,249	0.99
16"	2,085	0.39	6,671	1.26	724	0.14
18"	61,853	11.71	16,601	3.14	7,695	1.46
20"	8,410	1.59	127	0.02	0	0.00
21"	15,052	2.85	2,747	0.52	1,910	0.36
22"	858	0.16	0	0.00	0	0.00
24"	21,405	4.05	46,340	8.78	15,967	3.02
27"	6,434	1.22	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,107	3.62	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,757	3.74	18,386	3.48	6,730	1.27
39"	421	0.08	0	0.00	0	0.00
40"	377	0.07	0	0.00	0	0.00
42"	6,700	1.27	12,282	2.33	3,570	0.68
45"	1,029	0.19	0	0.00	0	0.00
48"	13,108	2.48	22,580	4.28	7,966	1.51
51"	1,104	0.21	0	0.00	0	0.00
54"	1,981	0.38	3,159	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,215	1.37	4,916	0.93	3,633	0.69
72"	4,077	0.77	11,640	2.20	0	0.00
78"	0	0.00	5,440	1.03	0	0.00
84"	0	0.00	88	0.02	0	0.00
96"	0	0.00	2,366	0.45	0	0.00
108"	0	0.00	5,025	0.95	0	0.00
113"	0	0.00	9,275	1.76	0	0.00
120"	0	0.00	7,340	1.39	0	0.00
Unknown	1,641	0.31	2,671	0.51	691	0.13
Totals	761,894	144.30	283,934	53.78	86,040	16.30

Total Sewer Main Length: 214.37 miles

Sewer Structures

System Data and Maintenance

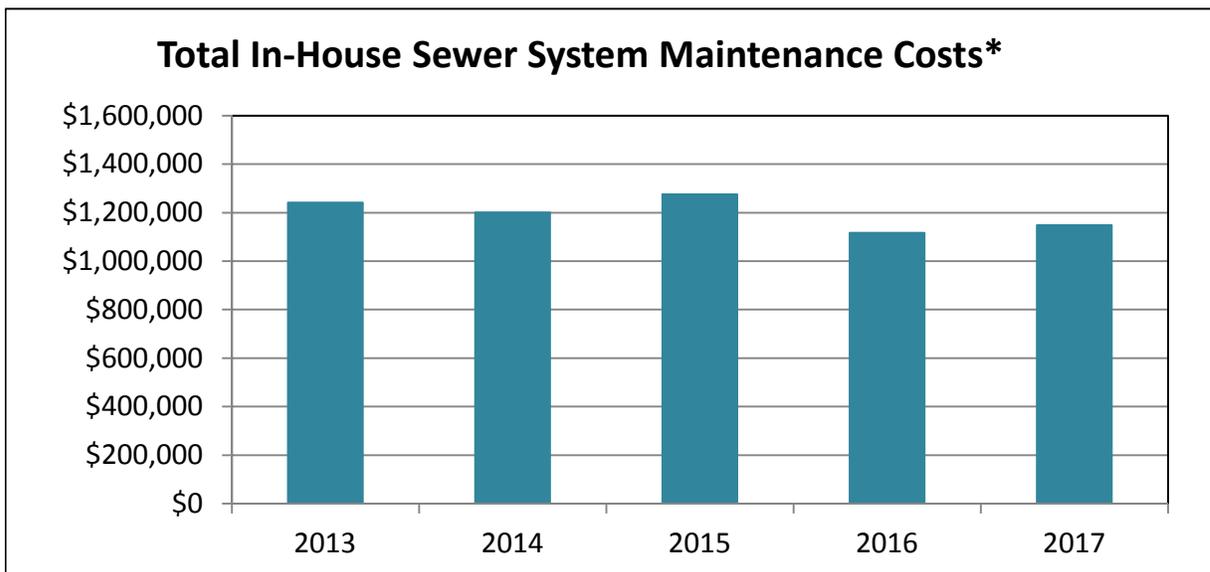
Number of Sewer Structures	2013	2014	2015	2016	2017
Manholes	5,561	5,566	5,582	5,583	5,588
Inlets	2,973	2,974	3,018	3,024	3,025
Catch Basins	6,203	6,208	6,238	6,246	6,241
Total	14,737	14,748	14,838	14,853	14,854

Sewer Structure Installation & Maintenance	2013	2014	2015	2016	2017
Installed (new)	16	1	41	3	4
Replaced	5	21	18	9	15
Repair	87	55	73	89	97
Clean	2,732	3,181	3,262	2,779	1,889
Inspect - General	327	161	614	156	196
Inspect - Storm-Related*	1001	985	935	689	995

* Inspection of City drainage structures as a result of street or alley flooding during or after a wet weather event.

Breakdown of In-House Maintenance Costs

Description	2013	2014	2015	2016	2017
Sewer Mains	\$449,960	\$355,398	\$344,407	\$396,738	\$377,668
Sewer Structures	\$423,665	\$353,667	\$547,051	\$388,196	\$434,624
Equip/Facility Maint.	\$176,489	\$87,884	\$162,452	\$122,994	\$164,159
Assist W&S Divisions	\$48,692	\$73,275	\$80,729	\$52,271	\$41,226
Snow & Ice Removal	\$66,675	\$243,207	\$68,538	\$32,077	\$12,423
Assist Contractors	\$39,542	\$18,681	\$16,637	\$16,955	\$23,378
Assist Other City Depts.	\$13,569	\$35,943	\$17,107	\$61,226	\$31,302
Safety & Training	\$15,233	\$18,759	\$27,486	\$30,844	\$23,472
Miscellaneous	\$6,808	\$13,868	\$10,588	\$14,874	\$39,778
JULIE Locates	\$135	\$553	\$193	\$357	\$236
Total	\$1,240,768	\$1,201,233	\$1,275,188	\$1,116,533	\$1,148,265



* Costs fluctuate from year to year due to changes in maintenance needs and prioritization of repair projects.

Sewer Mains Rehabilitated (Lined)

The Public Works Agency manages an annual sewer improvement program, with the goal of rehabilitating at least 1.5 miles of combined sewer mains annually (minimum 1% annual system-wide renewal rate).

