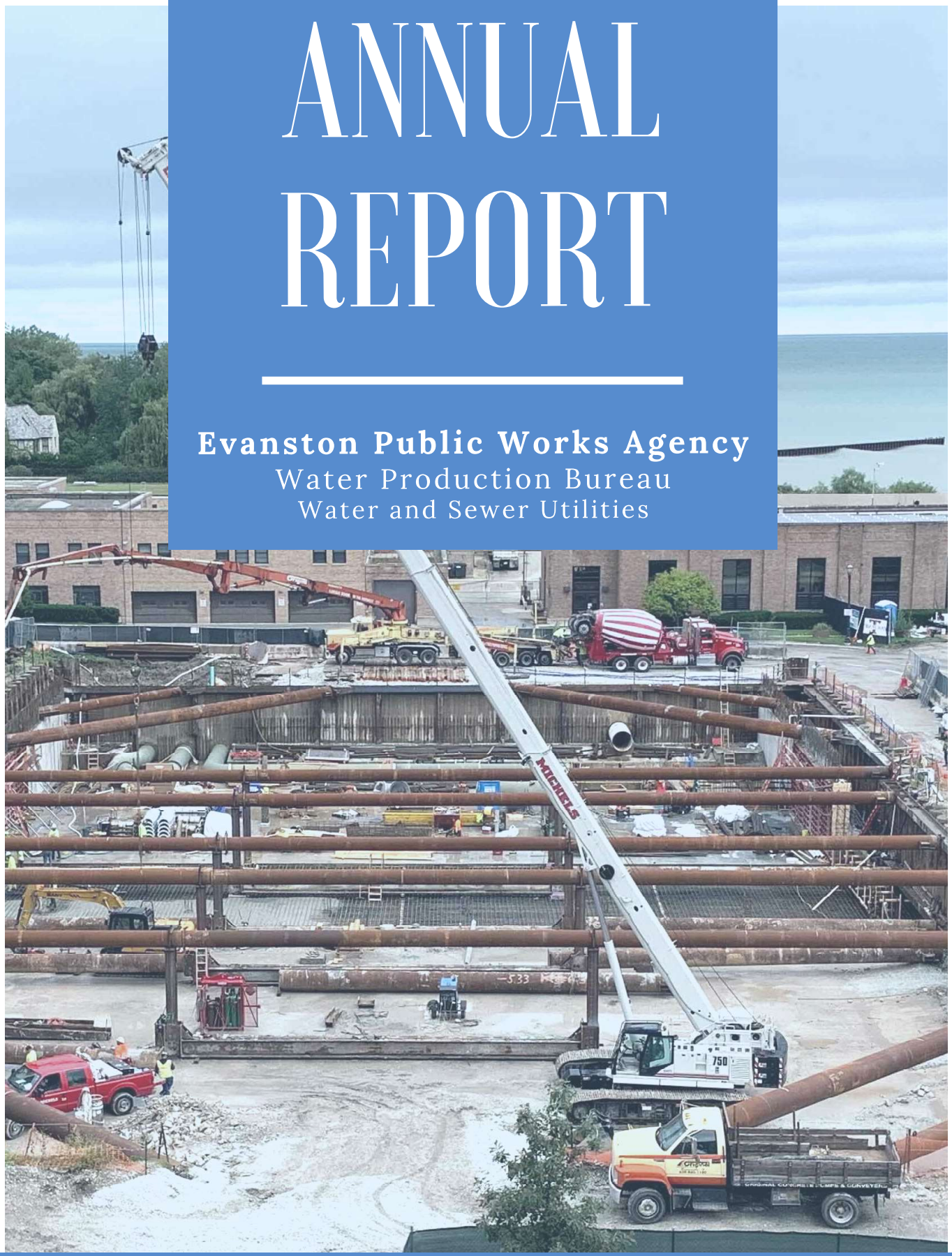
2019

ANNUAL REPORT

Evanston Public Works Agency
Water Production Bureau
Water and Sewer Utilities



City of Evanston

Committed to serving the community for 146 years

2019 Executive Summary

Evanston Water Production Bureau of the **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

471,505 Residents supplied
58,938 Businesses supplied
in Evanston and 8 other communities

SEWER UTILITY

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

BUDGET

$48.7 million - Water Fund
$14.8 million - Sewer Fund
57.5 full-time equivalents (FTE) staff

General Information

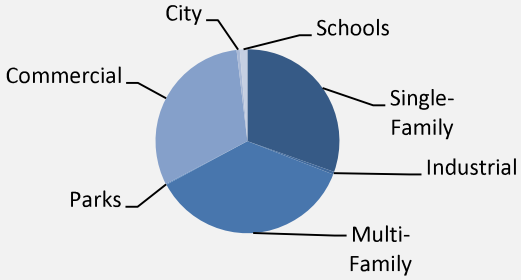
15,750 Million Gallons – Total Water Pumped in 2019
60 Million Gallons – Maximum Pumpage in One Day
June 15th – Day When the Maximum Pumpage occurred

330 Fire Hydrants Replaced/Repaired

1.3 Miles of Water Main Installed/Replaced/Rehabilitated
62 Water Main Valves Installed/Replaced/Rehabilitated
3.0 Miles of Sewer Main Installed/Replaced/Rehabilitated
10.7 Miles of Sewer Main Inspected
28.8 Miles of Sewer Main Cleaned
160 Sewer Structures Installed/Replaced/Repaired
1,910 Sewer Structures Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



11.9 Million kWh of Electric Power Used

127,891 Therms of Natural Gas Used

$64.09 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)

CROSS CONNECTION CONTROL

4,642 Backflow Prevention Devices Certified in 2019

Programs and Initiatives

Water Quality – Lead and Copper Tested in Drinking Fountains

Continued the seasonal drinking fountain start-up plan which included sampling water, high flow flushing, and replacing drinking fountain components known to contain lead. Sampled water from 57 park drinking fountains.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

146 miles of water main were surveyed, 1 water service leak and 2 water main breaks were found. This resulted in 8.85 million gallons/year of water savings.

First Responder

1,926 hours Distribution division spent on First Responder events

1,630 hours Sewer division spent on First Responder events

Capital Projects

Each year the City conducts millions of dollars of infrastructure projects as part of their **Capital Improvement Program or (CIP)**. Below are the Water and Sewer Capital Improvements completed in 2019.

- **Water Main Replacement:** Isabella Street – Prairie Avenue to Green Bay Road, Emerson Street – Dodge Avenue to Ashland Avenue, Hatrey Avenue – Dobson Street to Brummel Street and Main Street to Washington Street, Cowper Avenue – Harrison Street to Central Street, Lincolnwood Drive – Park Place to Isabella Street, Payne Street – Darrow Avenue to Dewey Avenue, Monroe Street – Dodge Avenue to Florence Avenue
- **Combined Sewer:** CIPP Rehabilitation
- **South Standpipe Pump Station:** New electrical room
- **Installed:** Plant Service Water Supply Booster Pump and West Filter Rate Controller with Master Meter

Accomplishments and Goals

2019 MAJOR ACCOMPLISHMENTS

Water Supply Expansion

Continued to expand Evanston's wholesale water customer base, including executing a water supply agreement with Lincolnwood and beginning construction to supply water to Lincolnwood.

Maintenance Management System Implementation

Year 3 implementation of the Computerized Maintenance Management System (CMMS) including Roads, curbs, sidewalks; Facilities (Service Center, Police and Fire Stations) assets to more effectively manage long-term maintenance and replacement of critical equipment and structures.

Water Treatment Facility Improvements

Began the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

2020 MAJOR GOALS AND INITIATIVES

Water Supply Expansion

Continue to expand Evanston's wholesale water customer base, including beginning to supply water to Lincolnwood.

Complete Large Diameter Sewer Rehabilitation

Complete Greenleaf Street Large Diameter Sewer Rehabilitation project that secured State low-interest loan funding in 2019.

Water Treatment Facility Improvements

Assure the quality and reliability of the potable water supply by completing a major water treatment plant improvement with the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

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Metering

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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 470,000 people and 59,000 businesses in Evanston and eight 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 2019 adopted budget was approximately $63.5 million ($48.7 million Water Fund and $14.8 million Sewer Fund). Public Works Agency staff includes 57.5 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2017	2018	2019
Total Water Pumped (millions of gallons)	14,821	15,049	15,750
Fire Hydrants Repaired or Replaced	545	583	330
Water Main Valves Repaired or Replaced	61	50	62
Water Main Replaced or Rehabilitated (miles)	0.87	1.26	1.3
Large Diameter Sewer Rehabilitated (feet)	0	835	0
Small Diameter Sewer Rehabilitated (feet)	13,921	3,827	11,578
Sewer Mains Inspected (feet of pipe)	70,782	53,710	56,567
Sewer Mains Cleaned (feet of pipe)	254,962	47,193	152,025
Sewer Structures Repaired or Replaced	112	122	119

2019 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 470,000 customers in eight communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

Water Supply Expansion

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

Water Treatment Facility Improvements

Assured the quality and reliability of the potable water supply by beginning a major water treatment plant improvement with the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

Maintenance Management System Implementation

Year 3 implementation of the Computerized Maintenance Management System (CMMS) including Roads, curbs, sidewalks; Facilities (Service Center, Police and Fire Stations) assets to more effectively manage long-term maintenance and replacement of critical equipment and structures.

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.

Complete South Standpipe Modifications

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

Complete Large Diameter Sewer Rehabilitation

Performed engineering design and secured State low-interest loan funding for the Greenleaf Street Large Diameter Sewer Rehabilitation project scheduled for 2020.

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.

2020 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 470,000 customers in ten 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 beginning to supply water to Lincolnwood.

Water Treatment Facility Improvements

Assure the quality and reliability of the potable water supply by completing a major water treatment plant improvement with the replacement of the City's 5 million gallon finished water Clearwell to address structural deterioration.

Begin Laboratory Modernization Construction Project

Begin improvements to the water quality laboratory, used to analyze water for bacteriological contamination and other water quality parameters, at the water treatment plant to continue to meet requirements necessary to be certified by the Illinois Department of Public Health.

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.

Complete Large Diameter Sewer Rehabilitation

Complete Greenleaf Street Large Diameter Sewer Rehabilitation project that secured State low-interest loan funding in 2019.

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 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.

Begin Development of Stormwater Master Plan

Begin a hydraulic analysis of the Evanston sewer system to determine where improvements could be made to address the potential to flooding due to stormwater runoff. This will assist in meeting the objectives established in the CARP.

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 ft^2 each, surface loading rate of 3 gpm/ft^s
12 – 10.0 mgd, 1,391 ft^2 each, surface loading rate of 5 gpm/ft^2
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

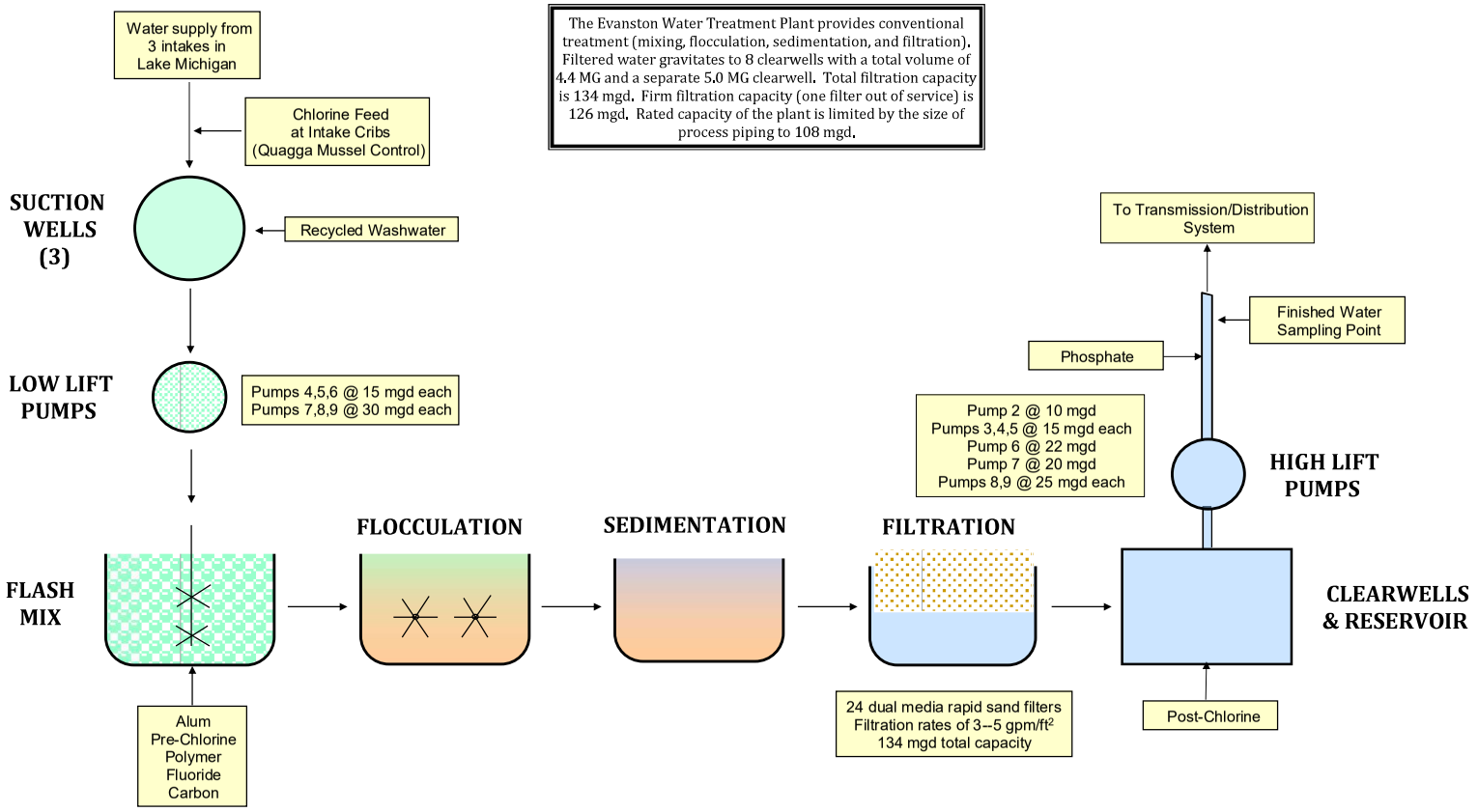
High Lift Pumps
1 – 15 mgd, electric motor driven
2 – 25 mgd, electric motor driven
1 – 10 mgd, dual drive, electric/natural gas
2 – 15 mgd, dual drive, electric/natural gas
1 – 22 mgd, dual drive, electric/natural gas
1 – 20 mgd, natural gas engine
Total capacity of 147 mgd
Emergency standby capacity 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



Water Works Improvements (1874 to 2019)

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 lengt.h

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.

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 chlorine 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
- 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.

2018

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

2019

- Completed South Standpipe pump station new electrical room and maintenance building improvements.
- Replacement of various doors at the water plant.
- Installed Plant Service Water Supply Booster Pump.
- Installed West Filter Rate Controller with Master Meter.

- Improved flushing water supply to Settling Basin 1.
- Completed Milburn gate automation.

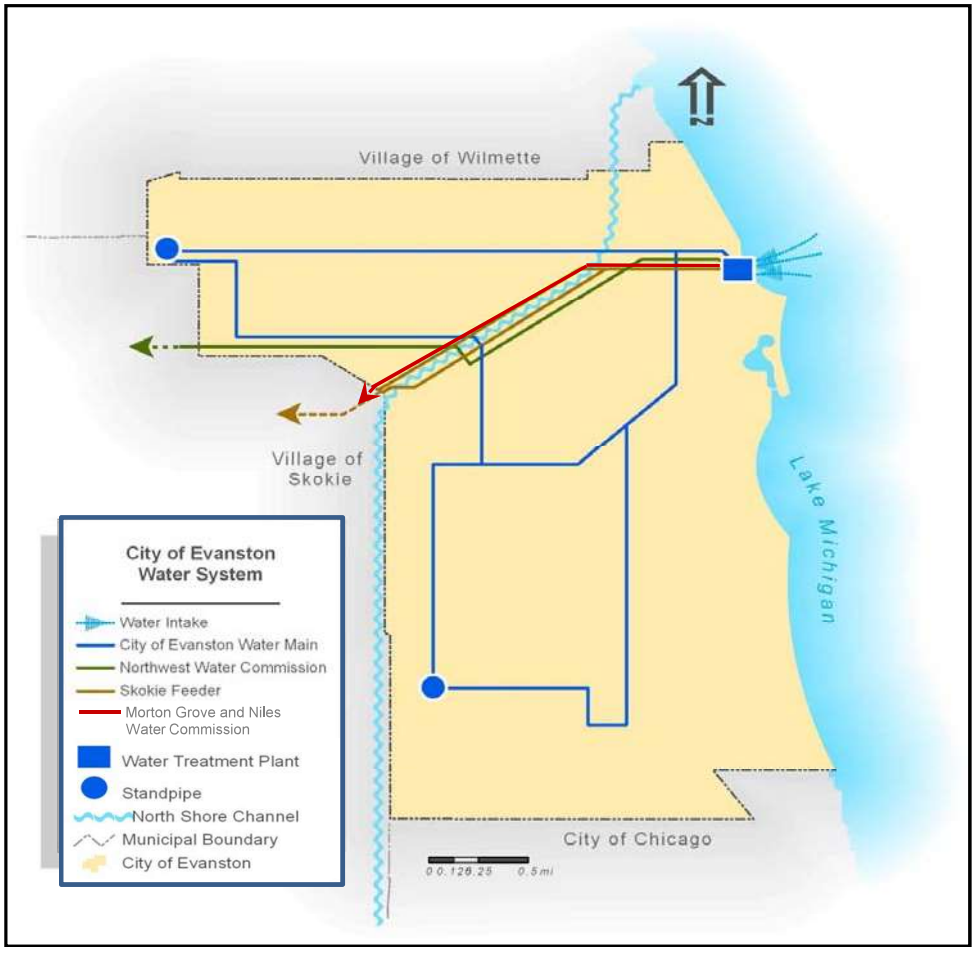
Notes: MG = million gallons
HP = horsepower
kW = kilowatt
mgd = million gallons per day
kV = kilovolt
kVA = kilovolt-ampere

Service Area & Customers

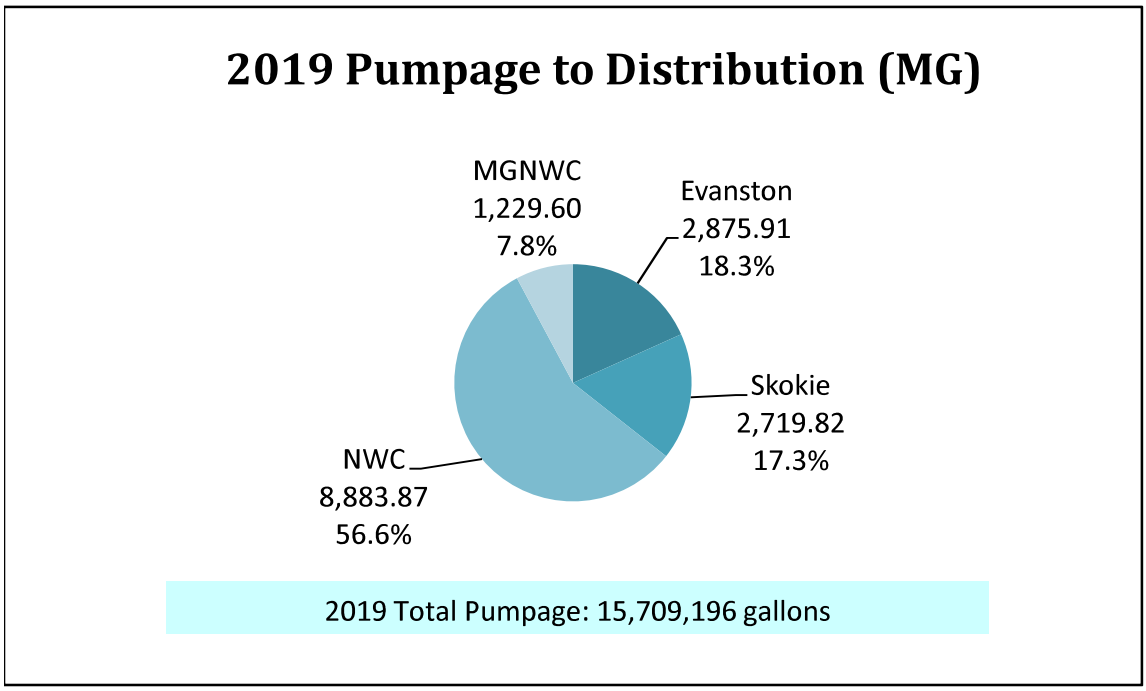
	Area (Square Miles)	2019 Persons*	2019 Businesses**
Evanston	7.8	74,106	8,459
Skokie	10	63,280	10,120
MORTON GROVE - NILES WATER COMMISSION			
Morton Grove	5.1	22,943	3,237
Niles	5.9	29,184	3,957
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	75,249	8,255
Buffalo Grove	9.5	40,853	5,266
Palatine	13.6	68,053	6,867
Wheeling	8.7	38,878	4,611
Des Plaines	14.4	58,959	8,166
Total Served	**91.54**	**471,505**	**58,938**

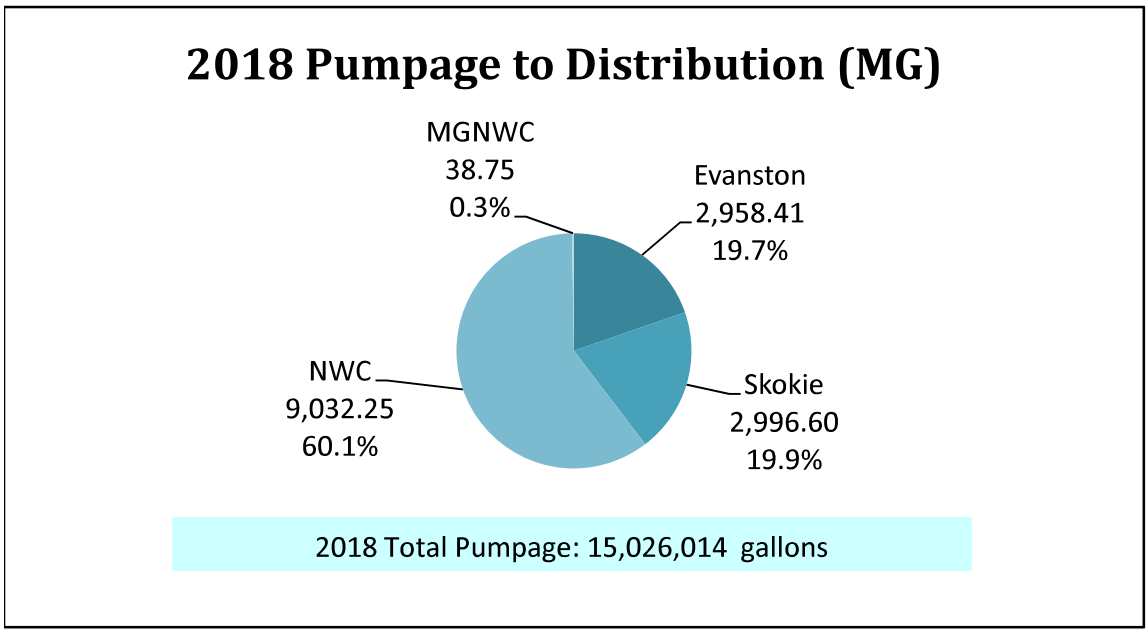
* U.S. Census Bureau, 2018 Estimate

** U.S. Census Bureau, 2012 Estimate



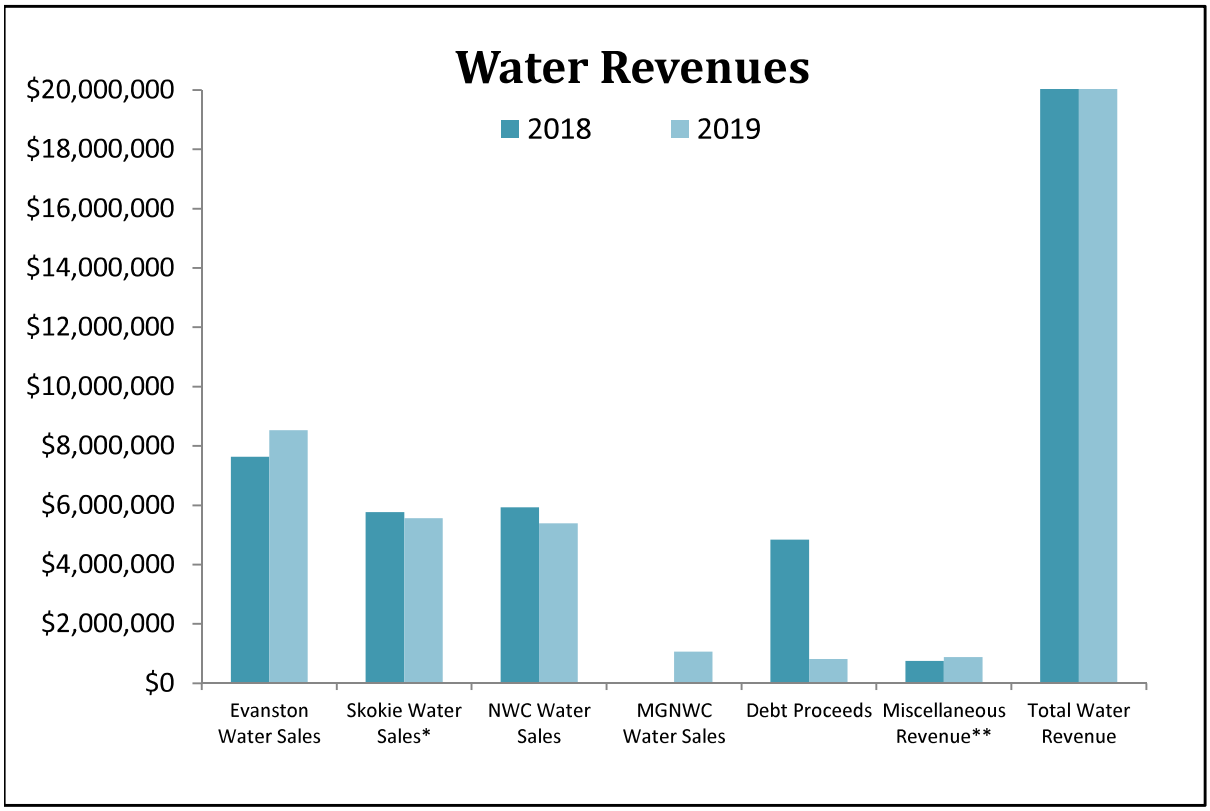
Pumpage to Distribution





Water Revenues

	2018	2019
Evanston Water Sales	$7,631,465	$8,529,573
Skokie Water Sales*	$5,773,487	$5,562,501
NWC Water Sales	$5,930,626	$5,394,834
MGNWC Water Sales	$27,677	$1,061,477
Debt Proceeds	$4,837,719	$818,361
Miscellaneous Revenue**	$750,516	$879,235
Total Water Revenue	$24,951,490	$22,245,981

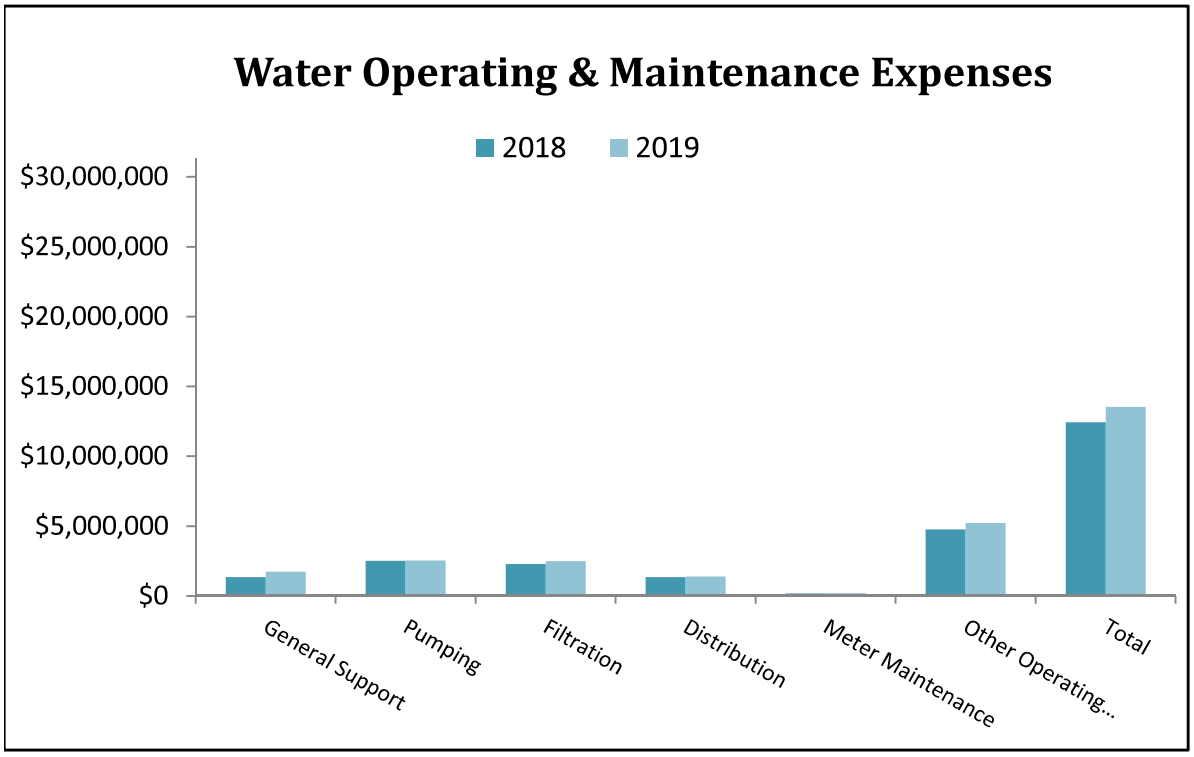


* Due to contract disputes this value represents the amount billed to Skokie. The amount paid in 2018 was $2,186,078 and in 2019 was $1,619,340.

** 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*

	2018	2019
General Support	$1,341,288	$1,741,775
Pumping	$2,521,261	$2,527,331
Filtration	$2,288,007	$2,484,628
Distribution	$1,345,242	$1,388,034
Meter Maintenance	$169,264	$189,630
Other Operating Expenses**	$4,769,596	$5,207,463
Total	$12,434,658	$13,538,861



* 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/.

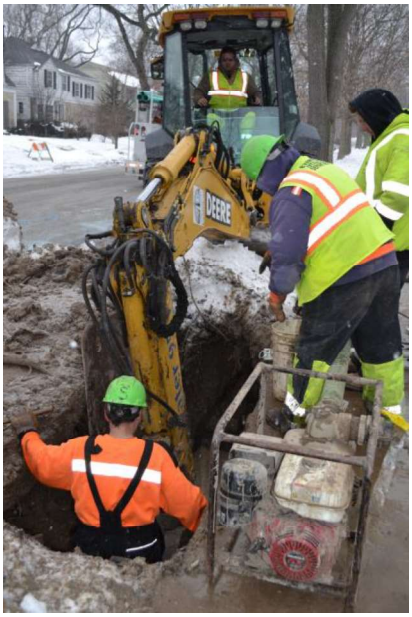
**Other Operating Expenses include capital outlay, interfund transfers (general and insurance), and other operating expenses.

First Responder

A first responder is defined as a person with specialized training who is among the first to arrive and provide assistance at the scene of an emergency such as an accident, natural disaster, or act of terrorism. First responders are responsible for the protection and preservation of life, property, evidence and the environment.

The "Public Works First Responder" symbol is used to identify public works personnel and acknowledge their federally-mandated role as first responders.

President George W. Bush issued Homeland Security Presidential Directive 5 (HSPD-5), Management of Domestic Incidents, in 2003, in which a public works response to emergencies and disasters were officially recognized as an absolute necessity, and the federal government was directed to include public works in all planning and response efforts.



Fixing water main breaks is one ways the Distribution Division ensures the safety of residents and protects both private and City property

The City of Evanston Distribution and Sewer divisions have annual emergency preparedness training which includes confined space training and certification. These divisions also respond to varied emergency events in the community such as snow and ice control, water main breaks, sewer main collapses, hydrant repairs, and sinkholes. They respond to utility outages and emergencies that occur at any time and in any weather to maintain water and sewer service for residents of Evanston.

Distribution - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Water Main Breaks	931	$36,691	$30,495	$2,937	$70,124
Snow & Ice Control	826	$38,688	$11,275	-	$49,963
Thaw Fire Hydrant	3	$95	$34	-	$130
Hydrant - Inspect	6	$291	$67	-	$358
Water Main - Check For Leaks	27	$1,540	$300	-	$1,840
Service - Delinquency	3	$130	$28	-	$158
Service - Inspect	33	$1,649	$464	-	$2,113
Service - Repair Leak	2	$108	$17	-	$125
Meter/MIU - Inspect	12	$515	$130	-	$645
Meter/MIU - Repair	2	$81	$17	-	$98
Meter/MIU - Replace	2	$104	$22	$70	$197
Dist - Assist Other Utilities	1	$54	$11	-	$65
Dist - Assist W&S Contractor	61	$3,120	$692	$706	$4,519
Dist - JULIE Locates	20	$968	$219	-	$1,187
Total	**1,926**	**$84,034**	**$43,773**	**$3,714**	**$131,521**

Sewer - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Basement Backups	264	$8,974	$6,505	-	$15,480
Snow & Ice Control	789	$33,254	$16,832	-	$50,086
Sinkholes	549	$17,368	$16,332	$41	$33,741
Sewer Structure - Inspect	15	$768	$168	-	$936
Sewer Structure - Repair	2	$81	$17	-	$98
Sewer Main - Inspect	2	$81	$17	-	$98
Sewer - Assist W&S Divisions	2	$81	$17	-	$98
Sewer - JULIE Locates	7	$354	$73	-	$427
Sewer - Miscellaneous	2	$106	$45	-	$151
Total	**1,630**	**$61,067**	**$40,005**	**$41**	**$101,113**

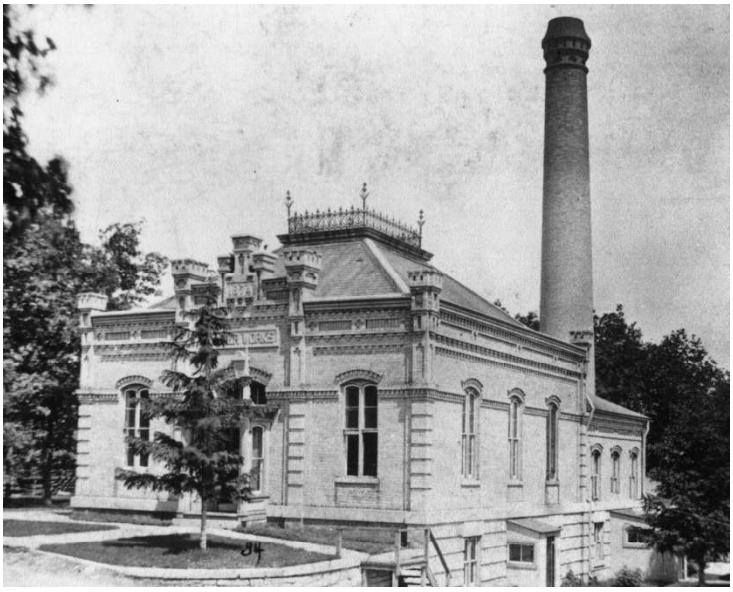
Pumping

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 and Morton Grove and Niles 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

2019 Monthly Pumpage (MG)

Month	Lake Water Pumpage	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Pumpage To			
					Evanston	Skokie	N.W.C.	M.G.N.W.C
Jan-19	1,286.873	34.249	1,321.122	1,311.993	257.911	232.278	721.097	100.710
Feb-19	1,191.786	31.445	1,223.231	1,212.716	236.188	207.724	673.159	95.651
Mar-19	1,223.425	35.539	1,258.964	1,249.680	236.872	221.782	725.031	62.532
Apr-19	1,214.498	33.457	1,247.955	1,226.422	240.275	207.222	690.744	88.220
May-19	1,289.875	32.678	1,322.553	1,309.585	256.645	217.383	747.443	88.266
Jun-19	1,276.628	32.322	1,308.950	1,299.616	256.118	220.002	744.647	78.849
Jul-19	1,541.357	34.513	1,575.870	1,571.108	288.160	274.810	881.631	120.322
Aug-19	1,498.310	38.049	1,536.359	1,531.310	287.774	264.451	845.341	133.745
Sep-19	1,285.967	34.822	1,320.789	1,317.244	229.452	230.212	738.278	113.041
Oct-19	1,249.708	35.342	1,285.050	1,269.513	215.817	218.980	708.122	117.501
Nov-19	1,188.455	32.522	1,220.977	1,208.010	191.636	210.330	697.024	99.007
Dec-19	1,224.571	31.020	1,255.591	1,243.054	179.057	214.646	711.353	131.757
Total	**15,471.453**	**405.958**	**15,877.411**	**15,750.251**	**2,875.905**	**2,719.820**	**8,883.870**	**1,229.601**

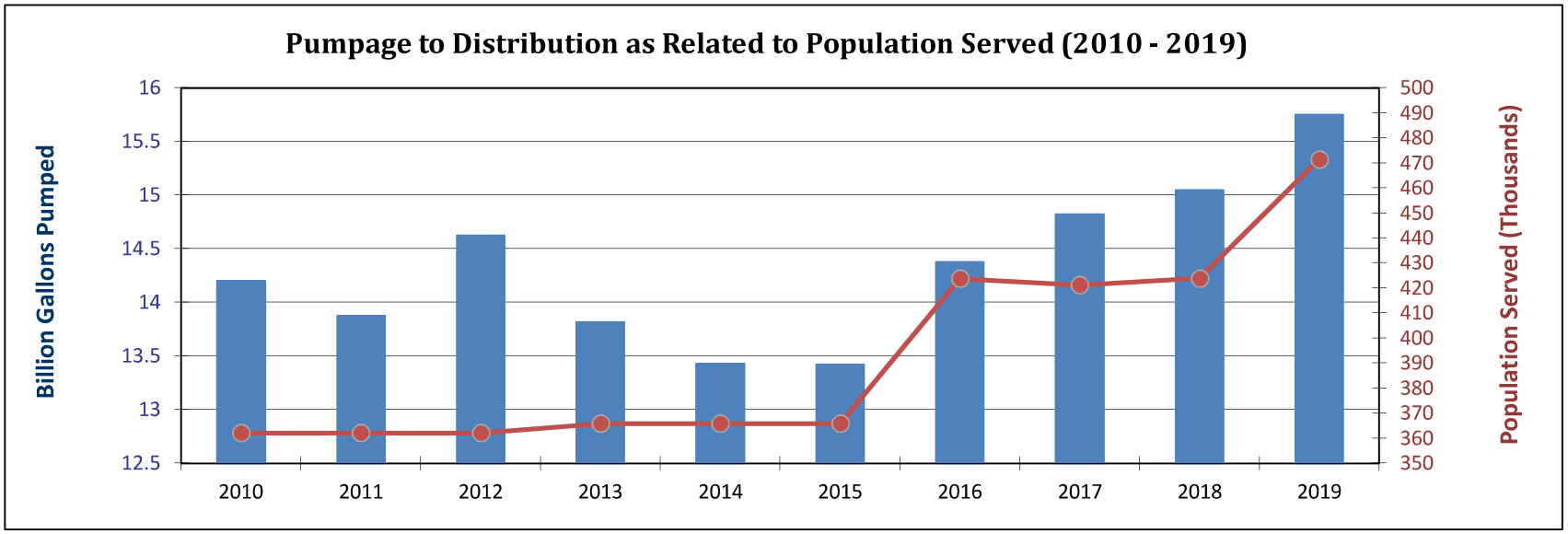
2019 Average Day Pumpage (MGD)

Month	Lake Water Pumpage*	Wash Water Recycled	Net Raw Water Pumpage	Finished Water Pumpage	Pumpage To			
					Evanston	Skokie	N.W.C.	M.G.N.W.C
Jan-19	41.512	1.105	42.617	42.322	8.320	7.493	23.261	3.249
Feb-19	42.564	1.123	43.687	43.311	8.435	7.419	24.041	3.416
Mar-19	34.400	1.146	40.612	40.312	7.641	7.154	23.388	2.017
Apr-19	33.939	1.115	41.599	40.881	8.009	6.907	23.025	2.846
May-19	41.609	1.079	40.257	42.245	8.279	7.012	24.111	2.847
Jun-19	42.554	1.077	43.632	43.321	8.537	7.333	24.822	2.544
Jul-19	49.721	1.113	50.835	50.681	9.295	8.865	28.440	3.881
Aug-19	48.333	1.227	49.560	49.397	9.283	8.531	27.269	4.314
Sep-19	42.866	1.161	44.026	43.908	7.648	7.674	24.609	3.646
Oct-19	40.313	1.140	41.453	40.952	6.962	7.064	22.843	3.790
Nov-19	39.615	1.084	40.699	40.267	6.388	7.011	23.234	3.194
Dec-19	39.502	1.001	40.503	40.099	5.776	6.924	22.947	4.250
Average	**42.388**	**1.112**	**43.500**	**43.151**	**7.879**	**7.452**	**24.339**	**39.995**

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	Finished Water Pumpage	Pumpage To			
					Evanston	Skokie	N.W.C.	M.G.N.W.C
2019	15,471.453	405.958	15,877.411	15,750.251	2,875.905	2,719.820	8,883.870	1,229.601
2018	14,793.326	337.586	15,130.912	15,049.406	2,958.411	2,996.604	9,032.250	38.749
2017	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366	0.000
2016	14,201.170	231.020	14,432.190	14,375.415	3,059.358	2,795.396	8,664.097	0.000
2015	13,471.823	200.285	13,672.108	13,423.806	2,790.010	2,786.896	7,846.900	0.000
2014	13,416.872	239.547	13,656.419	13,427.979	2,719.978	2,766.348	7,941.653	0.000
2013	13,925.102	247.609	14,172.711	13,814.461	2,908.602	2,787.256	8,096.927	0.000
2012	14,817.637	322.302	15,110.465	14,627.115	2,858.883	3,068.004	8,619.694	0.000
2011	13,939.618	212.426	14,152.042	13,941.167	2,920.633	2,866.652	8,082.667	0.000
2010	14,087.849	218.251	14,306.100	14,268.257	2,635.488	3,094.554	8,472.134	0.000



Average Daily Per Capita Consumption

	Evanston		Skokie		NWC		MGNWC		Total	
Year	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)*	Population	Per Capita Use (gpcd)	Population	Per Capita Use (gpcd)
2019	74,106	106	63,280	118	281,992	86	52,127	NA	471,505	91
2018	75,557	107	64,773	127	283,630	87	53,214	NA	477,174	86
2017	74,895	106	64,270	120	282,093	88	-	0	421,258	96
2016	75,527	111	64,821	118	283,493	84	-	0	423,841	94
2015	75,570	101	65,176	117	225,137	95	-	0	365,883	101
2014	75,570	99	65,176	116	225,137	97	-	0	365,883	101
2013	75,570	106	65,176	117	225,137	99	-	0	365,883	103
2012	74,486	105	64,784	130	222,802	106	-	0	362,072	110
2011	74,486	107	64,784	121	222,802	99	-	0	362,072	105
2010	74,486	97	64,784	131	222,802	104	-	0	362,072	107

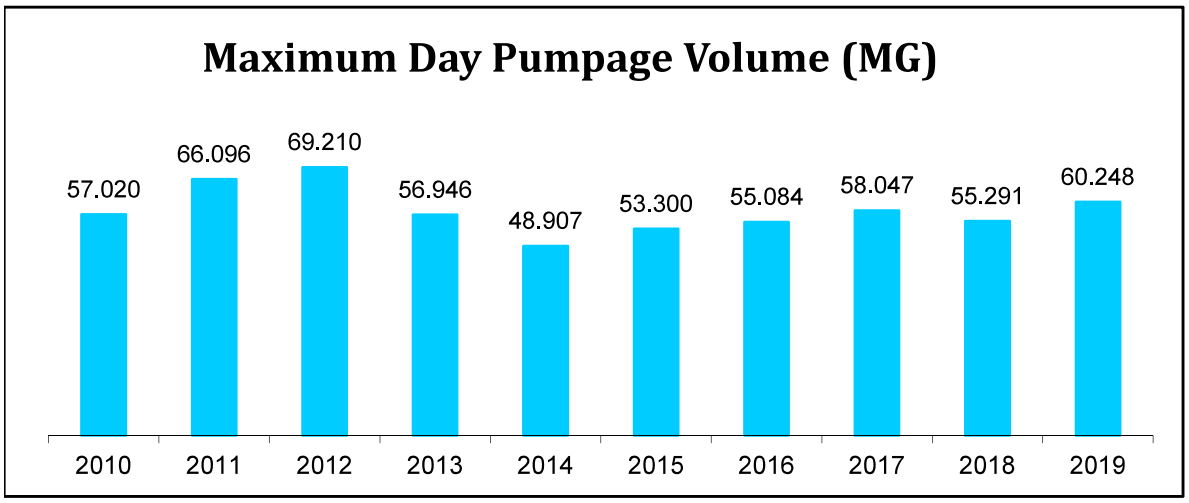
*In 2016 NWC began providing water to Des Plaines. Only a portion of the total population of Des Plaines consumes water provided by the City of Evanston.

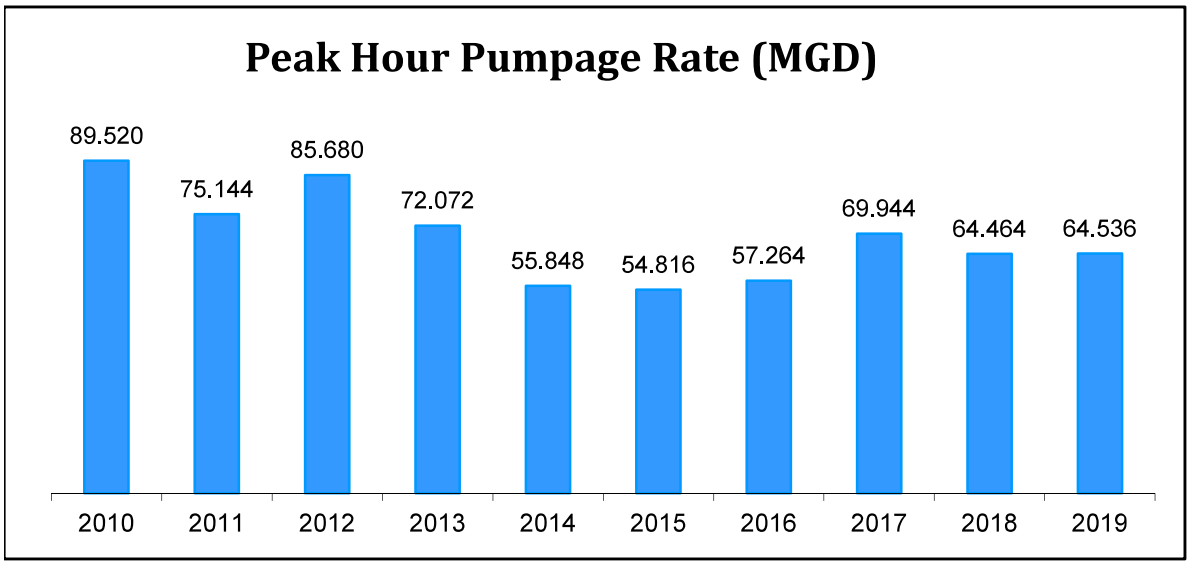
Maximum Pumpage to Distribution

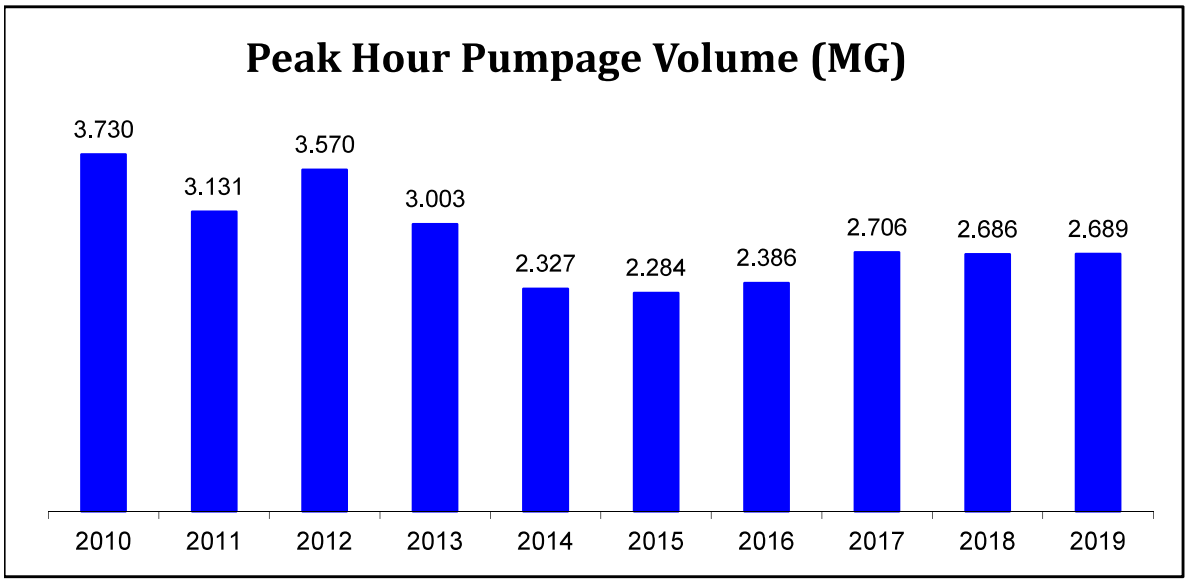
Year	*Max Day Pumpage Volume (MG)*	*Peak Hour Pumpage Rate (MGD)*	*Peak Hour Pumpage Volume (MG)*
2019	60.248	64.536	2.689
2018	55.291	64.464	2.686
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003
2012	69.210	85.680	3.570
2011	66.096	75.144	3.131
2010	57.020	89.520	3.730

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

Maximum Day and Peak Hour Pumpage







Maximum Pumpage Days (MGD)

	Maximum Day Pumpage To				
Year	**Distribution**	**Evanston**	**Skokie**	**NWC**	**MGNWC**
2019	July 15th	July 14th	July 15th	July 15th	Dec. 2nd
	60.248	11.368	10.930	33.829	7.707
2018	June 13th	June 13th	June 13th	June 30th	-
	55.372	13.575	9.609	33.989	-
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	-

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
2019	11,963,458	$947,943	$0.079	760
2018	11,533,446	$927,363	$0.080	766
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

Natural Gas Used for Pumping and Emergency Engines

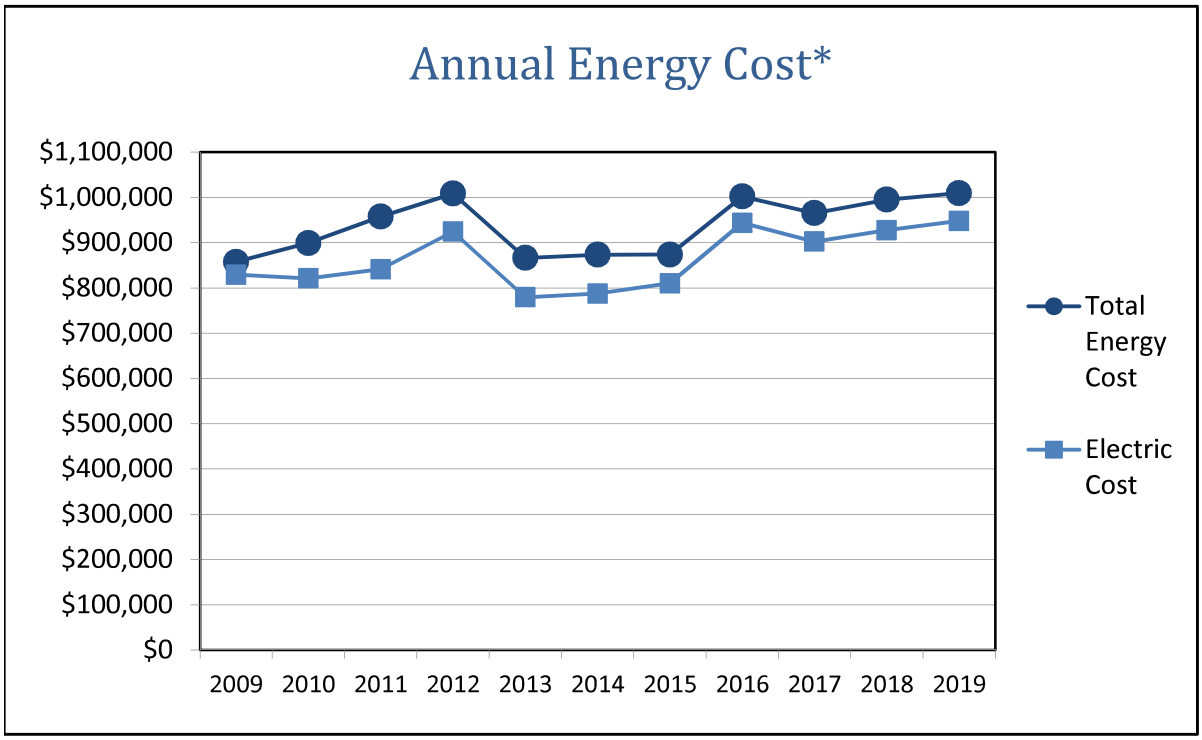
Year	Therms	Total Cost*	Average Unit Cost per Therm
2019	127,891	$61,462	$0.481
2018	127,945	$67,419	$0.527
2017	126,267	$63,074	$0.500
2016	121,018	$58,307	$0.482
2015	132,575	$86,033	$0.649

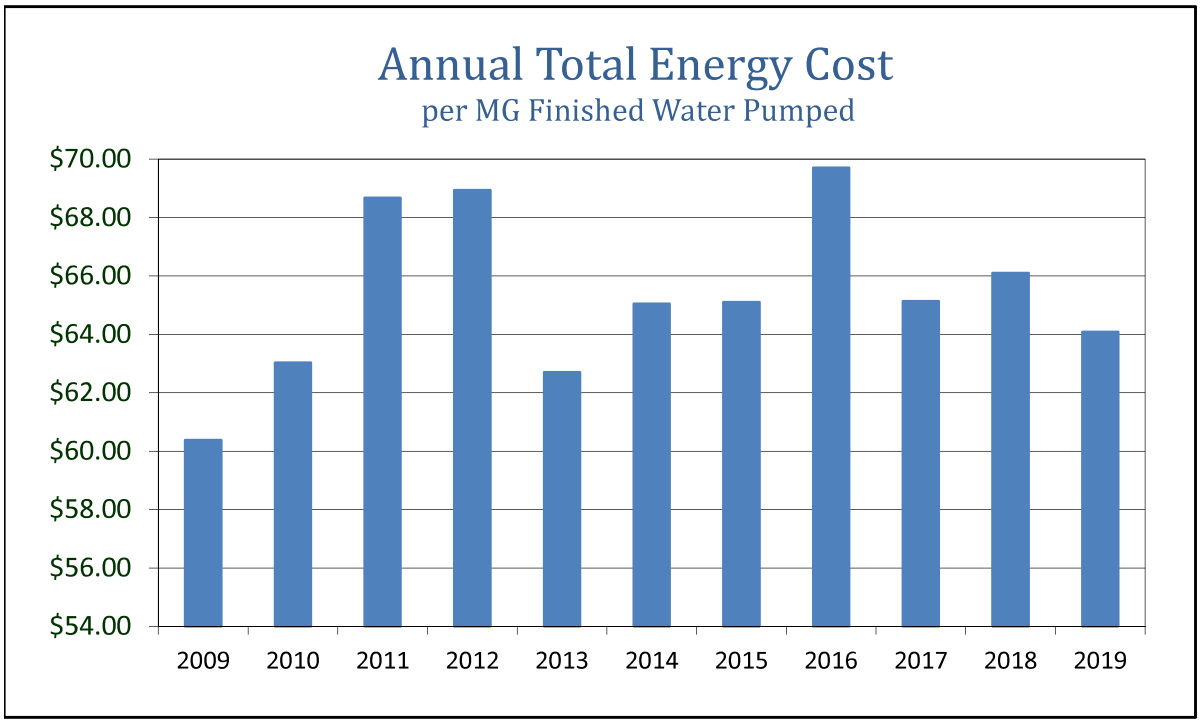
* Includes natural gas purchase and delivery charges.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2019	$1,009,404	$64.09
2018	$994,782	$66.10
2017	$965,320	$65.13
2016	$1,002,105	$69.71
2015	$896,063	$66.75

Energy Costs

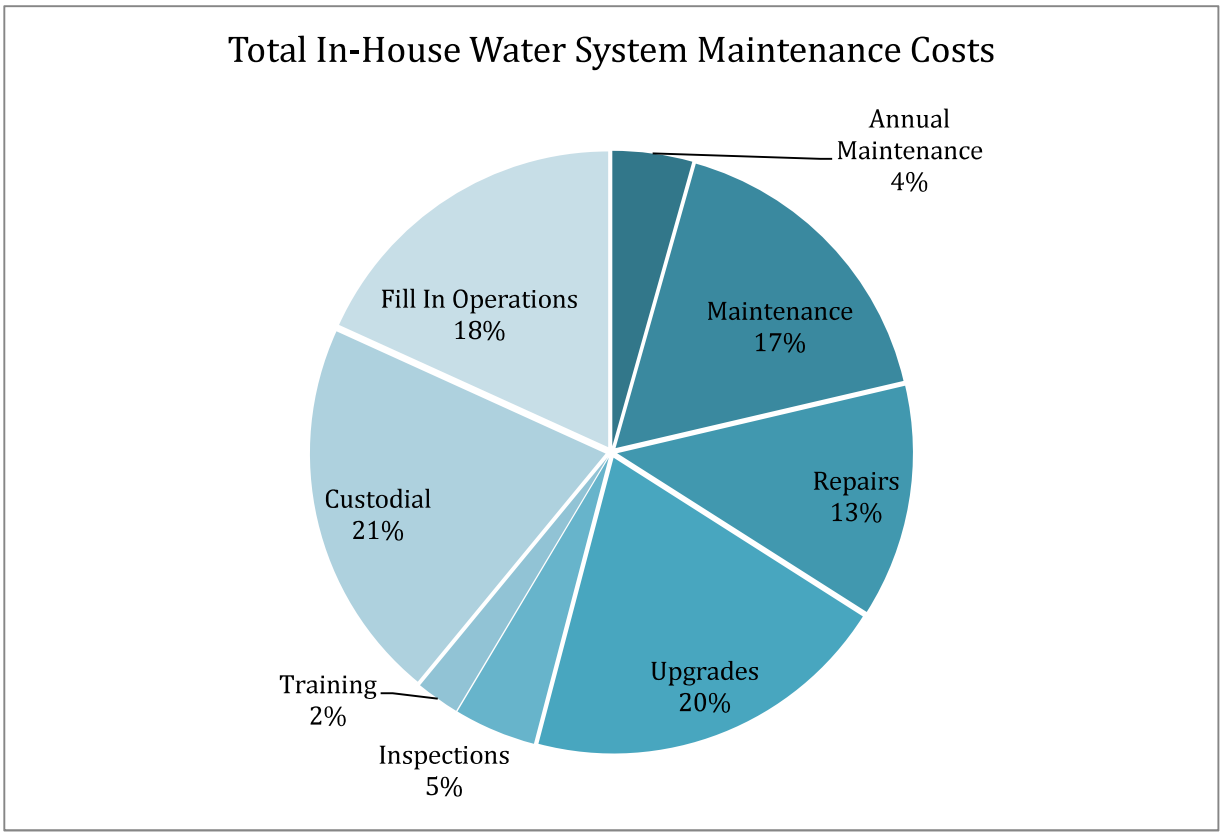




* Energy costs increased in 2012 due to increased pumping during the summer drought.

Breakdown of In-House Maintenance Costs

Description	2018	2019
Annual Maintenance	$7,751	$14,144
Maintenance	$41,135	$54,832
Repairs	$46,044	$40,956
Upgrades	$44,607	$64,873
Inspections	$38,709	$14,478
Training	$7,941	$7,735
Custodial	$46,684	$67,306
Fill In Operations	-	$58,841
Total	**$232,871**	**$264,326**



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.

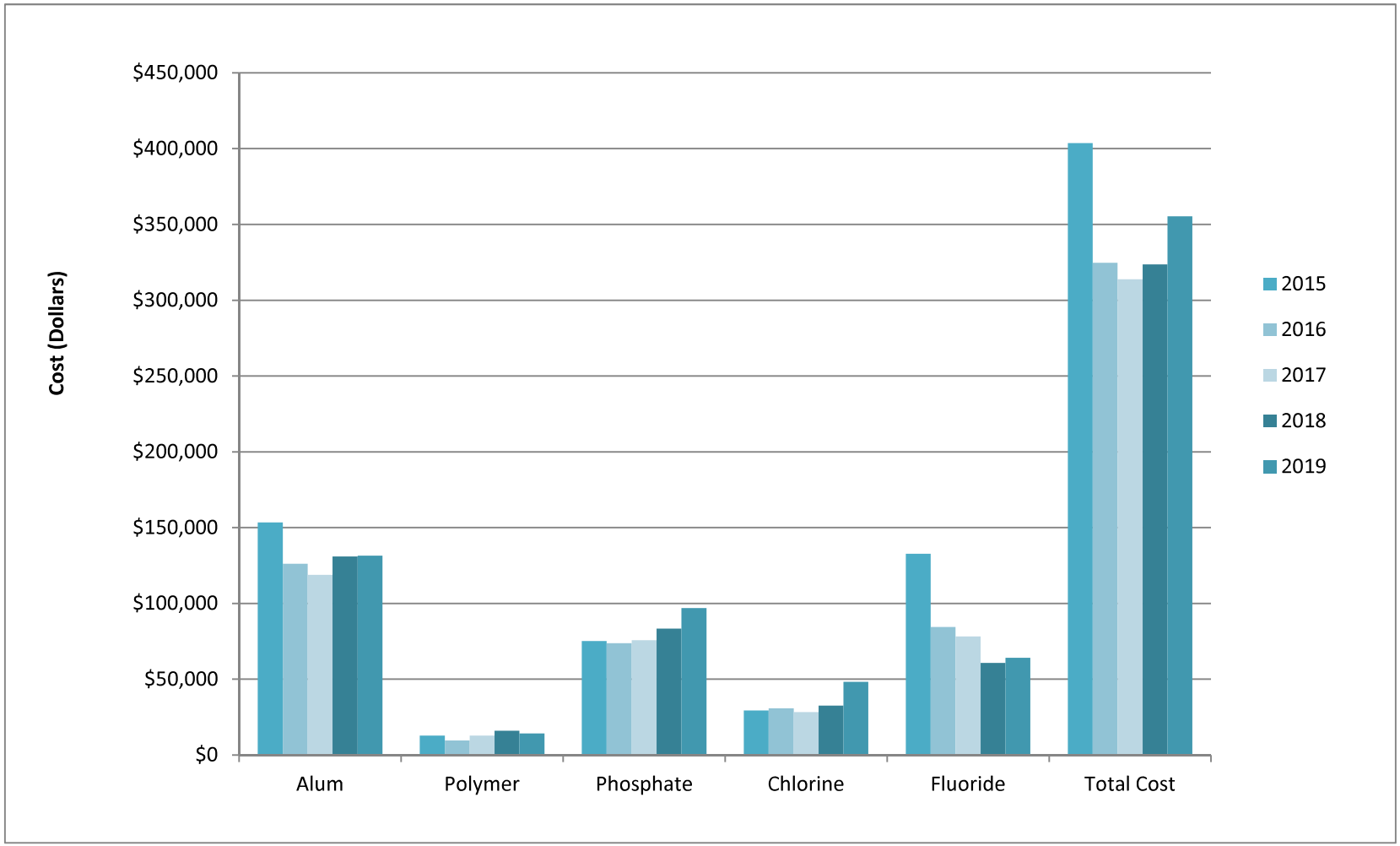
Filters 1 – 12, photo taken in 1924

Chemical Treatment: Chemicals Used and Costs

	Chemical Feed (lbs/MG)						
	Avg Daily	Max Day	Min Day	Unit Cost	Pounds per Year	Total Cost	Cost per MG Treated
Aluminum Sulfate							
2019	58.9	101.2	48.3	$282.00 / dry ton	933,182	$131,579	$8.29
2018	61.6	100.6	47.1	$282.00 / dry ton	928,450	$130,911	$8.82
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
Chlorine							
2019	14.0	18.6	10.0	$432.00 / ton	223,780	$48,336	$3.04
2018	12.8	19.6	9.1	$334.00 / ton	194,755	$32,524	$2.19
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
Activated Carbon*							
Hydrofluosilic Acid (Fluoride)							
2019	25.0	30.2	0.0	$333.00 / ton	385,133	$64,125	$4.04
2018	26.7	55.8	0.0	$302.00 / ton	402,710	$60,809	$4.10
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
Polymer							
2019	2.5	4.8	1.7	$730.00 / ton	39,142	$14,287	$0.90
2018	2.9	5.1	1.9	$730.00 / ton	43,738	$15,964	$1.08
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
Blended Phosphate							
2019	15.0	16.1	14.1	$4.48 / gallon	235,963	$96,983	$6.11
2018	14.5	15.2	13.4	$4.03 / gallon	217,723	$83,390	$5.62
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

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

Annual Chemical Costs



Filter Operations

Filter Runs

	Avg Hours per Filter Run		Total Hours per Year	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2019	113.5	95.3	52,899	103,710
2018	156.3	160.0	89,721	99,625
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

Filter Washes*

	Total Washes per Year		Max # of Washes per Day	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2019	498	1066	6	8
2018	647	760	7	7
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

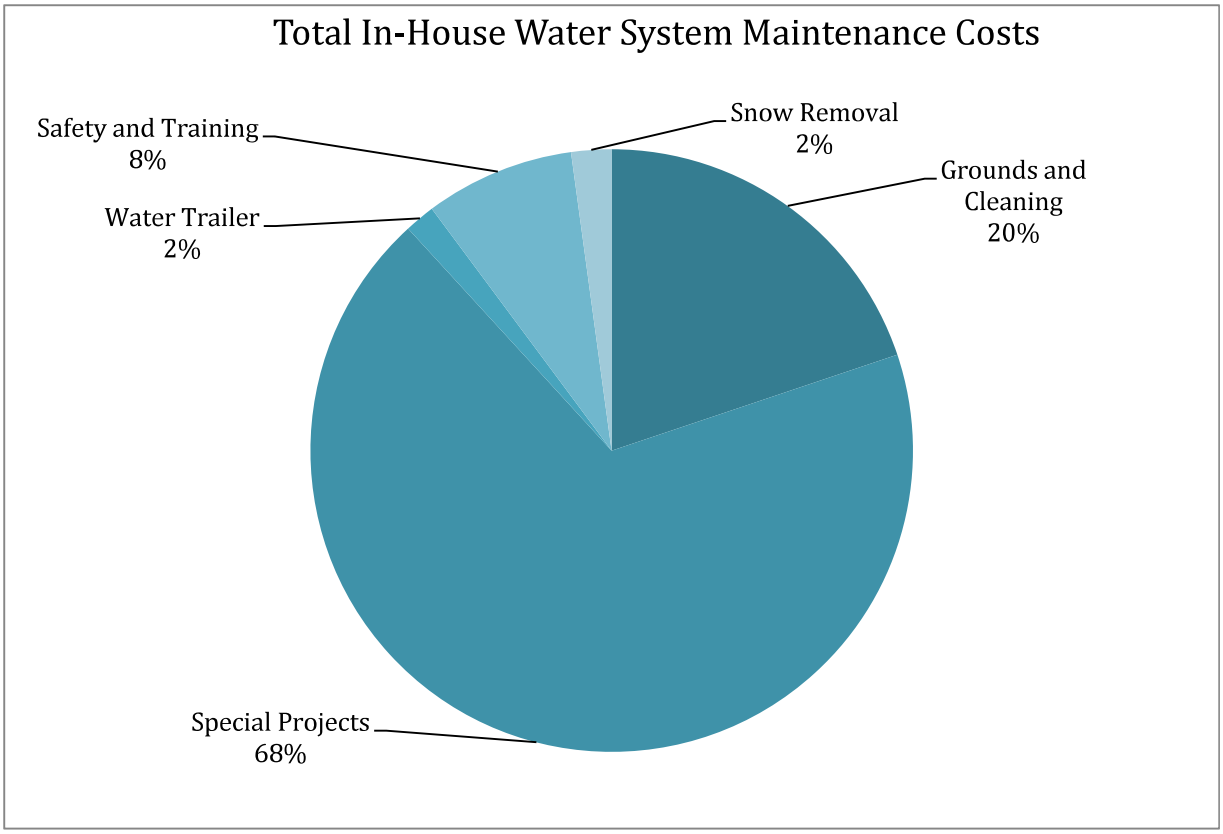
*In 2018, the filter run hours between washes were reduced from 300 hours to 100 hours in an effort to minimize mudball formation in the filter media

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2019	408.744	2.61	6.13
2018	339.444	2.23	7.11
2017	254.370	1.7	5.84
2016	239.545	1.6	9.65
2015	200.285	1.49	5.31
2014	243.089	1.78	6.2
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

Breakdown of In-House Maintenance Costs

Description	2018	2019
General Plant Maintenance and Repairs	$165,763	$109,293
Grounds and Cleaning	$20,296	$16,715
Special Projects	$22,175	$57,590
Water Trailer	$1,398	$1,370
Safety and Training	$2,232	$6,758
Snow Removal	$690	$1,816
Total	**$212,554**	**$193,542**



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
2019	979	0	0
2018	984	1	0
2017	978	1	1
2016	974	0	0
2015	989	3	0*

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

Raw Water		Colony Count	
Year	Number Sampled	Average	Maximum
2019	728 (Twice Daily)	56	>200
2018	730 (Twice Daily)	60	>200
2017	729 (Twice Daily)	77	>200
2016	732 (Twice Daily)	69	>200
2015	730 (Twice Daily)	59	>200

After Primary Treatment		Colony Count	
Year	Number Sampled	Average	Maximum
2019	730 (Twice Daily)	0	0
2018	730 (Twice Daily)	0	0
2017	729 (Twice Daily)	0	0
2016	732 (Twice Daily)	0	0
2015	730 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples		Colony Count	
Year	Number Sampled	Average	Maximum
2019	1460 (4 times Daily)	0	0
2018	1460 (4 times Daily)	0	0
2017	1430 (4 times Daily)	0	0
2016	1403 (4 times Daily)	0	0
2015	1460 (4 times Daily)	0	0

Odor, Turbidity, Temperature and Fluoride

Report of Evanston Water Quality Control Laboratory

Odor

Year	Number of Tests
2019	502
2018	498
2017	506
2016	503
2015	506

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.

	Raw Water			After Primary Treatment			Plant Tap		
Year	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
2019	4.55	49.9	0.32	0.63	2.1	0.19	0.1	0.15	0.08
2018	6.69	94.7	0.35	0.78	2	0.23	0.09	0.16	0.07
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

Raw Water Temperature

Year	Average	Maximum	Minimum
2019	10.5°C / 50.9°F	28.0°C / 82.4°F	1.1°C / 34.0°F
2018	11.2°C / 52.2°F	25.7°C / 78.3°F	1.2°C / 34.2°F
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

Fluoride Content (EPA target is 0.7 ppm)

	Plant Tap			Distribution		
Year	Avg	Max	Min	Avg	Max	Min
2019	0.66	0.79	0.14	0.77	0.96	0.00
2018	0.69	1.00	0.28	0.71	0.80	0.61
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

Chlorine Residual (ppm)*

Report of Evanston Water Quality Control Laboratory

Filter Influent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2019	0.96	1.22	0.41	1.11	1.41	0.56
2018	0.80	1.17	0.51	0.96	1.34	0.70
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

Filter Effluent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2019	0.89	1.16	0.49	1.02	1.33	0.61
2018	0.72	1.01	0.46	0.86	1.22	0.61
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

Plant Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2019	0.95	1.20	0.77	1.11	1.42	0.90
2018	0.76	1.00	0.42	0.92	1.17	0.53
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

Distribution Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2019	0.70	0.96	0.38	0.87	1.10	0.56
2018	0.50	0.78	0.17	0.66	0.98	0.28
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

*As of July 25, 2019 the Illinois Pollution Control Board increased the minimum chlorine residual in the distribution system from 0.2 ppm to 0.5 ppm. In order to meet this requirement the target chlorine leaving the plant was increased to maintain an average 1.00 ppm +/- 0.1 ppm.

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
2019	365	0.27	0.37	0.22
2018	365	0.29	0.39	0.21
2017	365	0.30	0.38	0.22
2016	365	0.28	0.41	0.17
2015	365	0.25	0.35	0.18

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2019	730	8.3	8.5	7.8	7.6	7.8	7.2
2018	730	8.2	8.5	7.9	7.6	7.7	7.2
2017	730	8.2	8.5	8	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

Alkalinity (ppm)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2019	730	108	119	97	102	112	94
2018	730	108	117	97	101	112	93
2017	730	106	116	97	100	113	89
2016	732	106	114	93	99	110	84
2015	730	106	121	92	100	115	91

Hardness (ppm as $CaCo_3$)

Year	Number of Tests	Raw Water Avg	Max	Min	Finished Water Avg	Max	Min
2019	730	137	149	127	135	154	121
2018	730	137	147	127	134	152	120
2017	730	136	149	124	133	149	124
2016	732	136	149	119	134	154	119
2015	730	135	149	124	133	154	124

Detected Substances: 2019 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; 0.16 NTU Highest single measurement	0.08 - 0.15	NO	Soil runoff
Fluoride (ppm)	4	4	0.7	0.7 - 0.8	NO	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate [measured as Nitrogen](ppm)	10	10	0.3	single sample	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Sodium (ppm)	NA[1]	NA[1]	8	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)[2]	0	5	0.99	single sample	NO	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)[2]	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
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.17	Single Sample	NO	Artificial sweetener
Hexavalent Chromium (ppb)	NOT REGULATED	NOT REGULATED	0.16	single sample	NO	Naturally-occurring element; used in making steel or other alloys. Chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning and wood preservation.
Perfluorooctanesulfonic acid (PFOS) (ppt)	NOT REGULATED	NOT REGULATED	2.1	single sample	NO	Surfactant for fire-fighting foam, mist suppressant for metal-plating baths, grease and water resistance to materials such as textiles, carpets, and paper. Production ceased in 2000.
Sulfate (ppm)	NOT REGULATED	USEPA National Secondary Standard of 250	25	single sample	NO	Naturally occurring, coagulant residual

1. There is no state or federal MCL for Sodium. Sodium levels below 20 mg/l (ppm) are not considered to be a health issue.

2. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Radiation is everywhere; from the sun, from the earth and even in our bodies. The amounts detected in Evanston's water are well below the maximum contaminant level; so low in fact, that Evanston is on a reduced monitoring schedule and is only required to sample every 6 years.

Detected Substances: 2019 Water Quality Data

Disinfectants and Disinfection By-Products	*MCLG*	*Highest Allowed (MCL)*	*Highest Level Detected*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
Total Trihalomethanes (ppb)	NA[1]	80	31 [2]	10.7 - 43.3	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA	60	10	5.2 - 12	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	0.6	0.4 - 1	NO	Water additive used to control microbes

Lead & Copper	*MCLG*	*Action Level (AL)*	*90th Percentile*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
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

Measured Parameter	*Evanston Average*	*Evanston Minimum*	*Evanston Maximum*
pH (0-14 pH units)	7.6	7.2	7.8
Hardness (as mg $CaCO_3$/L)	135	121	154
Hardness (gpg)	7.9	7.1	9
Alkalinity (ppm)	102	94	112
Raw Water Temperature °F	51	33	80

Measured Parameter	*Evanston Result*
Calcium (ppm)	34
Chloride (ppm)	14
Dissolved Solids (ppm)	130
Magnesium (ppm)	12
Potassium (ppm)	1.5
Aluminum (ppb)	76

1. Although there is no collective MCLG for this contaminant group, there are individual contaminant MCL's: Trihalomethanes: bromodichloromethane(zero); bromoform(zero); dibromochloromethane(0.06 mg/L) Haloacetic acids: dichloroacetic acid(zero); trichloracetic acid (0.3 mg/L).

2. Highest Running Annual Average (quarterly) (RAA). RAA quarterly is calculated by adding the most recent quarter plus the three previous quarters and dividing by four. The highest RAA during the year is reported.

Non-Detected Contaminants

2019 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

2019 Water Quality Data

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

Per and Polyfluoroalkyl Substances (PFASs)	MCLG	MCL	EEA MRL	Level Found
Perfluorooctanoic acid (PFOA)(ppt)	na	na	2	nd
11Cl-PF3OUdS/F-53B Minor (ppt)	na	na	2	nd
9Cl-PF3ONS/F-53B Major (ppt)	na	na	2	nd
ADONA (ppt)	na	na	2	nd
HFPO-DA/GenX (ppt)	na	na	2	nd
N-ethyl Perfluorooctanesulfonamidoacetic acid (ppt)	na	na	2	nd
N-methyl Perfluorooctanesulfonamidoacetic acid (ppt)	na	na	2	nd
Perfluorobutanesulfonic acid (PFBS) (ppt)	na	na	2	nd
Perfluorodecanoic acid (PFDA) (ppt)	na	na	2	nd
Perfluorododecanoic acid (PFDoA) (ppt)	na	na	2	nd
Perfluoroheptanoic acid (PFHpA) (ppt)	na	na	2	nd
Perfluorohexanesulfonic acid (PFHxS) (ppt)	na	na	2	nd
Perfluorohexanoic acid (PFHxA) (ppt)	na	na	2	nd
Perfluorononanoic acid (PFNA) (ppt)	na	na	2	nd
Perfluorotetradecanoic acid (PFTeDA) (ppt)	na	na	2	nd
Perfluorotridecanoic acid (PFTrDA) (ppt)	na	na	2	nd
Perfluoroundecanoic acid (PFUnA) (ppt)	na	na	2.0	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 2019, Evanston continued the seasonal drinking fountain start-up plan which included sampling water, high flow flushing, and replacing drinking fountain components known to contain lead. Evanston sampled water from 57 park drinking fountains.

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 $CaCO_3$/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).

ppt - Parts per trillion. A measure of the concentration of a substance in water. An equivalent unit of measurement is nanograms per liter (ng/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.

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.

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.

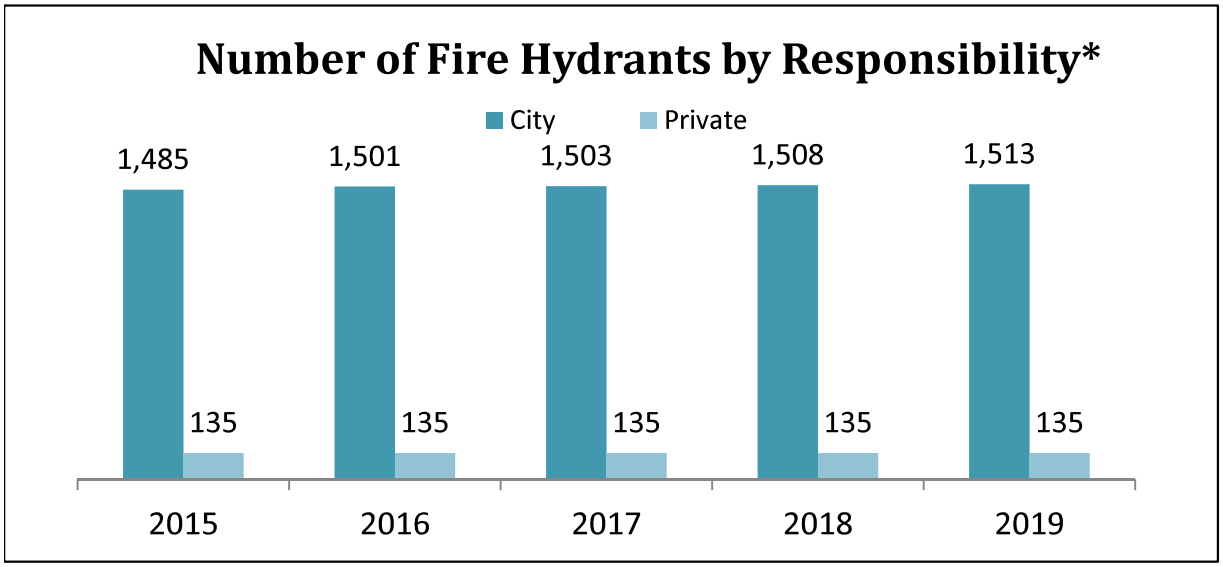
Pieces of wood water main from Evanston's original water distribution system.

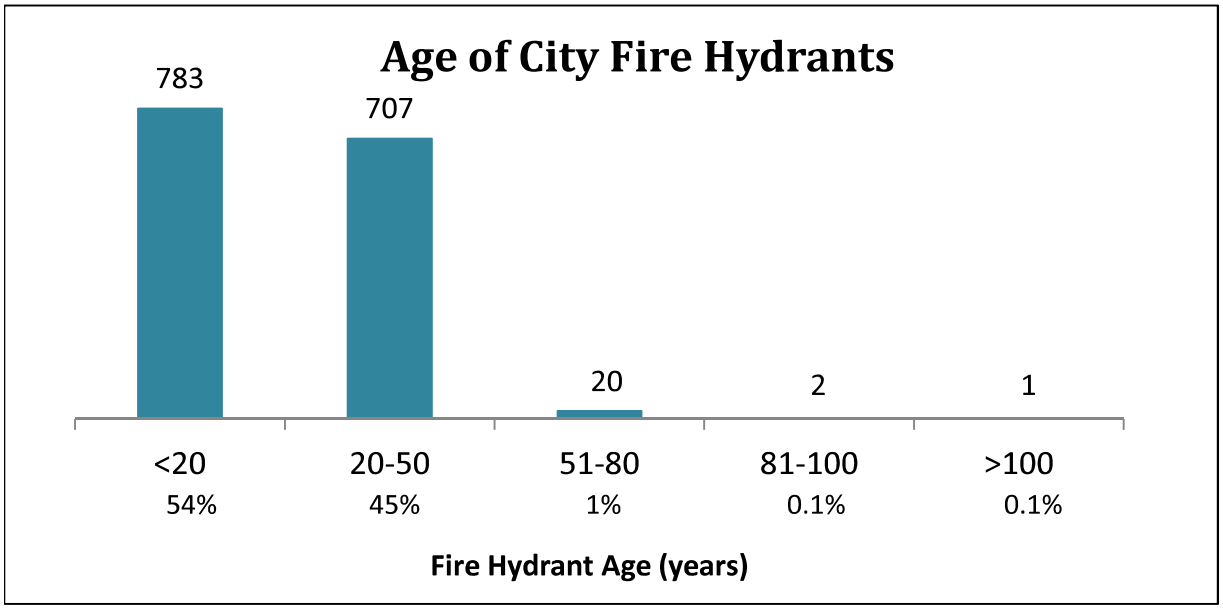
Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2015	2016	2017	2018	2019
Fire Department	1,477	1,428	1,453	1,491	1,445
Public Works Agency	0	13	11	19	15

Installation & Maintenance	2015	2016	2017	2018	2019
Installed (new)	11	18	2	5	3
Replaced	13	18	10	14	19
Repaired	51	327	535	569	311





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

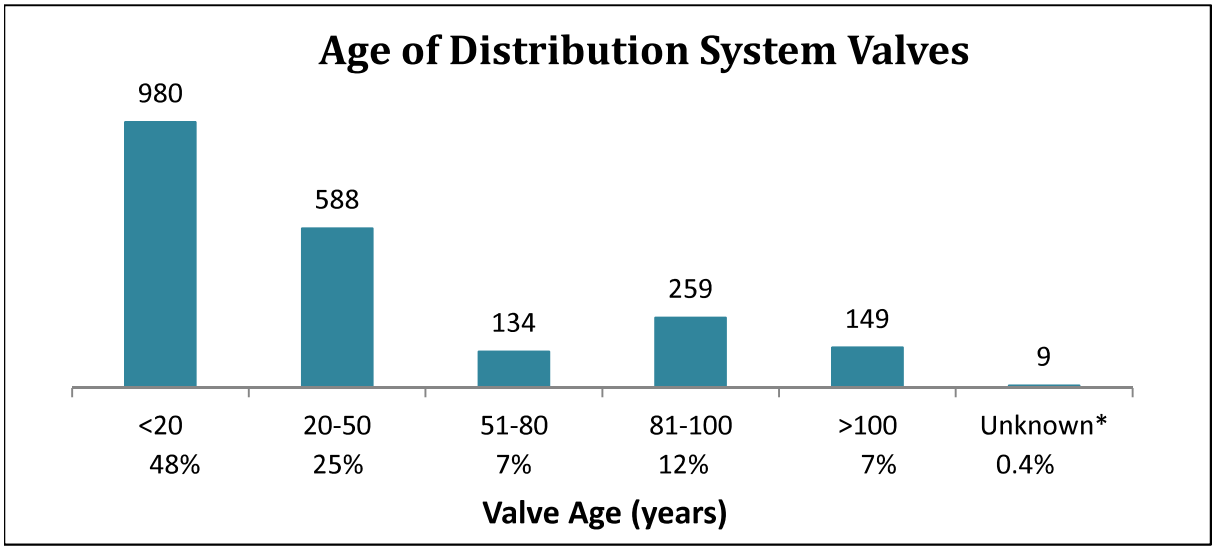
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2015	2016	2017	2018	2019
In-House	908	828	586	848	524
Contractor	0	0	0	0	0

Installation & Maintenance	2015	2016	2017	2018	2019
Installed (new)	13	27	13	16	19
Replaced	16	37	13	20	19
Repaired	55	19	48	30	24

Number of Valves by Size	2015	2016	2017	2018	2019
4" or smaller	23	23	22	23	23
6"	975	961	957	965	961
8"	513	521	532	540	554
10"	192	199	199	200	205
12"	244	252	252	253	253
14"	2	2	2	2	2
16"	50	50	50	50	50
18"	5	5	5	5	6
20"	2	2	2	2	2
24"	33	33	33	38	33
30"	12	13	13	13	13
36"	12	13	13	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,067	2,078	2,084	2,108	2,119



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

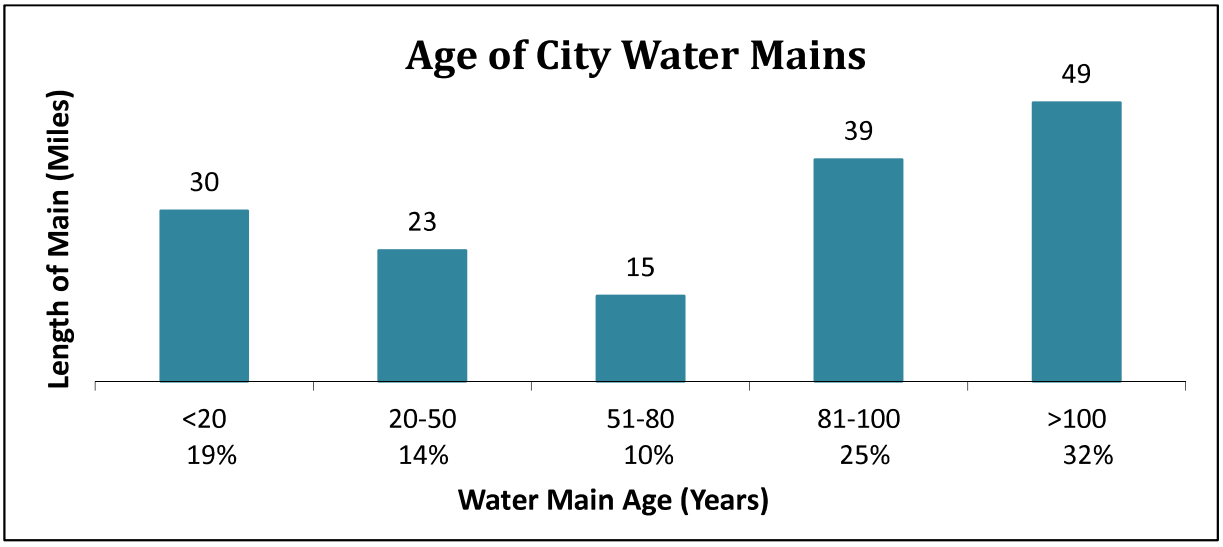
Water Mains

System Data and Maintenance

Improvements (lineal feet)	2015	2016	2017	2018	2019
Replaced by City	0	0	0	0	0
Replaced by Contractor	4,303	8,172	4,571	6,673	6,780
Rehabilitated by Contractor	395	3,802	0	0	0

Water Main Break Repairs	2014	2015	2016	2017	2019
Blow-Out	5	21	25	22	20
Shear Break	18	7	6	9	8
Damage	0	0	0	1	0
Total	23	28	31	32	28

Pipe Sizes (length in miles)*	2014	2015	2016	2017	2019
4" or smaller	1.37	1.37	1.37	1.37	1.37
6"	73.26	71.88	71.63	71.63	70.81
8"	28.93	29.01	28.87	29.57	30.35
10"	12.81	13.18	13.18	13.16	13.16
12"	17.66	17.95	17.95	17.95	17.95
14"	0.37	0.37	0.37	0.37	0.37
16"	6.26	6.26	6.26	6.27	6.27
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	8.63	8.63
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	156.36	155.72	155.33	156.03	155.99



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

Water Services

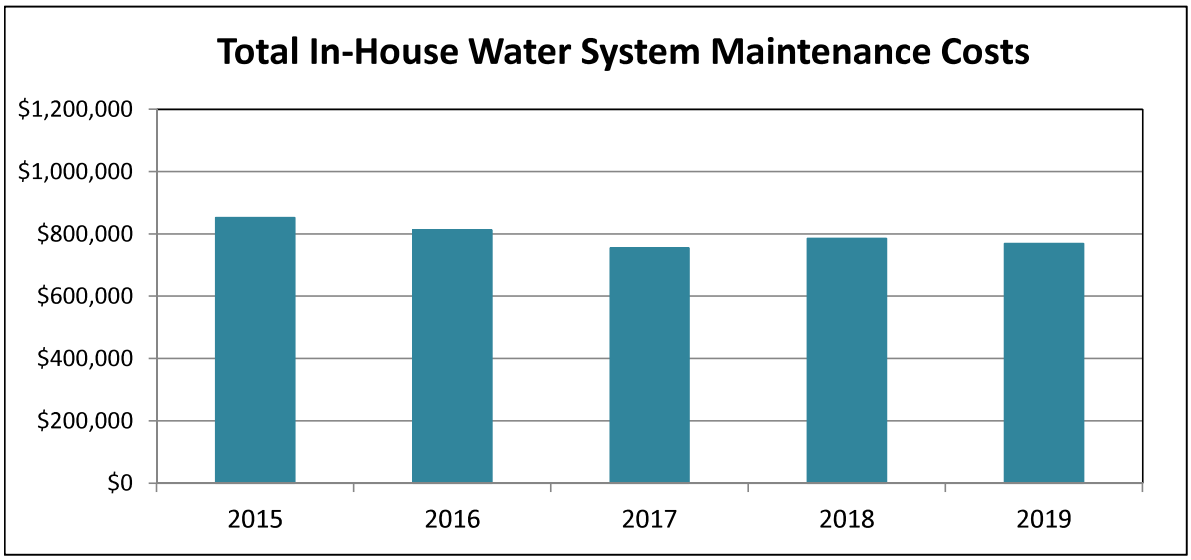
System Data and Maintenance

Water Service Accounts: 15,145*

Installation & Maintenance	2015	2016	2017	2018	2019
New Services Installed	13	3	7	7	15
Service Taps Replaced	36	53	52	42	64
Services Replaced by Contractor	147	78	42	102	136
Service Leaks Repaired	22	21	12	14	10

Breakdown of In-House Maintenance Costs

	2015	2016	2017	2018	2019
Water Mains	$83,864	$109,939	$123,158	$123,734	$119,977
Fire Hydrants	$65,197	$41,150	$42,292	$45,067	$34,908
Water Services	$166,275	$133,658	$97,085	$171,581	$239,846
Valves	$148,309	$65,263	$18,027	$87,328	$62,031
Snow & Ice Removal	$46,314	$38,105	$14,235	$57,315	$49,963
Assist Contractor	$57,511	$96,170	$100,447	$78,722	$62,476
JULIE Locates	$108,200	$117,375	$107,064	$72,489	$57,619
Equip/Facility Maint.	$77,189	$86,794	$146,597	$66,482	$64,903
Assist Other City Depts.	$8,878	$26,713	$24,749	$22,224	$7,365
Assist W&S Divisions	$20,610	$4,617	$5,112	$4,318	$7,403
Safety & Training	$22,639	$31,543	$26,268	$15,641	$17,374
Misc.	$48,069	$60,838	$49,939	$40,554	$45,451
Total	**$853,054**	**$812,166**	**$754,972**	**$785,455**	**$769,316**

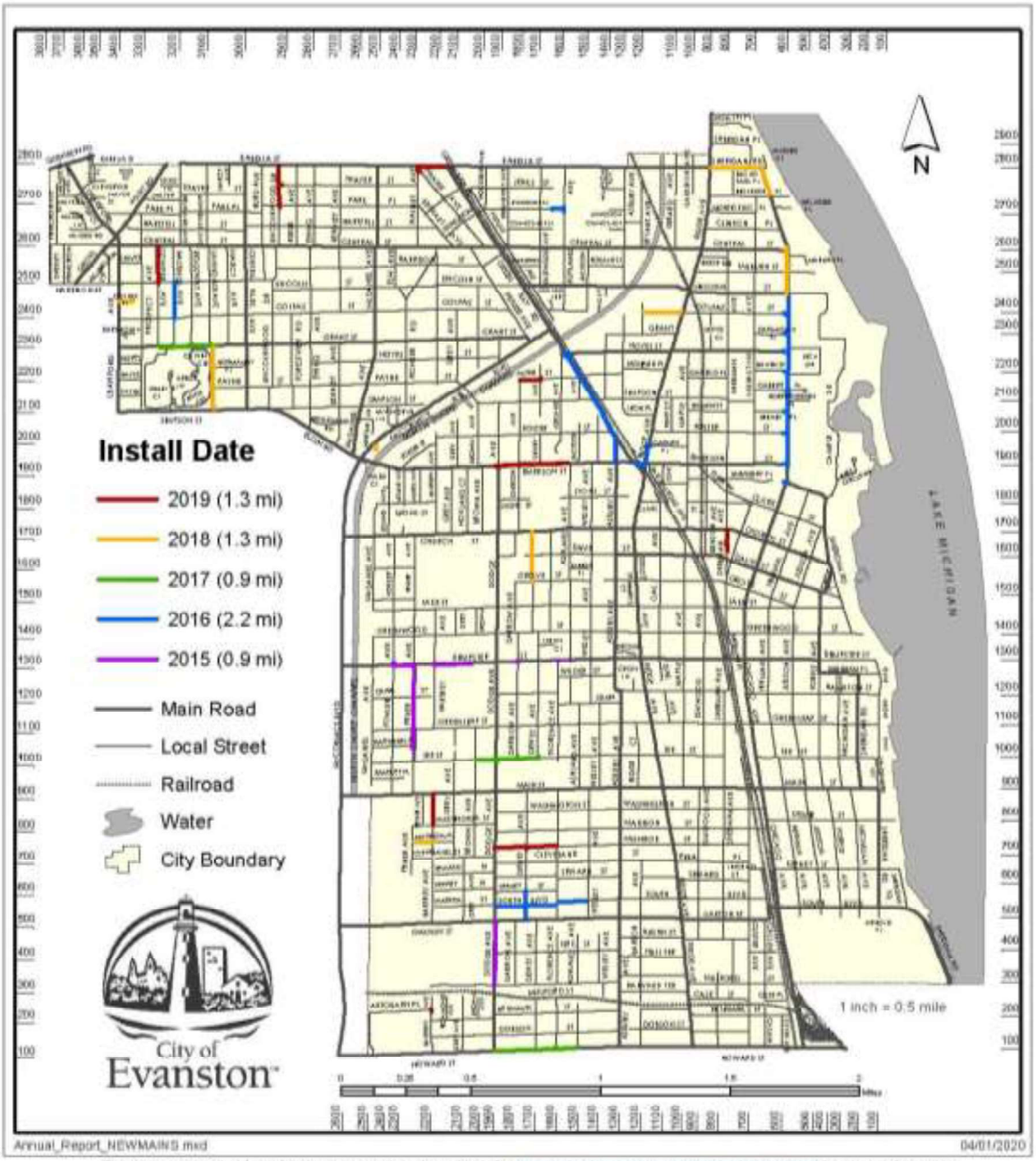


* Includes metered domestic water service accounts and unmetered fire service accounts.

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 156 miles of Evanston's water mains in 2013-2014.

The 2019 survey found one leak on a building water service pipe and two breaks on water mains. These defects were all successfully repaired, and the resulting estimated water savings for 2019 were over 8.85 Million Gallons (MG).

Year	Miles of Water Main Surveyed	Water Service Leaks Found	Water Main Breaks Found	Water Savings After Repairs
2016	149	2	3	13.53 MG/Year
2017	156	3	2	9.90 MG/Year
2018	143	3	3	14.06 MG/Year
2019	146	1	2	8.85 MG/Year
Totals	**594**	**9**	**10**	**46.34 MG**

In 2020 and future years, the Public Works Agency anticipates being able to survey the entire 156 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.

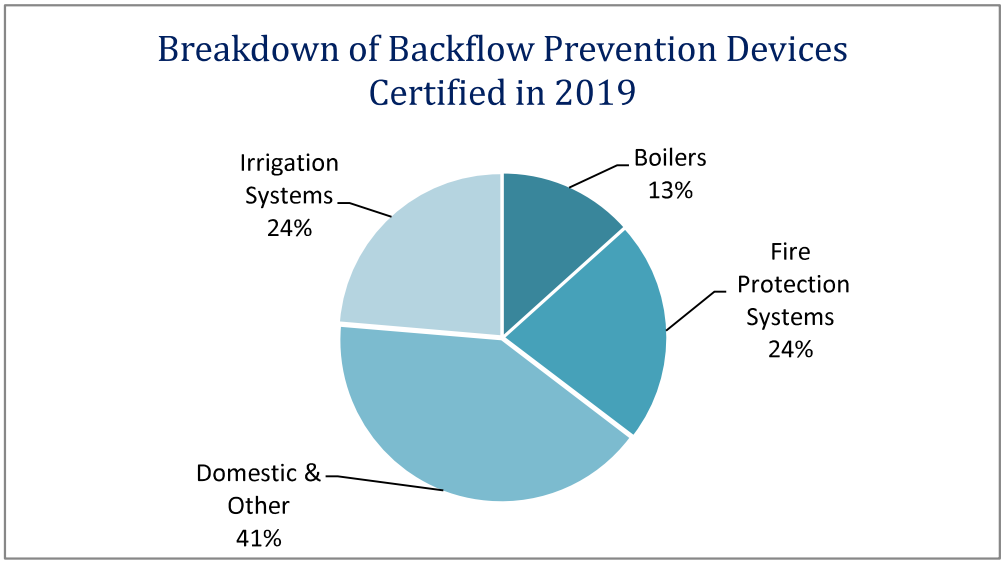
Cross Connection Control

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
2015	4,039
2016	4,241
2017	4,364
2018	4,522
2019	4,642



Metering

The Meter Division manages water meter reading and billing for Evanston's 14,513 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.

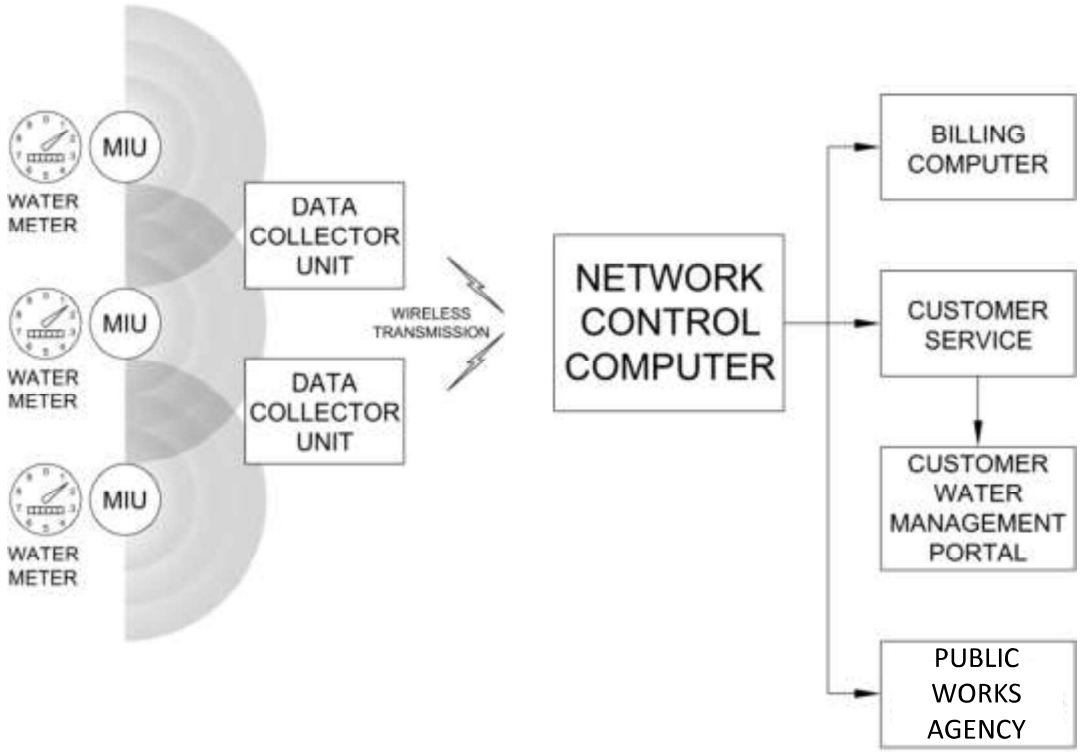
In 2013-2014, the Meter Division managed Evanston's migration to a new Advanced Metering Infrastructure (AMI) system, which has improved accuracy and efficiency of the water metering and billing processes. The AMI system also generates automated hourly meter reads and leak alerts for customers to help 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 5,732 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. We have over 8,300 customers in the portal that are notified or tracking hourly, daily or monthly 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 (CF). The minimum service charge every two months is based on water meter size as follows:

Meter Size	Number of Meters
5/8"	11394
3/4"	1150
1"	1,126
1.5"	258
2"	484
3"	65
4"	28
6"	4
8"	4
Total	14,513

Water Rates for Evanston Customers

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

Meter Size	Minimum Charge Effective 1/1/2019
5/8" & 3/4"	$9.80
1"	$19.55
1 ½"	$36.60
2"	$57.63
3"	$101.49
4"	$162.57
6"	$286.69
8"	$485.33

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

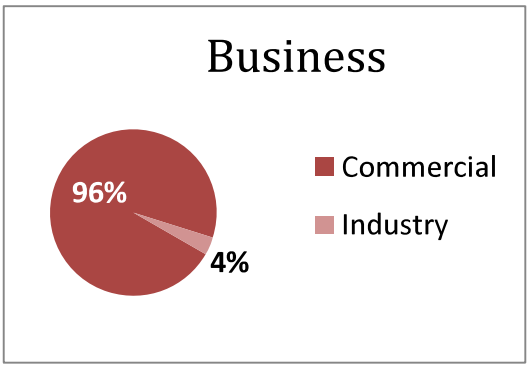
Water usage over the minimum is billed at $2.74 per CF effective 1/1/2019. This is equivalent to a rate of $3.60 per 1,000 gallons.

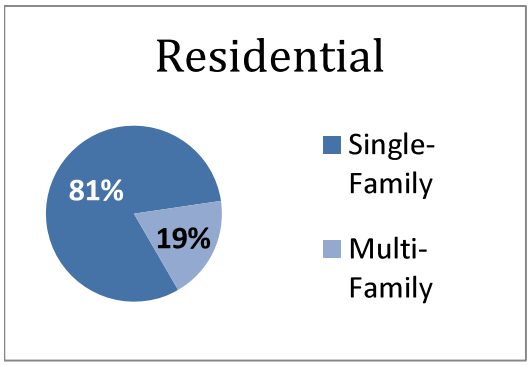
Water Customer Classes and Metered Usage

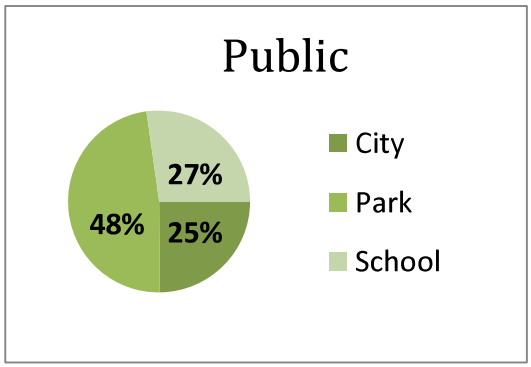
Billed by Category and Water Usage for 2019

Category	Number of Accounts	2019 Usage (100 CF)*
Metered Water Services		
Single-Family	10,874	1,029,919
Multi-Family	2,550	1,178,104
Commercial	930	1,154,229
Industry	34	14,182
City	31	17,515
Park	60	7,429
School	34	44,121
Subtotal	14,513	3,445,499
Unmetered Water Services		
Fire Services**	632	-
Totals	**15,145**	**3,445,499**

Water Service Accounts by Category:



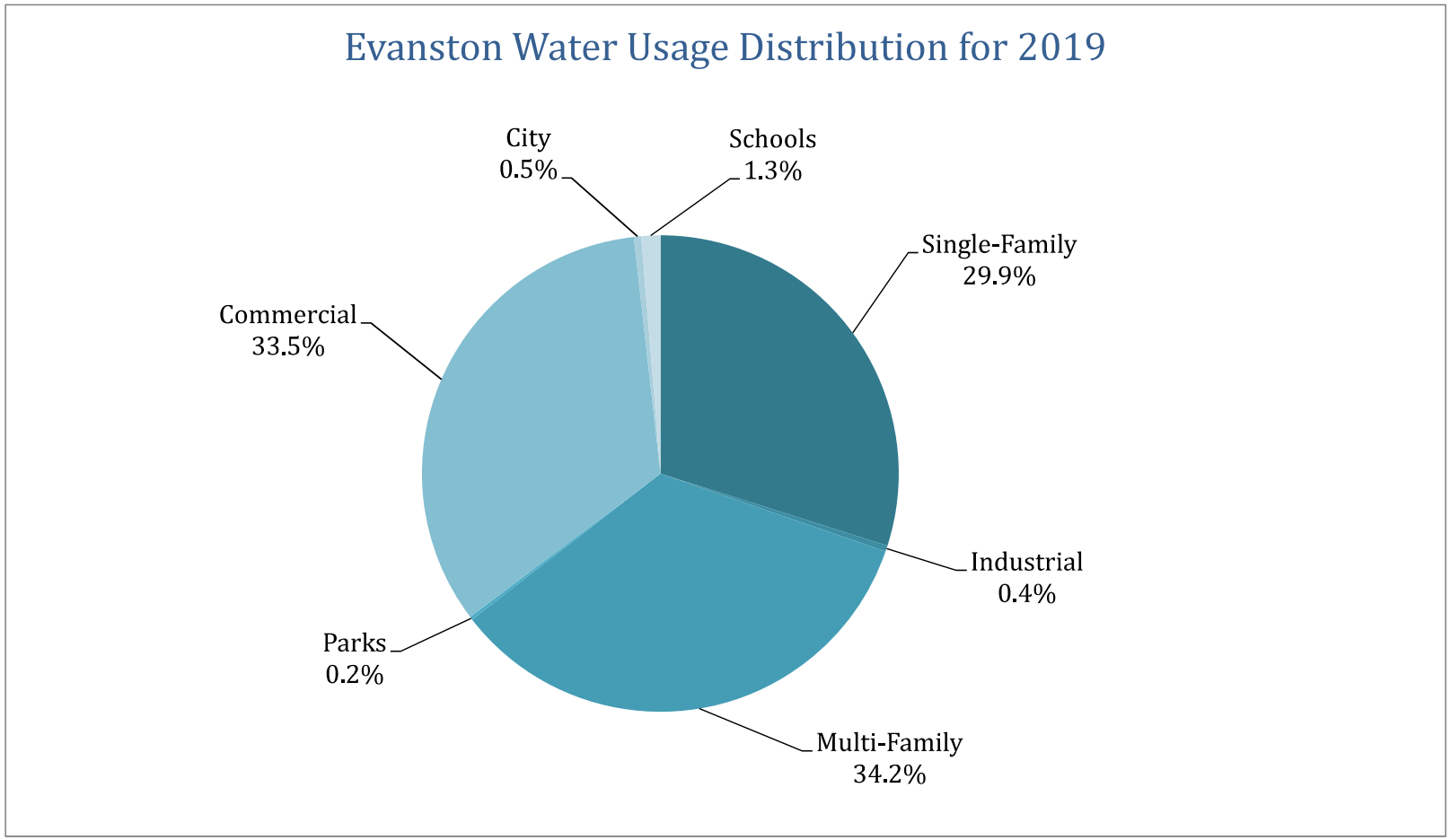




* Water usage is metered in units of 100 cubic feet (CF). 100 CF is approximately 748 gallons

** 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.

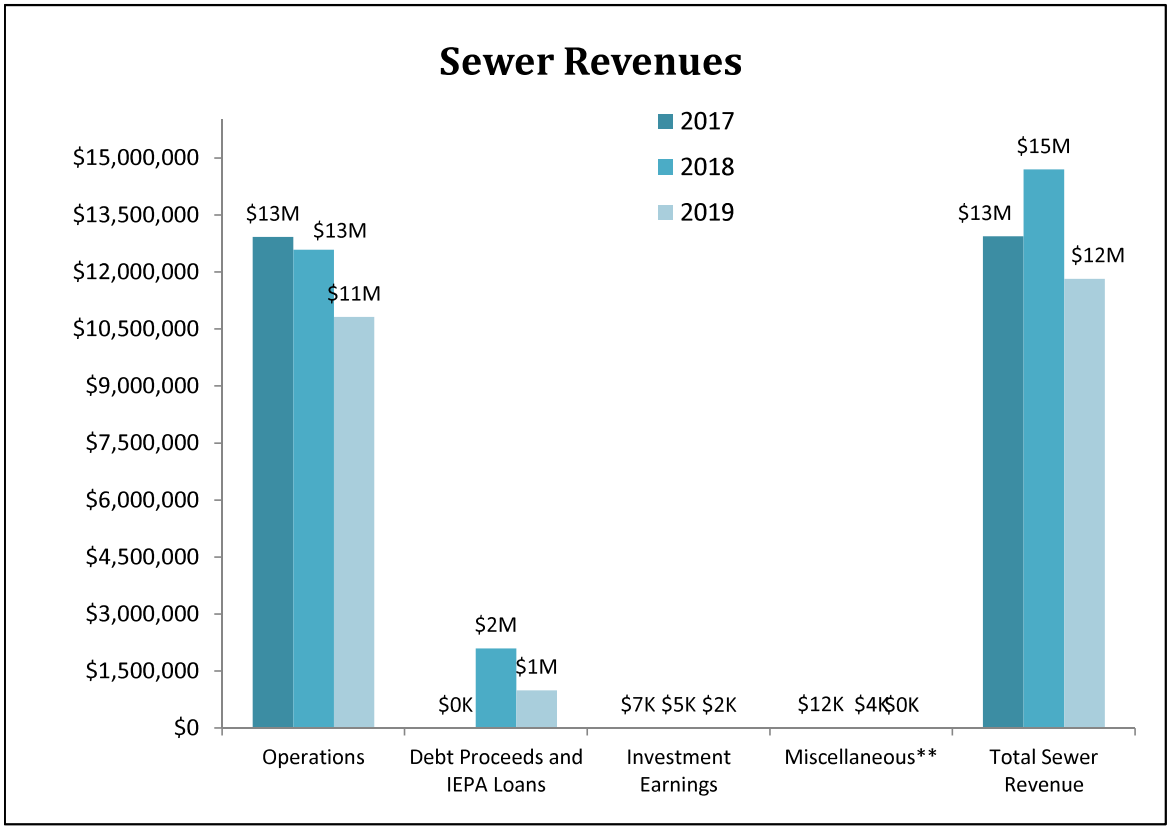
Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

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*

	2017	2018	2019
Operations	$12,921,749	$12,589,650	$10,819,358
Debt Proceeds and IEPA Loans	$0	$2,100,000	$1,000,000
Investment Earnings	$6,500	$5,000	$2,185
Miscellaneous**	$12,000	$4,000	$0
Total Sewer Revenue	$12,940,249	$14,698,650	$11,821,543

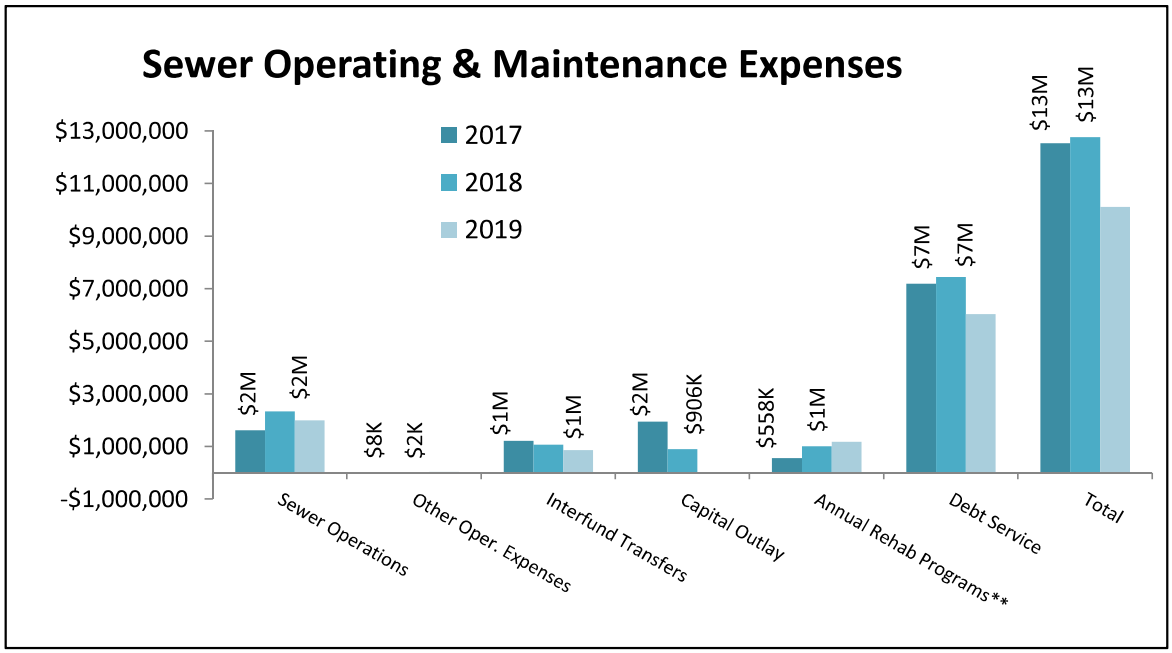


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports/.

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

Sewer Operating & Maintenance Expenses*

	2017	2018	2019
Sewer Operations	$1,615,026	$2,332,207	$1,996,867
Other Oper. Expenses	$7,676	$1,700	$38,212
Interfund Transfers	$1,219,451	$1,069,452	$863,402
Capital Outlay	$1,943,160	$905,883	$952
Annual Rehab Programs**	$557,574	$1,010,000	$1,175,661
Debt Service	$7,198,860	$7,447,026	$6,034,324
Total	$12,541,747	$12,766,268	$10,109,418



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

Major Combined Sewer System

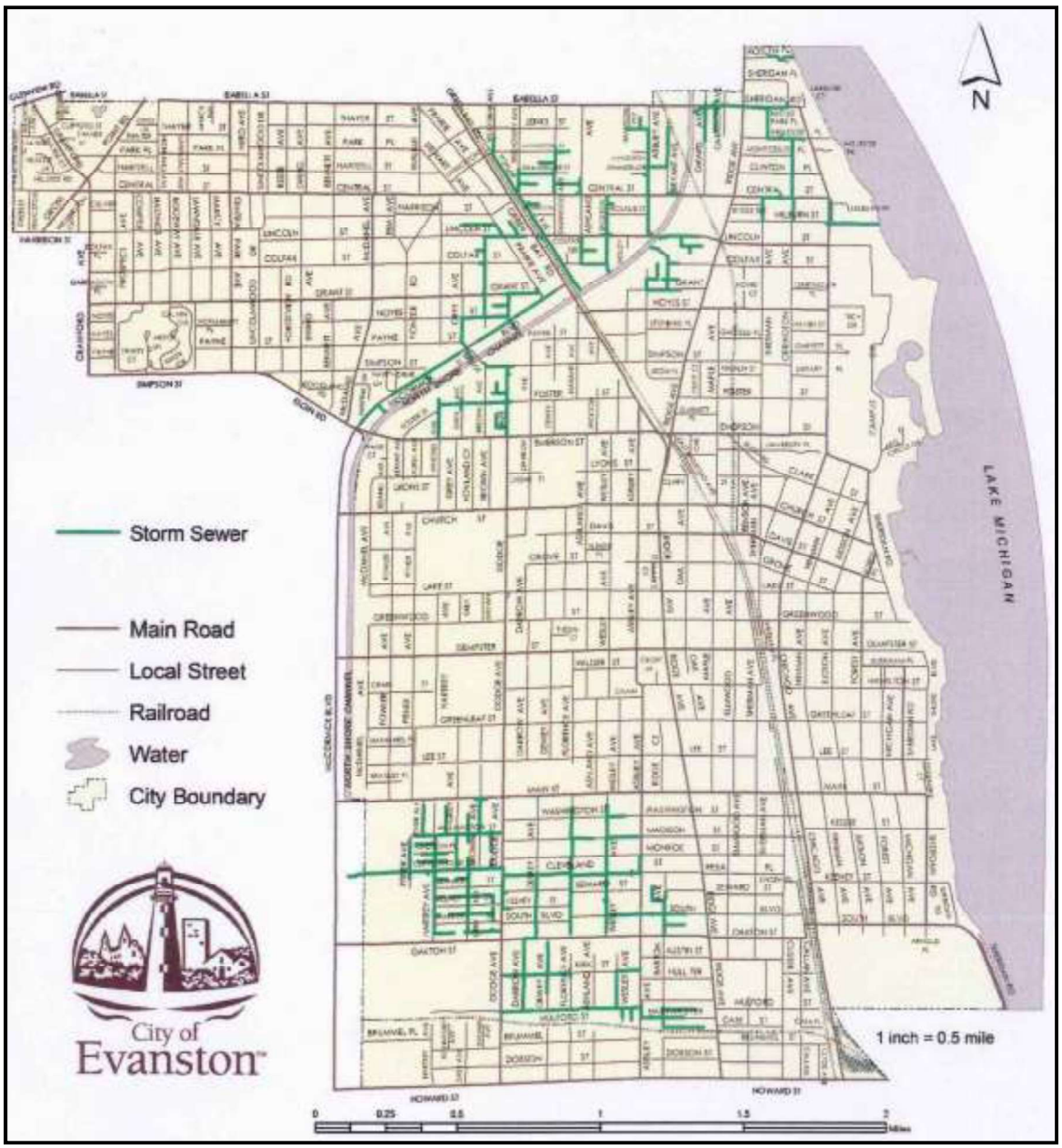
The combined sewer system is Evanston's original sewage collection system. Much of this system was constructed in the late 1800s to early 1900s. The system was intended to capture and convey both domestic sewage and stormwater runoff, though as early as the early 1900s the City experienced flooding and 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 their basements 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 storm 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.

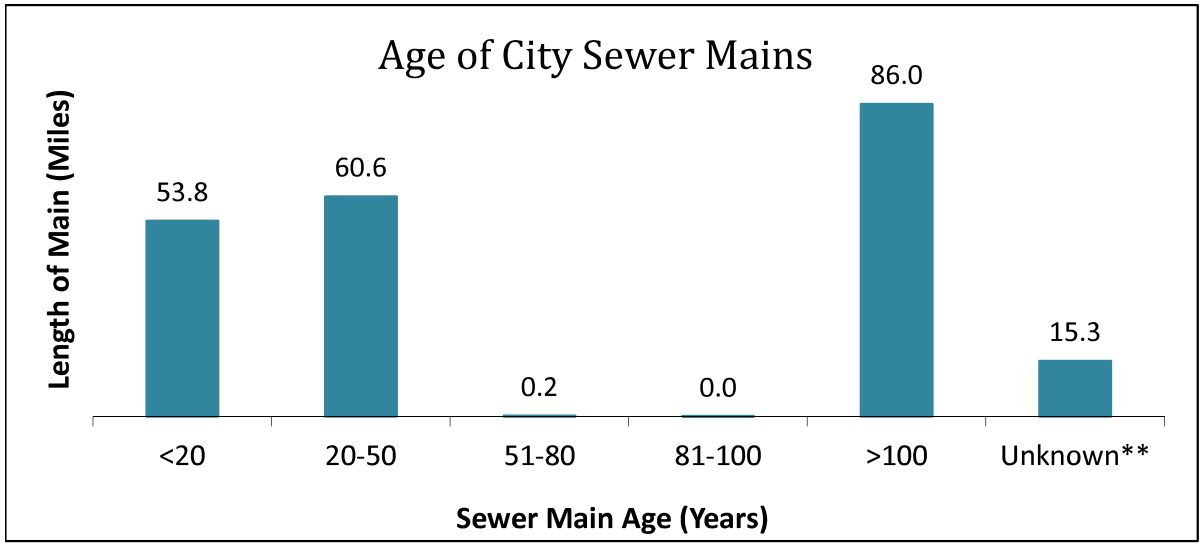


Sewer Mains

System Data and Maintenance

	Pipe Length (miles)				
Sewer Length by Type	2015	2016	2017	2018	2019
Combined Sewer	144.30	144.27	144.30	144.53	144.25
Relief Sewer	53.54	53.69	53.78	54.54	55.14
Storm Sewer	16.29	16.30	16.30	16.30	16.44
Total Length	214.13	214.26	214.38	215.37	215.84

Sewer Installation	Pipe Length (feet)				
and Maintenance	2015	2016	2017	2018	2019
Installed (new)	2,782	0	501	2,311	3,746
Replaced	0	0	178	760	281
CIPP Rehabilitation (Lining)	11,330	7,753	13,921	4,662	11,578
Spot Repair	2,143	2,943	1,048	3,107	1,495
Clean - Hydroflush	110,419	217,566	253,055	45,575	143,443
Clean - Root Cut	39,987	8,400	1,907	1,618	8,582
Inspection - General	45,777	28,492	19,881	9,509	6,292
Inspection - Televised	50,300	51,602	50,901	42,897	49,900
Inspection - Storm-related*	530	0	161	1,304	375



* 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

	Combined Sewer		Relief Sewer		Storm Sewer	
Diameter	Feet	Miles	Feet	Miles	Feet	Miles
<6"	2,925	0.55	243	0.05	0	0.00
6"	1,726	0.33	196	0.04	0	0.00
8"	20,964	3.97	11,503	2.18	1,933	0.37
9"	124,921	23.66	7,545	1.43	991	0.19
10"	110,326	20.90	31,991	6.06	11,122	2.11
12"	221,275	41.91	28,630	5.42	10,399	1.97
14"	1,019	0.19	0	0.00	0	0.00
15"	93,152	17.64	5,737	1.09	5,249	0.99
16"	2,085	0.39	6,789	1.29	724	0.14
18"	62,140	11.77	16,576	3.14	7,693	1.46
20"	8,196	1.55	127	0.02	0	0.00
21"	14,930	2.83	2,614	0.50	1,910	0.36
22"	867	0.16	0	0.00	0	0.00
24"	21,759	4.12	47,713	9.04	15,967	3.02
27"	6,297	1.19	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,093	3.62	3,913	0.74
33"	3,771	0.71	1,309	0.25	482	0.09
36"	19,759	3.74	18,237	3.45	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"	13,210	2.50	22,373	4.24	7,966	1.51
51"	1,104	0.21	0	0.00	0	0.00
54"	1,981	0.38	3,173	0.60	609	0.12
57"	784	0.15	0	0.00	0	0.00
60"	7,424	1.41	5,242	0.99	3,633	0.69
72"	4,126	0.78	11,640	2.20	0	0.00
78"	0	0.00	5,452	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	5,012	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	1,404	0.27	2,232	0.42	691	0.13
Totals	**761,646**	**144.25**	**291,151**	**55.14**	**86,824**	**16.44**

Total Sewer Main Length: 215.84 miles

Sewer Structures

System Data and Maintenance

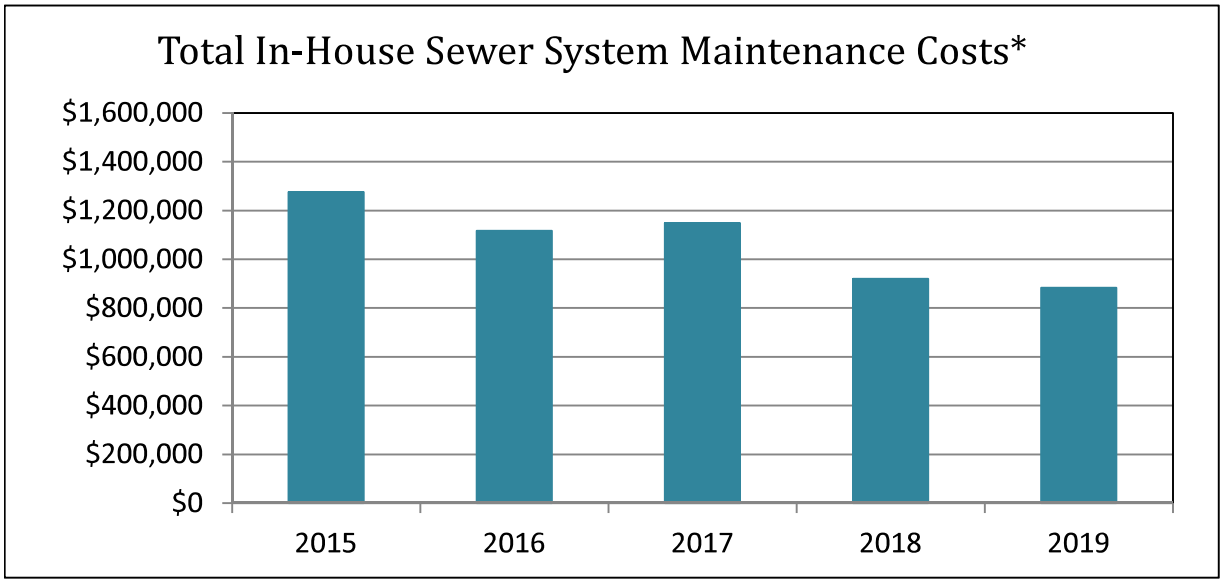
Number of Sewer Structures	2015	2016	2017	2018	2019
Manholes	5,582	5,583	5,588	5,620	5,637
Inlets	3,018	3,024	3,025	3,092	3,121
Catch Basins	6,238	6,246	6,241	6,280	6,291
Total	14,838	14,853	14,854	14,992	15,049

Sewer Structure Installation & Maintenance	2015	2016	2017	2018	2019
Installed (new)	41	3	4	27	41
Replaced	18	9	15	6	24
Repair	73	89	97	116	95
Clean	3,262	2,779	1,889	3,006	1,910
Inspect - General	614	156	196	668	187
Inspect - Storm-Related*	935	689	995	998	598

* 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	2015	2016	2017	2018	2019
Sewer Mains	$344,407	$396,738	$377,668	$238,526	$267,761
Sewer Structures	$547,051	$388,196	$434,624	$360,072	$277,468
Equip/Facility Maint.	$162,452	$122,994	$164,159	$117,291	$113,110
Assist W&S Divisions	$80,729	$52,271	$41,226	$36,266	$21,835
Snow & Ice Removal	$68,538	$32,077	$12,423	$66,934	$50,086
Assist Contractors	$16,637	$16,955	$23,378	$20,102	$37,141
Assist Other City Depts.	$17,107	$61,226	$31,302	$41,396	$65,575
Safety & Training	$27,486	$30,844	$23,472	$26,350	$17,973
Miscellaneous	$10,588	$14,874	$39,778	$12,525	$30,605
JULIE Locates	$193	$357	$236	$648	$1,052
Total	**$1,275,188**	**$1,116,533**	**$1,148,265**	**$920,111**	**$882,606**



* 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).

In 2019, due to weather, the remaining 1.18 miles of combined sewer mains to be lined in 2018 were completed in Quarter 1. Likewise, due to weather, a remaining 0.81 miles of combined sewer mains to be lined in 2019 will be completed in Quarter 1 of 2020.