2020

ANNUAL REPORT

Evanston Public Works Agency

Water Production Bureau

Water and Sewer Utilities

Committed to serving the community for 147 years

2020 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

480,433 Residents supplied
61,146 Businesses supplied
in Evanston and 9 other communities

SEWER UTILITY

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

BUDGET

$50.1 million - Water Fund
$14.7 million - Sewer Fund
58.5 full-time equivalents (FTE) staff

General Information

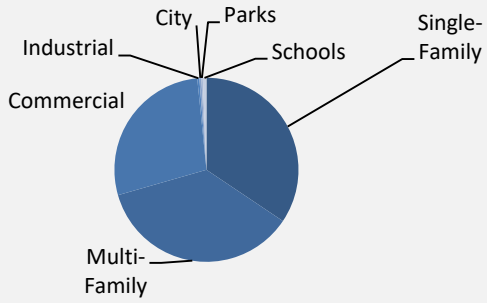
16,988 Million Gallons – Total Water Pumped in 2020
63 Million Gallons – Maximum Pumpage in One Day
August 21st – Day When the Maximum Pumpage occurred

59 Fire Hydrants Replaced/Repaired

1.7 Miles of Water Main Installed/Replaced/Rehabilitated
66 Water Main Valves Installed/Replaced/Rehabilitated
3.4 Miles of Sewer Main Installed/Replaced/Rehabilitated
12.4 Miles of Sewer Main Inspected
11.5 Miles of Sewer Main Cleaned
149 Sewer Structures Installed/Replaced/Repaired
2,921 Sewer Structures Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



12.6 Million kWh of Electric Power Used

131,460 Therms of Natural Gas Used

$61.93 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)

CROSS CONNECTION CONTROL

4,742 Backflow Prevention Devices Certified in 2020

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 31 park drinking fountains. Drinking fountains remained closed for the entirety of 2021 due to COVID-19.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

141 miles of water main were surveyed, two (2) water service leaks and three (3) water main breaks were found. This resulted in 13.53 million gallons/year of water savings.

First Responder

1,739 hours Distribution division spent on First Responder events

1,099 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 2020.

- **Water Main Replacement:** Lawndale Avenue – Harrison Street to Grant Street, Darrow Avenue – Lyons Street to Church Street, Hartrey Avenue – Cleveland Street to Oakton Street, Oakton Street North Shore Channel to Hartrey Avenue, Dodge Avenue – Mulford Street to Howard Street, Howard Street – Hartrey Avenue to Dodge Avenue, and Asbury Avenue to Ridge Avenue
- **Combined Sewer:** CIPP Rehabilitation
- **Water Treatment Facility Improvements:** Replaced City's five (5) million gallon finished water Clearwell

Accomplishments and Goals

2020 MAJOR ACCOMPLISHMENTS

Water Supply Expansion

Continued 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

Completed the replacement of the City's five (5) million gallon finished water Clearwell to address structural deterioration.

2021 MAJOR GOALS AND INITIATIVES

Large Diameter Sewer Rehabilitation

Complete the Greenleaf Street Large Diameter Sewer Rehabilitation Project.

Raw Water Intake Improvement Project

Finalize the engineering design of the replacement of the City's 42"/36" Lake Michigan Raw Water Intake installed in 1909 to address diminished flow capacity.

Laboratory Modernization Construction Project

Finish the renovation to the water quality laboratory, used to analyze water for bacteriological contamination and other water quality parameters, at the water treatment plant.

New Utility Billing System

Implement a new utility billing system, Truebill, for individual customers.

Table of Contents

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 480,000 people and 61,000 businesses in Evanston and nine other communities. The Water Utility also operates and maintains more than 156 miles of water mains, 2,100 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 210 miles of sewer mains ranging in size from less than 6-inch diameter to 120-inch diameter, including over 5,600 manhole structures and over 9,300 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 2020 adopted budget was approximately $64.8 million ($50.1 million Water Fund and $14.7 million Sewer Fund). Public Works Agency staff includes 58.5 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2018	2019	2020
Total Water Pumped (millions of gallons)	15,049	15,750	16,934
Fire Hydrants Repaired or Replaced	583	330	59
Water Main Valves Repaired or Replaced	50	43	47
Water Main Replaced or Rehabilitated (miles)	1.26	1.3	1.3
Large Diameter Sewer Rehabilitated (feet)	835	0	2,369
Small Diameter Sewer Rehabilitated (feet)	3,827	11,578	12,823
Sewer Mains Inspected (feet of pipe)	53,710	56,567	65,585
Sewer Mains Cleaned (feet of pipe)	47,193	152,025	60,752
Sewer Structures Repaired or Replaced	122	119	126

2020 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 480,000 customers in nine 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 beginning to supply water to Lincolnwood.

Water Treatment Facility Improvements

Assured 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.

Water Distribution and Expansion

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. The entire distribution system was also surveyed for leaks.

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.

Small Diameter Sewer Rehabilitation

Continued 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.

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.

Preventative Measures for Sewer Mains

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

Combined and Storm Sewer Regulatory Inspections

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

Stormwater Management Initiatives

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

Development of Stormwater Master Plan

Continued the 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.

2021 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.

Raw Water Intake Improvement Project

Continue the engineering design of a major water treatment plant improvement with the replacement of the City's 42"/36" Lake Michigan Raw Water Intake installed in 1909 to address diminished flow capacity.

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.

Laboratory Modernization Construction Project

Continued renovation 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.

30" Transmission Main Rehabilitation Project

Improve the water distribution system reliability by beginning the 30" Transmission Main Rehabilitation Project.

Intake Heater Replacement Project

Assure the reliability of the potable water supply by replacing the 54" Intake Heater Cable (installed in 2009). The 54" intake was originally installed in 1975.

SCADA Update Project

Complete the Supervisory Control and Data Acquisition (SCADA) System Upgrade Project.

Electrical Improvements Projects

Begin the engineering phase of the Medium Voltage Switchgear Reliability and Generator Replacement Project.

Greenleaf Street Large Diameter Sewer Lining

Perform engineering design and secure State low-interest loan funding for a large diameter sewer rehabilitation project scheduled for 2021.

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.

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 green space – 5.0 MG
Total Plant Storage – 9.4 MG

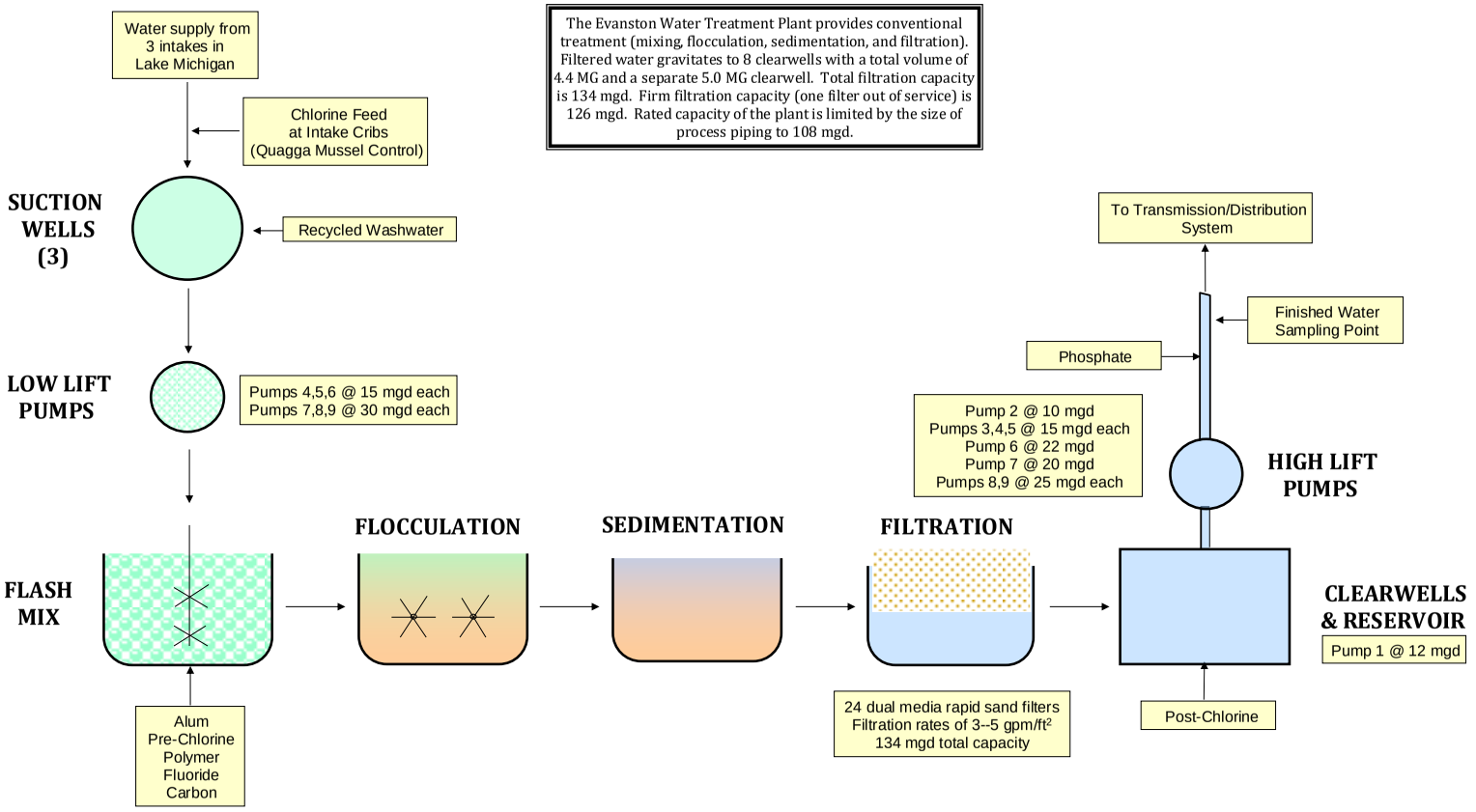
High Lift Pumps
1 – 12 mgd, submersible, electric motor driven
1 – 15 mgd, electric motor driven
2 – 25 mgd, electric motor driven
1 – 10 mgd, dual drive, electric/natural gas
2 – 15 mgd, dual drive, electric/natural gas
1 – 22 mgd, dual drive, electric/natural gas
1 – 20 mgd, natural gas engine
Total capacity of 159 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 2020)

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.

1941

- 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.

2020

- Replaced the City's five (5) MG finished water clearwell, which is located on Northwestern University's campus, to address structural deterioration.

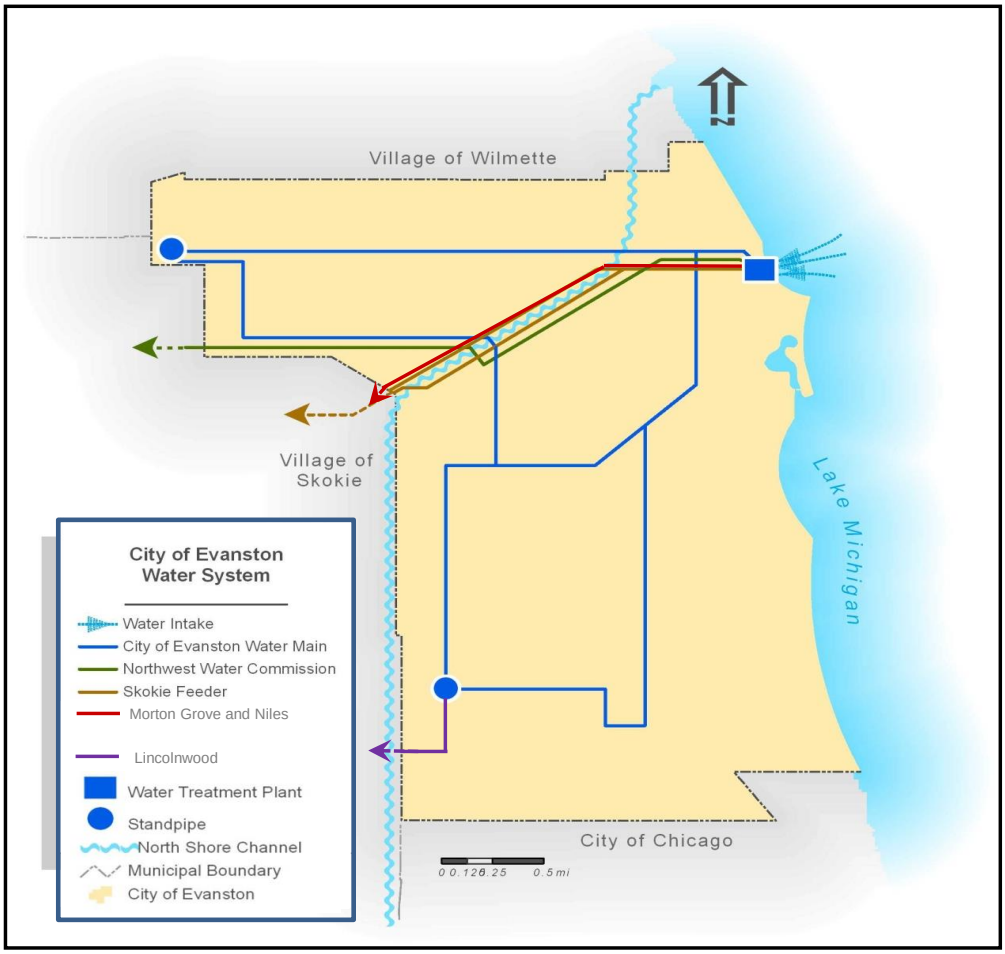
Notes: MG = million gallons
mgd = million gallons per day
HP = horsepower
kV = kilovolt
kW = kilowatt
kVA = kilovolt-ampere

Service Area & Customers

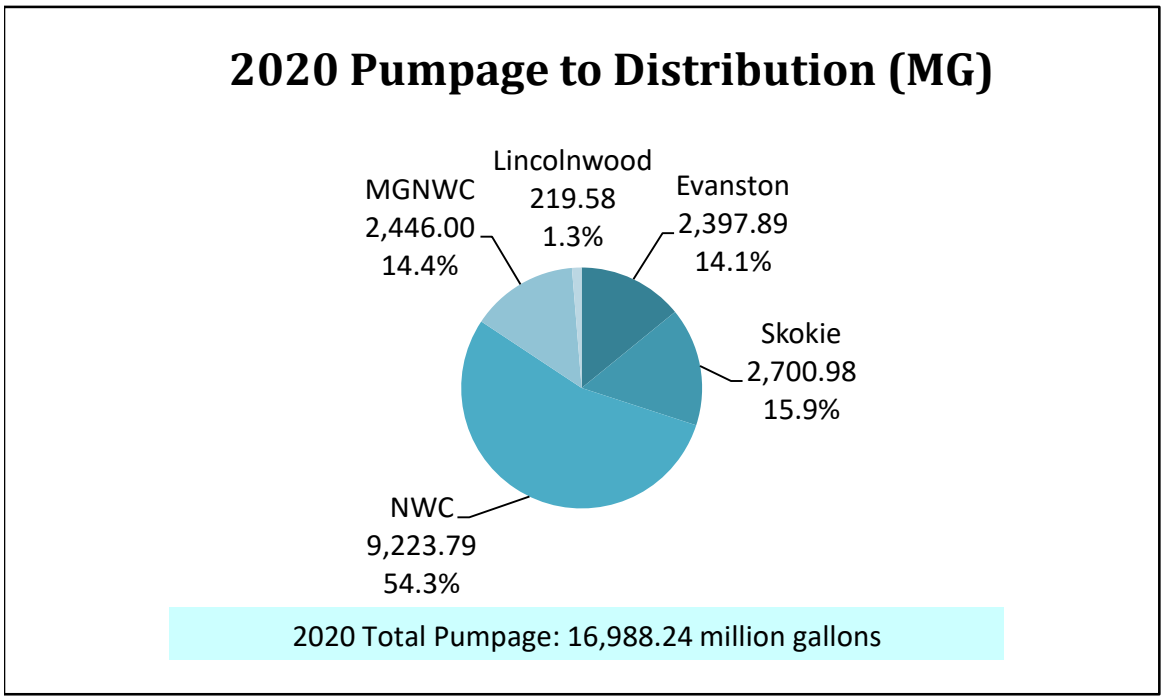
	Area (Square Miles)	2020 Persons*	2020 Businesses**
Evanston	7.8	73,473	8,459
Skokie	10.1	62,700	10,120
Linclonwood	2.7	12,245	2,208
MORTON GROVE - NILES WATER COMMISSION			
Morton Grove	5.1	22,796	3,237
Niles	5.9	28,938	3,957
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	74,760	8,255
Buffalo Grove	9.5	40,494	5,266
Palatine	13.6	67,482	6,867
Wheeling	8.7	38,646	4,611
Des Plaines	14.3	58,899	8,166
Total Served	**94.3**	**480,433**	**61,146**

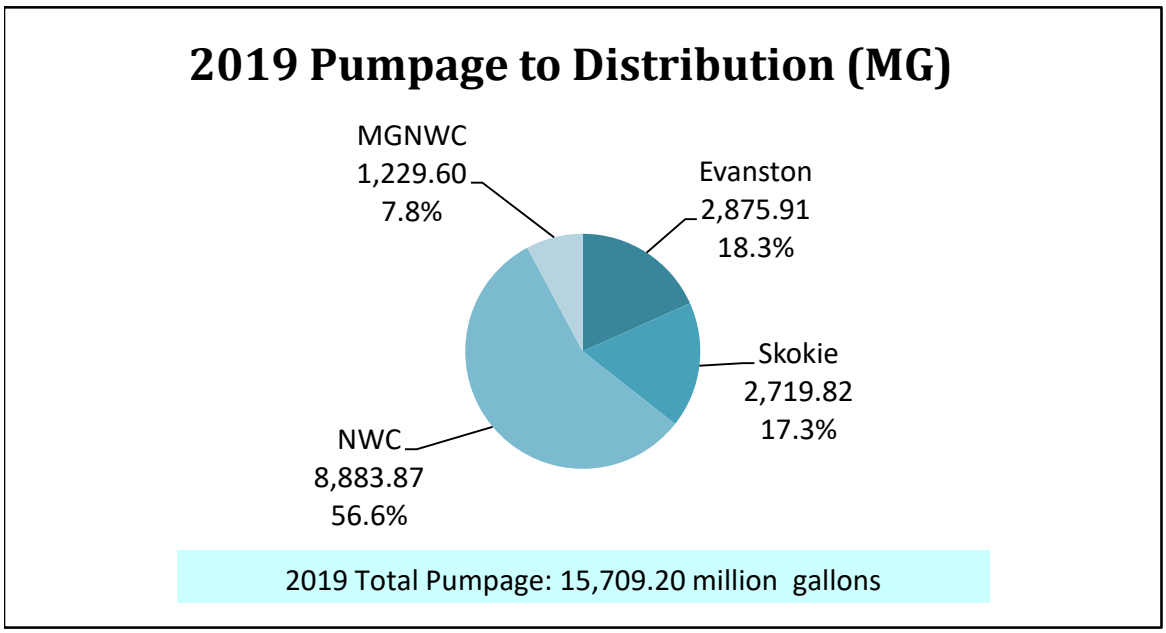
* U.S. Census Bureau, 2019 Estimate

** U.S. Census Bureau, 2012 Estimate



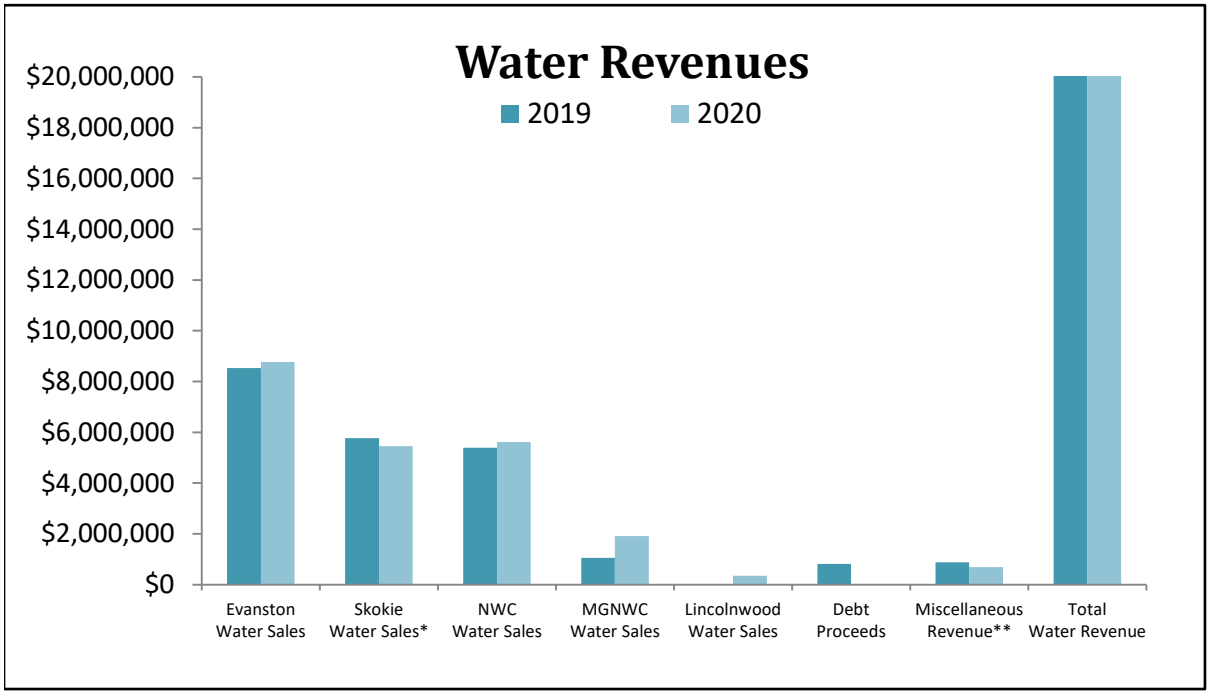
Pumpage to Distribution





Water Revenues

	2019	2020
Evanston Water Sales	$8,529,573	$8,771,788
Skokie Water Sales*	$5,773,487	$5,455,762
NWC Water Sales	$5,394,834	$5,613,924
MGNWC Water Sales	$1,061,477	$1,918,954
Lincolnwood Water Sales	$0	$352,370
Debt Proceeds	$818,361	$0
Miscellaneous Revenue**	$879,235	$691,788
Total Water Revenue	$22,456,967	$22,804,586

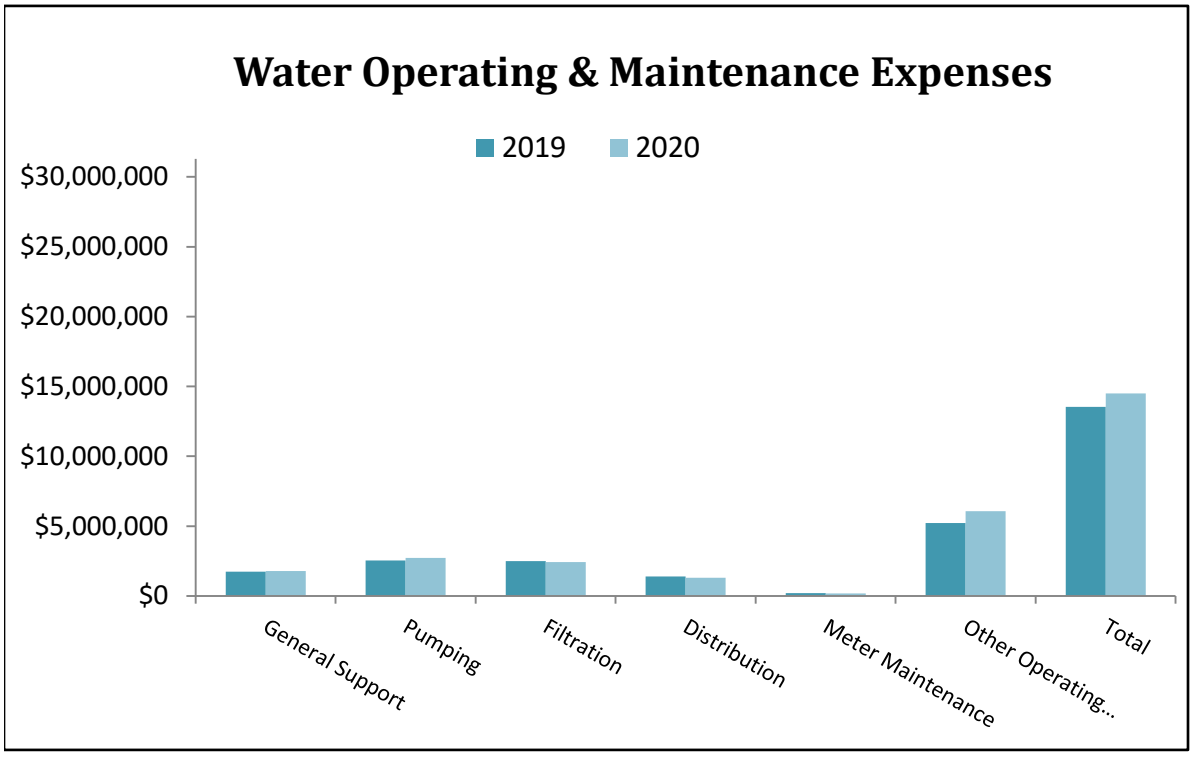


* Due to contract disputes this value represents the amount billed to Skokie. The amount paid in 2019 was $1,619,340 and in 2020 was $2,489,520

** 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*

	2019	2020
General Support	$1,741,775	$1,792,393
Pumping	$2,527,331	$2,716,482
Filtration	$2,484,628	$2,431,060
Distribution	$1,388,034	$1,306,956
Meter Maintenance	$189,630	$179,891
Other Operating Expenses**	$5,207,463	$6,061,104
Total	$13,538,861	$14,487,886

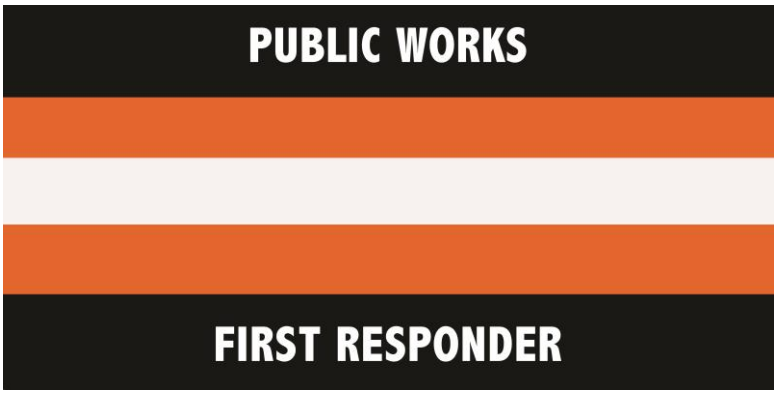


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, http://www.cityofevanston.org/transparency/budget-financial-reports/. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

**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 way 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	949	$39,096	$31,446	$2,377	$72,920
Snow & Ice Control	317	$12,927	$830	$0	$13,757
Hydrant - Inspect	3	$159	$34	$0	$193
Hydrant - Repair	32	$1,112	$1,275	$86	$2,473
Meter/MIU - Inspect	2	$85	$17	$0	$101
Meter/MIU - Repair	2	$113	$22	$0	$135
Meter/MIU - Replace	2	$81	$17	$0	$98
Service - Inspect	24	$936	$293	$35	$1,264
Service - Maintenance	1	$35	$11	$0	$47
Service - Repair Leak	185	$7,172	$7,561	$1,070	$15,804
Service - Replace	85	$3,976	$3,041	$621	$7,638
Valve - Structure Repair	1	$54	$11	$0	$65
Water Main - Check For Leaks	19	$1,033	$180	$0	$1,213
Water Main - Maintenance	64	$2,220	$2,610	$0	$4,831
Dist - Assist W&S Contractor	33	$1,562	$554	$70	$2,186
Dist - JULIE Locates	22	$1,282	$248	$0	$1,530
Total	**1,739**	**$71,845**	**$48,150**	**$4,259**	**$124,253**

Sewer - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Basement Backups	262	$9,946	$6,960	$0	$16,905
Basement Flooding	60	$2,255	$1,779	$0	$4,034
Snow & Ice Control	398	$14,522	$4,897	$0	$19,419
Sinkholes	324	$11,163	$9,715	$0	$20,878
Sewer Main - Inspect	4	$161	$122	$0	$283
Sewer Structure - Clean	10	$352	$229	$0	$581
Sewer Structure - Inspect	18	$987	$355	$0	$1,341
Sewer - Equipment Maintenance	3	$162	$34	$0	$195
Sewer - JULIE Locates	15	$870	$163	$0	$1,033
Sewer - Miscellaneous	6	$313	$65	$0	$377
Total	**1,099**	**$40,730**	**$24,318**	**$0**	**$65,048**

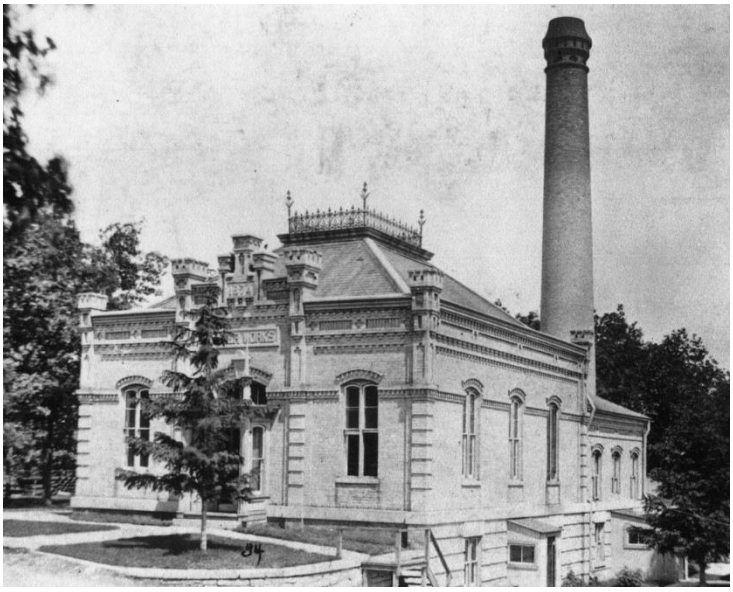
Pumping

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

2020 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	Lincolnwood
Jan-20	1,259.425	33.359	1,292.784	1,235.816	181.247	211.058	706.874	134.342	0.000
Feb-20	1,257.530	30.933	1,288.463	1,236.301	175.656	200.654	675.744	184.247	0.000
Mar-20	1,378.169	33.652	1,411.821	1,352.940	183.410	210.094	704.531	254.905	0.000
Apr-20	1,380.043	28.395	1,408.438	1,327.923	190.556	198.961	701.237	237.170	0.000
May-20	1,458.402	28.628	1,487.030	1,414.099	197.375	212.457	754.389	249.879	0.000
Jun-20	1,546.913	28.977	1,575.890	1,495.448	207.557	232.586	837.478	217.827	0.000
Jul-20	1,742.859	38.545	1,781.404	1,613.308	247.470	279.788	924.638	216.661	1.477
Aug-20	1,816.518	31.985	1,848.503	1,744.998	246.143	281.707	941.892	217.060	58.196
Sep-20	1,530.511	27.568	1,558.079	1,482.072	215.442	239.751	786.894	192.352	47.633
Oct-20	1,473.389	19.685	1,493.074	1,428.277	200.907	221.026	781.457	183.334	41.503
Nov-20	1,329.208	16.157	1,345.365	1,280.266	179.396	201.538	691.305	172.885	35.142
Dec-20	1,358.092	17.748	1,375.840	1,322.411	172.728	211.360	717.352	185.342	35.629
Total	**17,531.059**	**335.632**	**17,866.691**	**16,933.859**	**2,397.887**	**2,700.980**	**9,223.791**	**2,446.004**	**219.580**

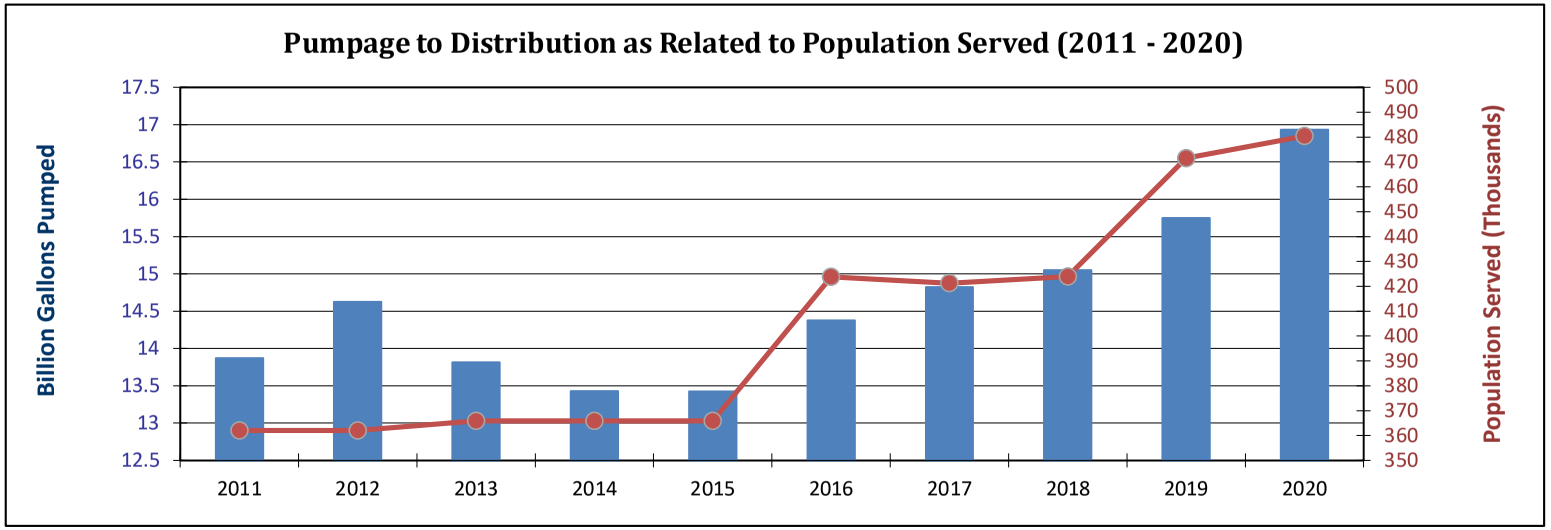
2020 Average Day Pumpage (MGD)

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	Lincolnwood
Jan-20	40.627	1.076	41.703	39.865	5.847	6.808	22.802	4.334	0.000
Feb-20	43.363	1.067	44.430	42.631	6.057	6.919	23.302	6.353	0.000
Mar-20	44.457	1.086	45.543	43.643	5.916	6.777	22.727	8.223	0.000
Apr-20	46.001	0.947	46.948	44.264	6.352	6.632	23.375	7.906	0.000
May-20	47.045	0.923	47.969	45.616	6.367	6.853	24.335	8.061	0.000
Jun-20	51.564	0.966	52.530	49.848	6.919	7.753	27.916	7.261	0.000
Jul-20	56.221	1.243	57.465	52.042	7.983	9.025	29.827	6.989	0.048
Aug-20	58.597	1.032	59.629	56.290	7.940	9.087	30.384	7.002	1.877
Sep-20	51.017	0.919	51.936	49.402	7.181	7.992	26.230	6.412	1.588
Oct-20	47.529	0.635	48.164	46.073	6.481	7.130	25.208	5.914	1.339
Nov-20	44.307	0.539	44.846	42.676	5.980	6.718	23.044	5.763	1.171
Dec-20	43.809	0.573	44.382	42.658	5.572	6.818	23.140	5.979	1.149
Average	**48.030**	**0.920**	**48.950**	**46.394**	**6.570**	**7.400**	**25.271**	**6.701**	**0.602**

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	Lincolnwood
2020	17,531.059	335.632	17,866.691	16,933.859	2,397.887	2,700.980	9,223.791	2,446.004	219.580
2019	15,471.453	405.958	15,877.411	15,750.251	2,875.905	2,719.820	8,883.870	1,229.601	0.000
2018	14,793.326	337.586	15,130.912	15,049.406	2,958.411	2,996.604	9,032.250	38.749	0.000
2017	14,493.663	252.747	14,746.410	14,821.364	2,891.174	2,816.778	9,087.366	0.000	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	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	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	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	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	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	0.000



Average Daily Per Capita Consumption

	Evanston		Skokie		NWC		MGNWC		Lincolnwood		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)	Population	Per Capita Use (gpcd)
2020	73,473	89	62,700	118	280,281	90	51,734	130	12,245	NA	480,433	97
2019	74,106	106	63,280	118	281,992	86	52,127	NA	-	NA	471,505	91
2018	75,557	107	64,773	127	283,630	87	53,214	NA	-	NA	477,174	86
2017	74,895	106	64,270	120	282,093	88	-	0	-	0	421,258	96
2016	75,527	111	64,821	118	283,493	84	-	0	-	0	423,841	94
2015	75,570	101	65,176	117	225,137	95	-	0	-	0	365,883	101
2014	75,570	99	65,176	116	225,137	97	-	0	-	0	365,883	101
2013	75,570	106	65,176	117	225,137	99	-	0	-	0	365,883	103
2012	74,486	105	64,784	130	222,802	106	-	0	-	0	362,072	110
2011	74,486	107	64,784	121	222,802	99	-	0	-	0	362,072	105

*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.

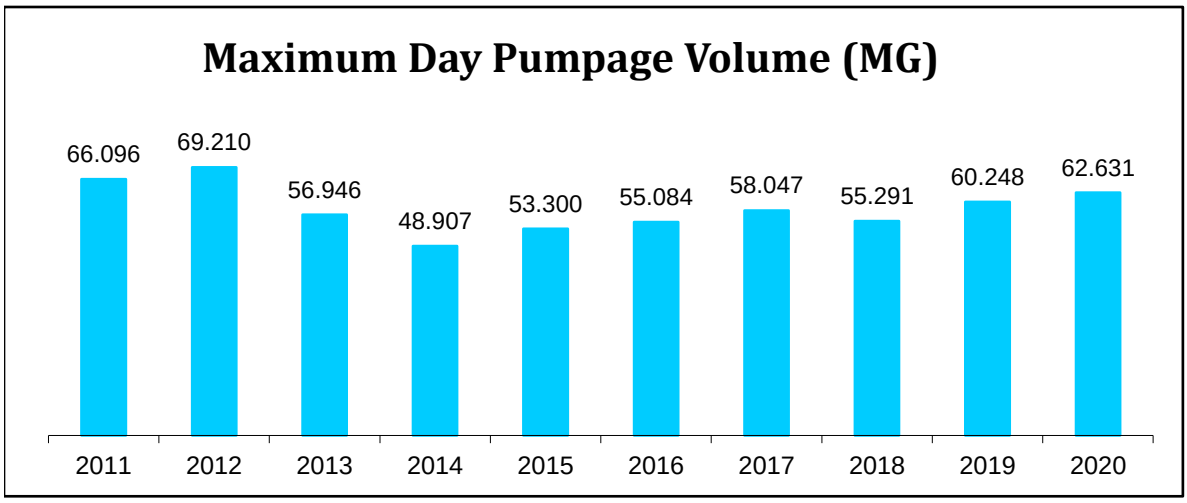
*In 2020, the City of Evanston began providing water to Lincolnwood starting in July.

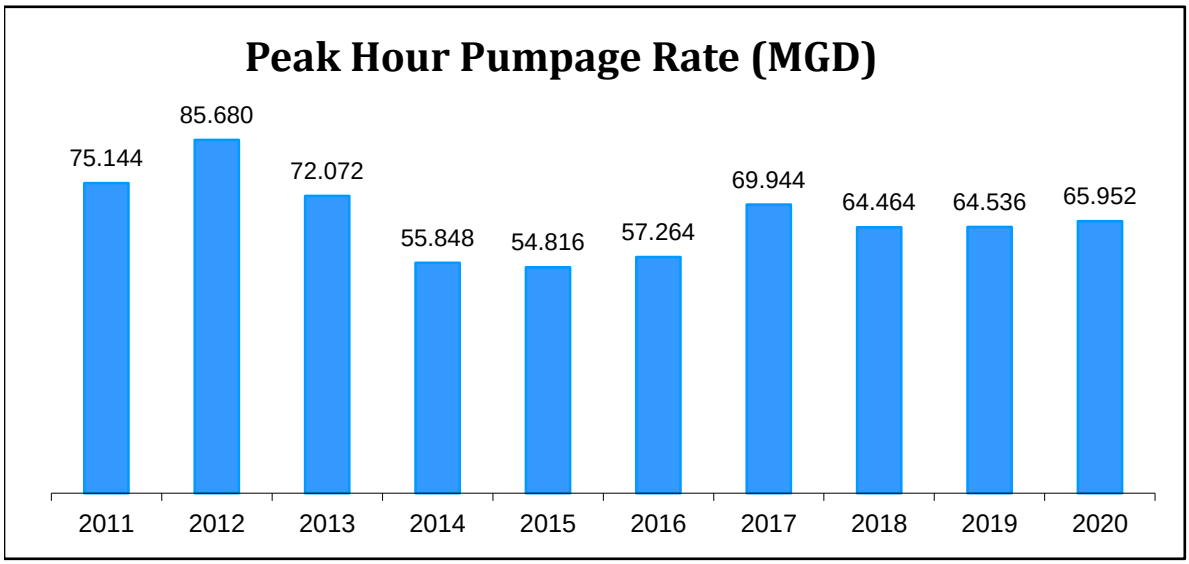
Maximum Pumpage to Distribution

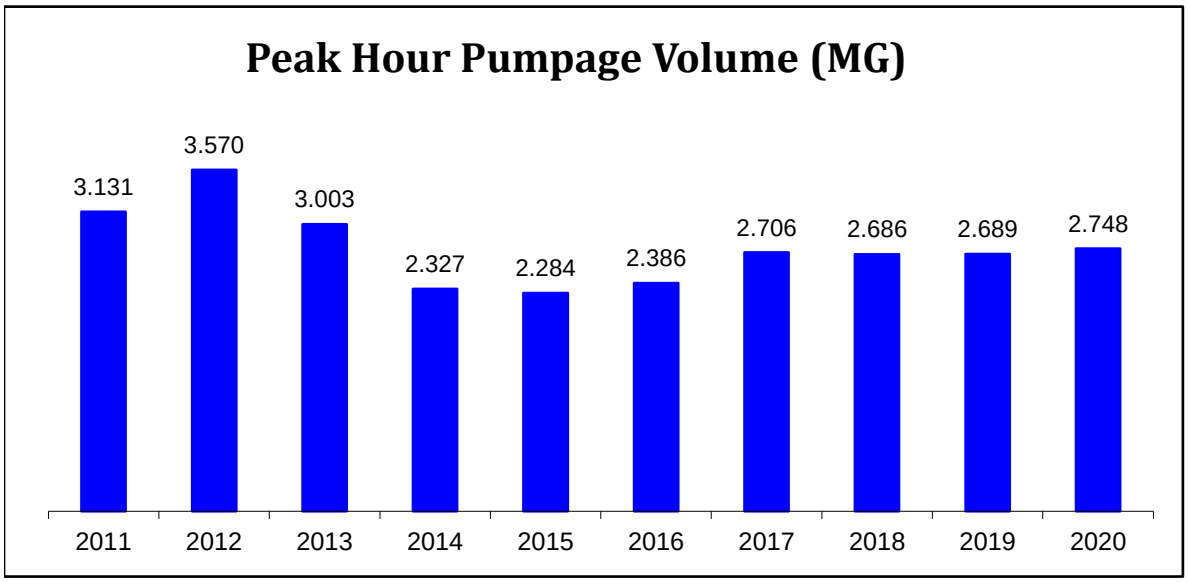
Year	*Max Day Pumpage Volume (MG)*	*Peak Hour Pumpage Rate (MGD)*	*Peak Hour Pumpage Volume (MG)*
2020	62.631	65.952	2.748
2019	60.248	64.536	2.689
2018	55.291	64.464	2.686
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003
2012	69.210	85.680	3.570
2011	66.096	75.144	3.131

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**	**Lincolnwood**
2020	August 21st	August 18th	August 21st	August 23rd	March 26th	August 21st
	62.631	9.814	10.047	33.727	10.587	2.338
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	-	-

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
2020	12,640,104	$995,122	$0.079	746
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

Natural Gas Used for Pumping and Emergency Engines

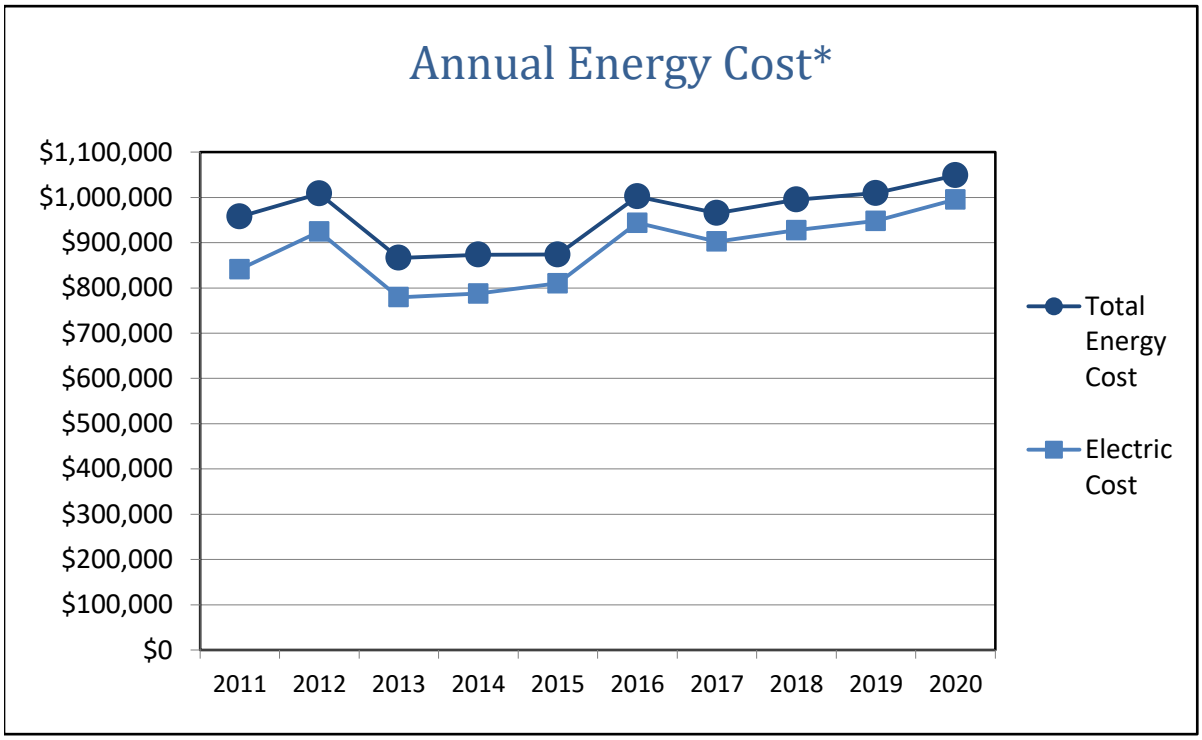
Year	Therms	Total Cost*	Average Unit Cost per Therm
2020	131,460	$53,586	$0.408
2019	127,891	$61,462	$0.481
2018	127,945	$67,419	$0.527
2017	126,267	$63,074	$0.500
2016	121,018	$58,307	$0.482

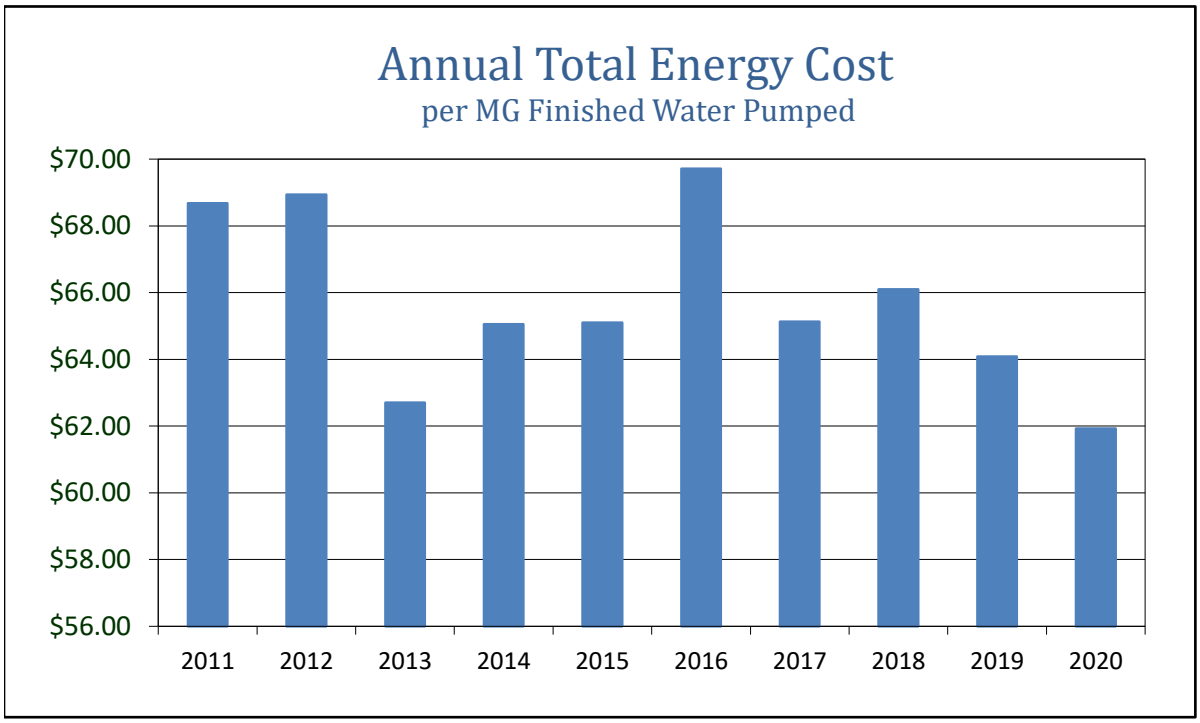
* Includes natural gas purchase and delivery charges.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2020	$1,048,708	$61.93
2019	$1,009,404	$64.09
2018	$994,782	$66.10
2017	$965,320	$65.13
2016	$1,002,105	$69.71

Energy Costs

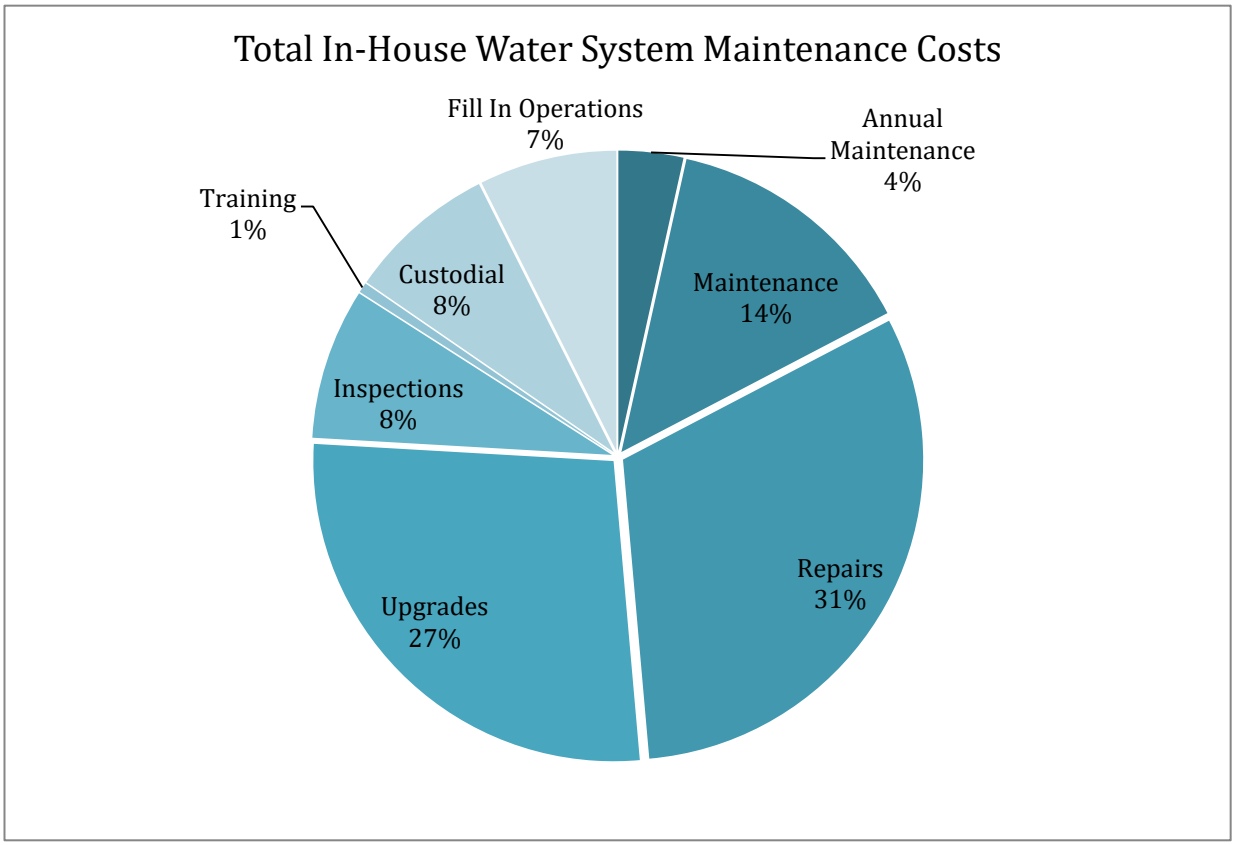




* Energy costs increased in 2012 due to increased pumping during the summer drought.

Breakdown of In-House Maintenance Costs

Description	2019	2020
Annual Maintenance	$14,144	$19,203
Maintenance	$54,832	$76,367
Repairs	$40,956	$172,268
Upgrades	$64,873	$150,497
Inspections	$14,478	$44,821
Training	$7,735	$2,971
Custodial	$67,306	$44,093
Fill In Operations	$58,841	$40,850
Total	**$323,167**	**$551,070**



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.

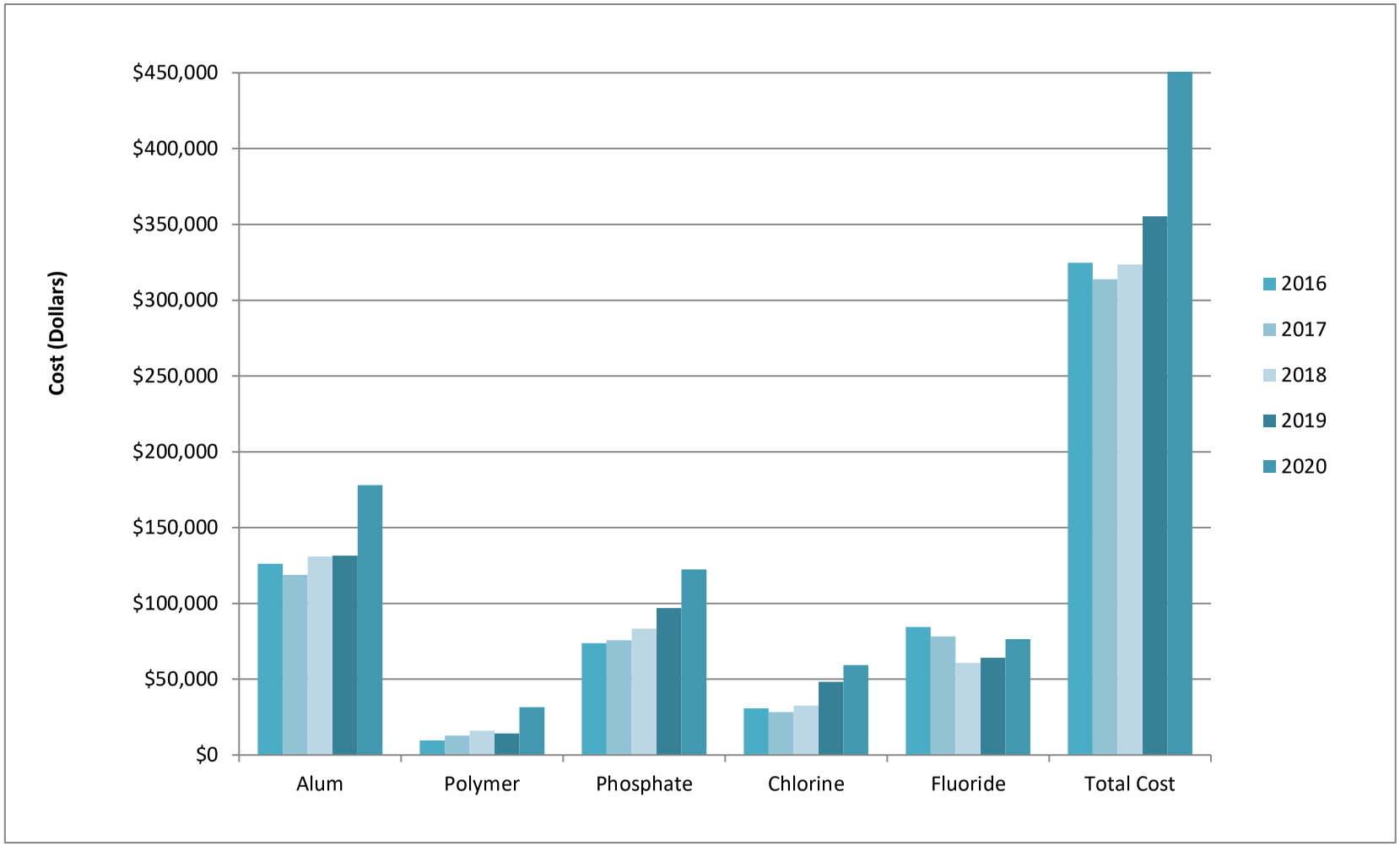
Filters 1 – 12, photo taken in 1924

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							
2020	69.0	130.1	49.0	$300.00 / dry ton	1,187,180	$178,077	$10.31
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
Chlorine							
2020	15.9	20.8	12.5	$430.00 / ton	276,160	$59,374	$3.44
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
Activated Carbon*							
Hydrofluosilic Acid (Fluoride)							
2020	27.2	28.7	24.9	$326.20 / ton	468,955	$76,487	$4.43
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
Polymer							
2020	3.0	5.7	1.8	$1220.00 / ton	51,715	$31,546	$1.83
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
Blended Phosphate							
2020	16.2	19.0	14.6	$4.816 / gallon	276,994	$122,386	$7.09
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

* 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
2020	119.2	114.3	64,901	102,652
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

Filter Washes*

	Total Washes per Year		Max # of Washes per Day	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2020	549	977	8	8
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

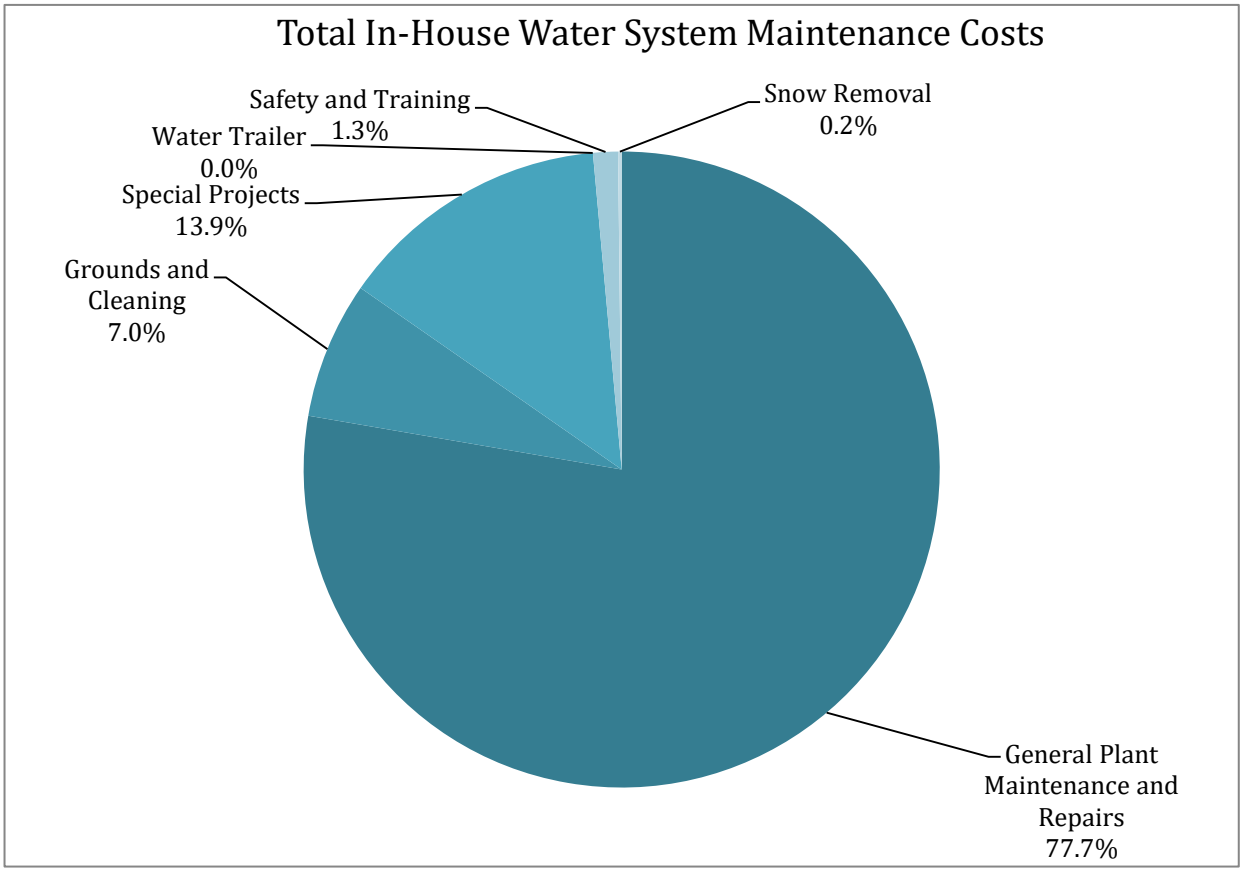
*In 2018, the filter run hours between washes were reduced from 300 hours to 100 hours in an effort to minimize mudball formation in the filter media

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2020	377.241	2.22	6.25
2019	408.744	2.61	6.13
2018	339.444	2.23	7.11
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	15.20

Breakdown of In-House Maintenance Costs

Description	2019	2020
General Plant Maintenance and Repairs	$109,293	$220,547
Grounds and Cleaning	$16,715	$19,762
Special Projects	$57,590	$39,410
Water Trailer	$1,370	$0
Safety and Training	$6,758	$3,590
Snow Removal	$1,816	$512
Total	**$193,542**	**$283,821**



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
2020	960	0	0
2019	979	0	0
2018	984	1	0
2017	978	1	1
2016	974	0	0

Raw Water		Colony Count	
Year	Number Sampled	Average	Maximum
2020	732 (Twice Daily)	63	>200
2019	728 (Twice Daily)	56	>200
2018	730 (Twice Daily)	60	>200
2017	729 (Twice Daily)	77	>200
2016	732 (Twice Daily)	69	>200

After Primary Treatment		Colony Count	
Year	Number Sampled	Average	Maximum
2020	732 (Twice Daily)	0	0
2019	730 (Twice Daily)	0	0
2018	730 (Twice Daily)	0	0
2017	729 (Twice Daily)	0	0
2016	732 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples		Colony Count	
Year	Number Sampled	Average	Maximum
2020	1464 (4 times Daily)	0	0
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

Odor, Turbidity, Temperature and Fluoride

Report of Evanston Water Quality Control Laboratory

Odor

Year	Number of Tests
2020	371
2019	502
2018	498
2017	506
2016	503

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
2020	8.23	74.8	0.46	0.76	1.94	0.23	0.11	0.18	0.09
2019	4.55	49.9	0.32	0.63	2.10	0.19	0.10	0.15	0.08
2018	6.69	94.7	0.35	0.78	2.00	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

Raw Water Temperature

Year	Average	Maximum	Minimum
2020	10.8°C / 51.5°F	24.9°C / 76.8°F	1.4°C / 34.5°F
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

Fluoride Content (EPA target is 0.7 ppm)

	Plant Tap			Distribution		
Year	Avg	Max	Min	Avg	Max	Min
2020	0.71	0.81	0.59	0.69	0.78	0.60
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

Chlorine Residual (ppm)*

Report of Evanston Water Quality Control Laboratory

Filter Influent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2020	1.09	1.40	0.80	1.24	1.52	0.94
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

Filter Effluent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2020	1.00	1.30	0.80	1.14	1.49	0.95
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

Plant Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2020	1.07	1.29	0.75	1.23	1.54	0.91
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

Distribution Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2020	0.80	1.12	0.47	0.96	1.32	0.55
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

*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
2020	365	0.28	0.35	0.22
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

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2020	732	8.3	8.7	7.9	7.6	7.8	7.2
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

Alkalinity (ppm)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2020	732	108	119	95	100	114	85
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

Hardness (ppm as $CaCo_3$)

Year	Number of Tests	Raw Water Avg	Max	Min	Finished Water Avg	Max	Min
2020	732	136	147	121	134	149	120
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

Detected Substances: 2020 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; 0.18 NTU Highest single measurement	0.09 - 0.18	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.
Total Coliform Bacteria	0	5% of Monthly Samples are positive	1.2%	NA	NO	Naturally present in the environment.
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[1]	NA[1]	8	single sample	NO	Erosion from naturally occurring deposits
Barium (ppm)	2	2	0.020	single sample	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of Natural deposits
Sulfate (ppm)	NOT REGULATED	USEPA National Secondary Standard of 250	26	single sample	NO	Naturally occurring, coagulant residual
Combined Radium 226/228 (pCi/L)[2]	0	5	1.02	single sample	NO	Erosion of natural deposits
Gross Alpha excluding Radon and Uranium (pCi/L)[2]	0	15	0.72	single sample	NO	Erosion of natural deposits
Hexavalent Chromium (ppb)	NOT REGULATED	NOT REGULATED	0.15	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	2.2	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.
Cotinine (ppb)	NOT REGULATED	NOT REGULATED	0.002	Single Sample	NO	Nicotine metabolite/waste water discharge
DEET (ppb)	NOT REGULATED	NOT REGULATED	0.006	Single Sample	NO	Insect repellent
Sucralose (ppb)	NOT REGULATED	NOT REGULATED	0.064	Single Sample	NO	Artificial sweetener
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.04	Single Sample	NO	Artificial sweetener

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: 2020 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]	13.4-40.3	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA[1]	60	10 [2]	5.2 - 12	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	0.6 [3]	0.4 - 1	NO	Water additive used to control microbes

Unregulated Contaminant Monitoring Rule (UCMR4)	*MCLG*	*Highest Allowed (MCL)*	*Highest Level Detected*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
HAA6Br (ppb)	NOT REGULATED	NOT REGULATED	11.2	9.6 - 11.2	NO	By-product of drinking water chlorination
HAA9 (ppb)	NOT REGULATED	NOT REGULATED	23.4	17.9 - 23.4	NO	By-product of drinking water chlorination
Manganese (ppm)	NOT REGULATED	USEPA National Secondary Standard	0.000421	single sample	NO	Erosion of naturally occurring deposits

Lead & Copper	*MCLG*	*Action Level (AL)*	*90th Percentile*	*Range of Levels Detected*	*Violation*	*Source of Contamination*
Lead (ppb)	0	15	5.8	<1 - 39	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.16	0.0015 - .220	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)	134	120	149
Hardness (gpg)	8.0	7.0	8.7
Alkalinity (ppm)	100	85	114
Raw Water Temperature °F	52	35	77

Measured Parameter	*Evanston Result*
Calcium (ppm)	34
Chloride (ppm)	15
Dissolved Solids (ppm)	180
Magnesium (ppm)	12
Potassium (ppm)	1.5
Aluminum (ppb)	79

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.

3. Running Annual Average (monthly) (RAA). RAA monthly is based on the monthly averages of all samples.

Non-Detected Contaminants

2020 Water Quality Data

Inorganic Contaminants	MCLG	MCL	EEA MRL	Level Found
ARSENIC (ppb)	10	10	1.0	nd
CADMIUM (ppb)	5	5	1.0	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	2.0	nd
MERCURY (INORGANIC) (ppb)	2	2	0.1	nd
NICKEL	n/a	100	1.0	nd
SELENIUM (ppb)	50	50	2.0	nd
ANTIMONY (ppb)	6	6	1.0	nd
BERYLLIUM (ppb)	4	4	0.3	nd
THALLIUM (ppb)	0.5	2	0.3	nd
ZINC (ppb)	n/a	5000	5.0	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	1.0	nd
DALAPON (ppb)	200	200	1.0	nd
DIQUAT (ppb)	20	20	0.4	nd
ENDOTHALL (ppb)	100	100	9.0	nd
DI(2-ETHYLHEXYL)ADIPATE (ppb)	400	400	0.6	nd
OXAMYL (VYDATE) (ppb)	200	200	1.0	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

2020 Water Quality Data

Volatile Organic Contamintants (VOCs)	MCLG	MCL	EEA MRL	Level Found
METHYL TERT-BUTYL ETHER (MTBE) (ppb)	n/a	n/a	0.5	nd
1,2,4-TRICHLOROBENZENE (ppb)	70	70	0.5	nd
CIS-1,2-DICHLOROETHYLENE (ppb)	70	70	0.5	nd
XYLENES(ppm)	10	10	0.5	nd
DICHLOROMETHANE (ppb)	0	5	0.5	nd
O-DICHLOROBENZENE (ppb)	600	600	0.5	nd
P-DICHLOROBENZENE (ppb)	75	75	0.5	nd
1,1-DICHLOROETHYLENE (ppb)	7	7	0.5	nd
TRANS-1,2-DICHLOROETHYLENE (ppb)	100	100	0.5	nd
1,2-DICHLOROETHANE (ppb)	0	5	0.5	nd
1,1,1-TRICHLOROETHANE (ppb)	200	200	0.5	nd
CARBON TETRACHLORIDE (ppb)	0	5	0.5	nd
1,2-DICHLOROPROPANE (ppb)	0	5	0.5	nd
TRICHLOROETHYLENE (ppb)	0	5	0.5	nd
1,1,2-TRICHLOROETHANE (ppb)	3	5	0.5	nd
TETRACHLOROETHYLENE (ppb)	0	5	0.5	nd
MONOCHLOROBENZENE (ppb)same as CHLOROBENZENE	100	100	0.5	nd
BENZENE (ppb)	0	5	0.5	nd
TOLUENE (ppm)	1	1	0.5	nd
ETHYLBENZENE (ppb)	700	700	0.5	nd
STYRENE(ppb)	100	100	0.5	nd
VINYL CHLORIDE(ppb)	0	2	0.2	nd

THM/HAAs	MCLG	MCL	EEA MRL	Level Found
MONOBROMOACETIC ACID (ppb)	n/a	n/a	1.0	nd

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

Non-Detected Contaminants

2020 Water Quality Data

Per and Polyfluoroalkyl Substances (PFASs)	MCLG	MCL	EEA MRL	Level Found
Perfluorooctanoic acid (PFOA)(ppt)	n/a	n/a	2.0	nd
11Cl-PF3OUdS/F-53B Minor (ppt)	n/a	n/a	2.0	nd
9Cl-PF3ONS/F-53B Major (ppt)	n/a	n/a	2.0	nd
ADONA (ppt)	n/a	n/a	2.0	nd
HFPO-DA/GenX (ppt)	n/a	n/a	2.0	nd
N-ethyl Perfluorooctanesulfonamidoacetic acid (ppt)	n/a	n/a	2.0	nd
N-methyl Perfluorooctanesulfonamidoacetic acid (ppt)	n/a	n/a	2.0	nd
Perfluorobutanesulfonic acid (PFBS) (ppt)	n/a	n/a	2.0	nd
Perfluorodecanoic acid (PFDA) (ppt)	n/a	n/a	2.0	nd
Perfluorododecanoic acid (PFDoA) (ppt)	n/a	n/a	2.0	nd
Perfluoroheptanoic acid (PFHpA) (ppt)	n/a	n/a	2.0	nd
Perfluorohexanesulfonic acid (PFHxS) (ppt)	n/a	n/a	2.0	nd
Perfluorohexanoic acid (PFHxA) (ppt)	n/a	n/a	2.0	nd
Perfluorononanoic acid (PFNA) (ppt)	n/a	n/a	2.0	nd
Perfluorotetradecanoic acid (PFTeDA) (ppt)	n/a	n/a	2.0	nd
Perfluorotridecanoic acid (PFTrDA) (ppt)	n/a	n/a	2.0	nd
Perfluoroundecanoic acid (PFUnA) (ppt)	n/a	n/a	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. The most recent compliance samples were taken in June, July and August of 2020. Water was sampled from 40 homes with full lead service lines. The 90th percentile level for lead in these samples is 5.8 ppb. The 90th percentile level for copper in these samples is 0.16 ppm. The EPA requires 30 samples to be collected. In 2020, Evanston voluntarily collected 10 additional samples. This allowed for a better geographical sampling and for each ward to contain at least three samples.

In 2020, 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 31 park drinking fountains. The drinking fountain program was impacted by COVID-19. Drinking fountains remained closed for the entirety of 2020.

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.

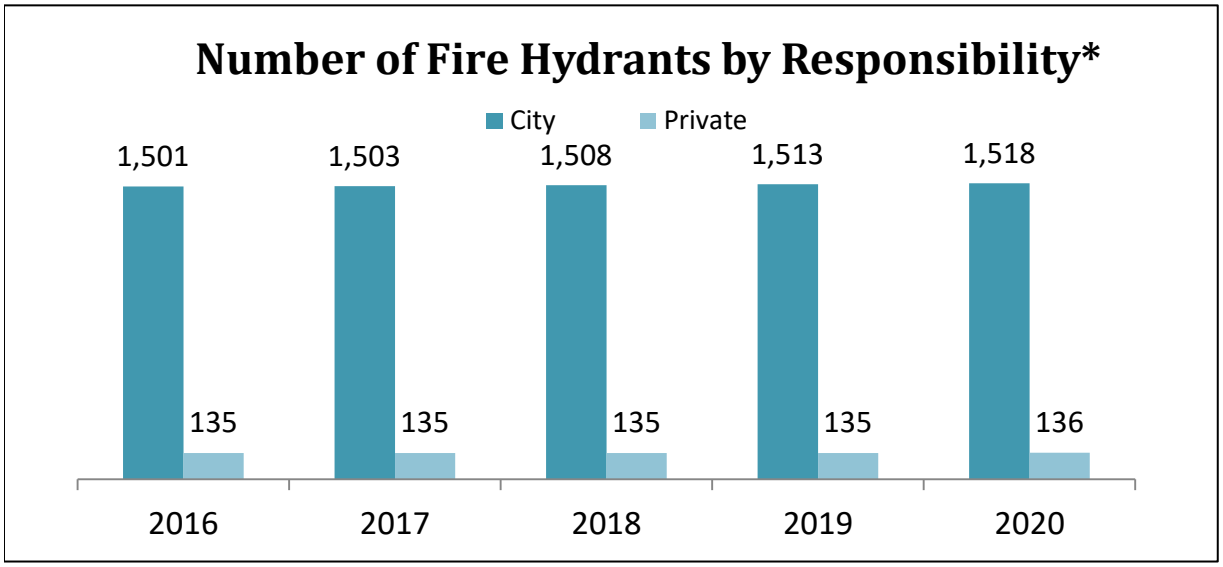
Pieces of wood water main from Evanston's original water distribution system.

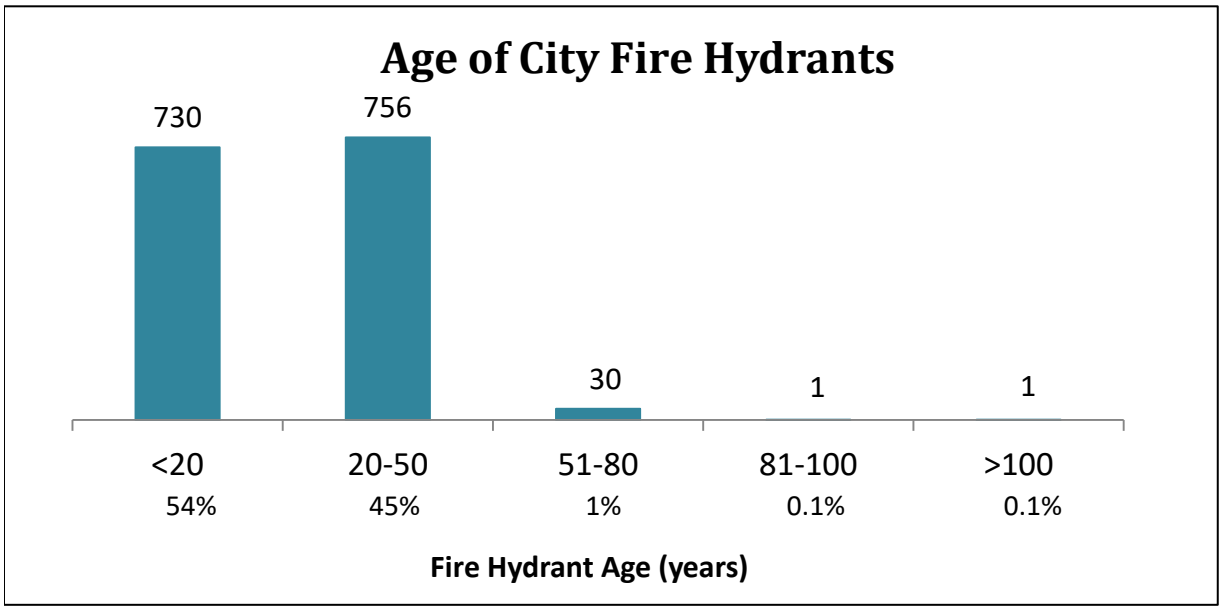
Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2016	2017	2018	2019	2020
Fire Department	1,428	1,453	1,491	1,445	1,485
Public Works Agency	13	11	19	15	13

Installation & Maintenance	2016	2017	2018	2019	2020
Installed (new)	18	2	5	3	6
Replaced	18	10	14	19	23
Repaired	327	535	569	311	36





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

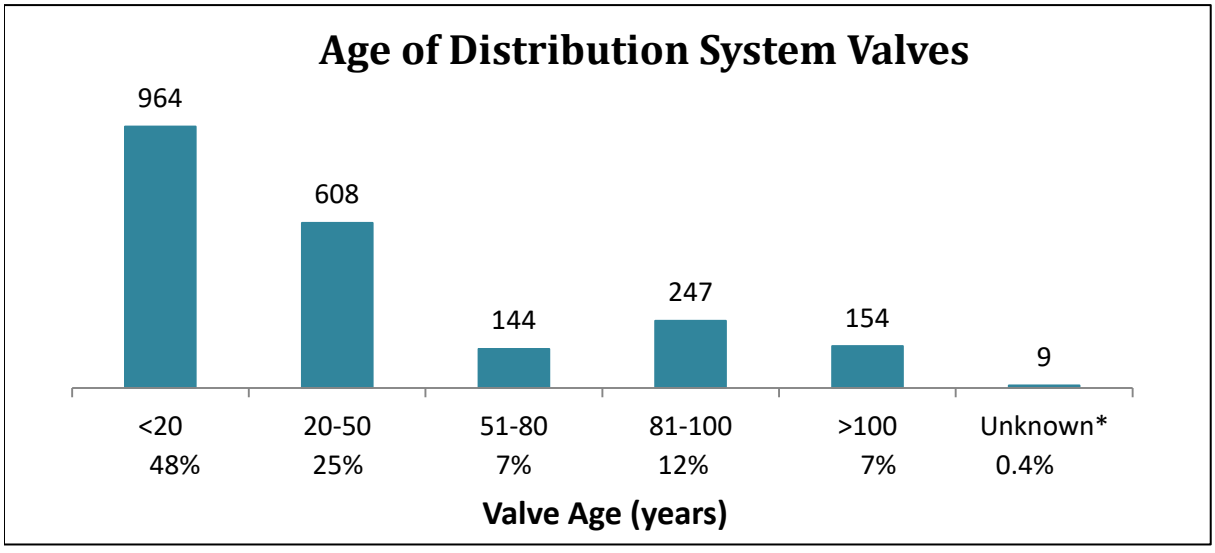
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2016	2017	2018	2019	2020
In-House	828	586	848	524	537
Contractor	0	0	0	0	0

Installation & Maintenance	2016	2017	2018	2019	2020
Installed (new)	27	13	16	19	19
Replaced	37	13	20	19	20
Repaired	19	48	30	24	27

Number of Valves by Size	2016	2017	2018	2019	2020
4" or smaller	23	22	23	23	23
6"	961	957	965	961	958
8"	521	532	540	554	557
10"	199	199	200	205	204
12"	252	252	253	253	257
14"	2	2	2	2	2
16"	50	50	50	50	53
18"	5	5	5	6	6
20"	2	2	2	2	2
24"	33	33	38	33	34
30"	13	13	13	13	13
36"	13	13	13	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,078	2,084	2,108	2,119	2,126



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

Water Mains

System Data and Maintenance

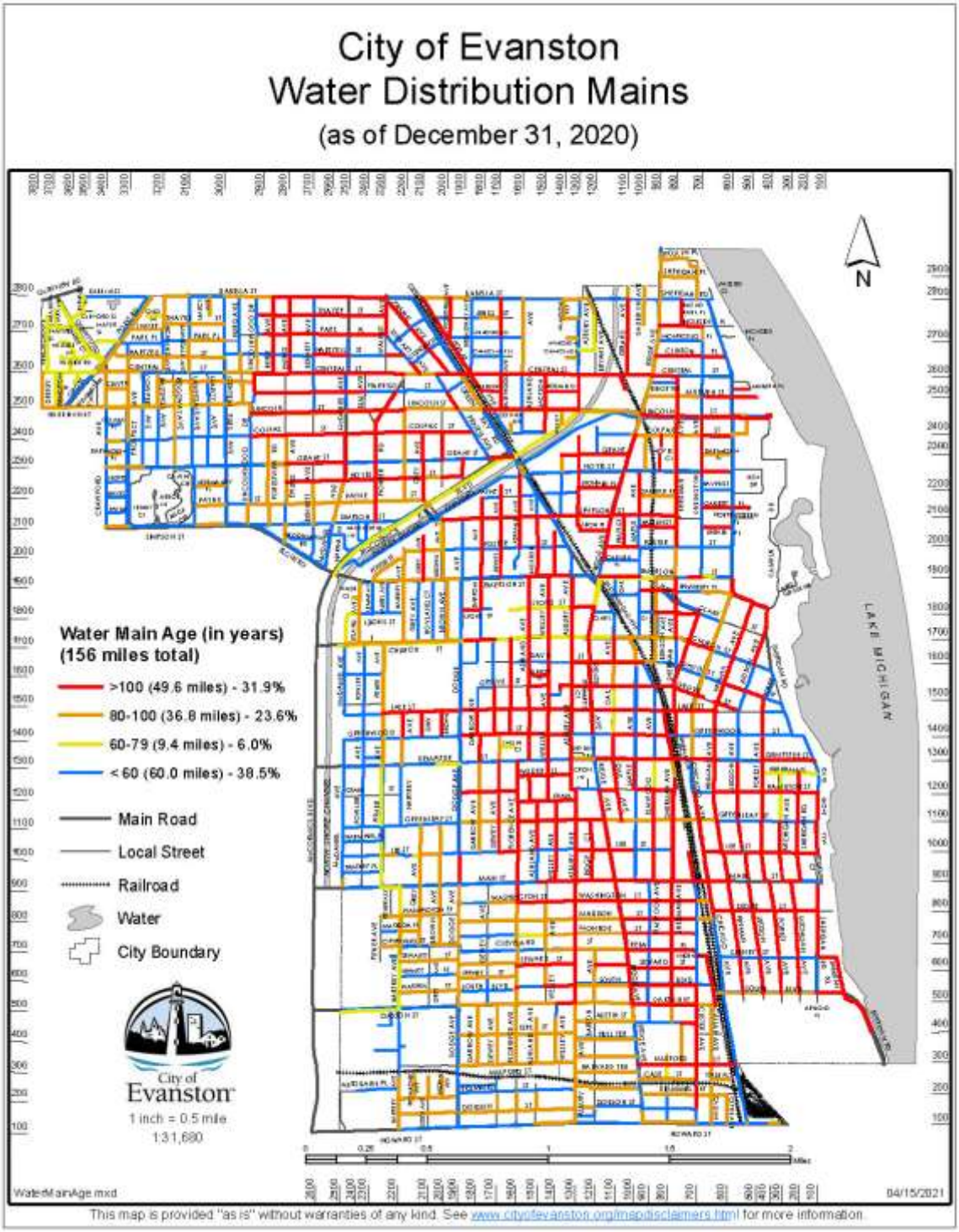
Improvements (lineal feet)	2016	2017	2018	2019	2020
Replaced by City	0	0	0	0	0
Replaced by Contractor	8,172	4,571	6,673	6,780	6,692
Installed New by Contractor	0	0	0	0	2,485
Rehabilitated by Contractor	3,802	0	0	0	0

Water Main Break Repairs	2016	2017	2018	2019	2020
Blow-Out	21	25	22	20	29
Shear Break	7	6	9	8	3
Damage	0	0	1	0	0
Total	28	31	32	28	32

Pipe Sizes (length in miles)*	2016	2017	2018	2019	2020
4" or smaller	1.37	1.37	1.37	1.37	1.37
6"	71.88	71.63	71.63	70.81	70.00
8"	29.01	28.87	29.57	30.35	30.71
10"	13.18	13.18	13.16	13.16	12.94
12"	17.95	17.95	17.95	17.95	17.95
14"	0.37	0.37	0.37	0.37	0.37
16"	6.26	6.26	6.27	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	8.63	8.63	9.10
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	155.72	155.33	156.03	155.99	155.78

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

Water Main Age



Water Services

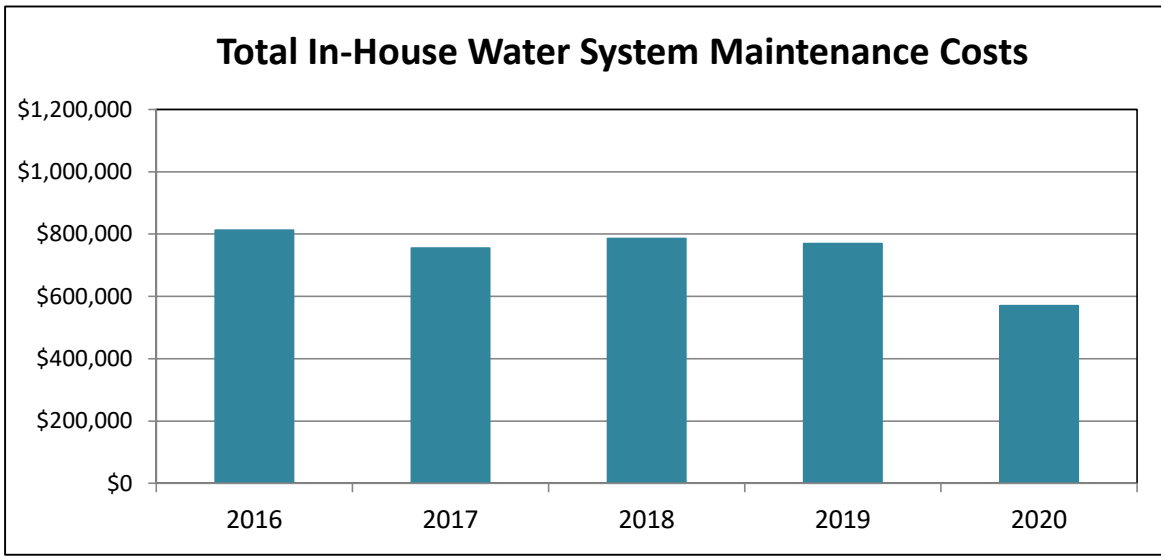
System Data and Maintenance

Water Service Accounts: 15,166*

Installation & Maintenance	2016	2017	2018	2019	2020
New Services Installed	3	7	7	15	7
Service Taps Replaced	53	52	42	64	75
Services Replaced by Contractor	78	42	102	136	82
Service Leaks Repaired	21	12	14	10	11

Breakdown of In-House Maintenance Costs

	2016	2017	2018	2019	2020
Water Mains	$109,939	$123,158	$123,734	$119,977	$72,920
Fire Hydrants	$41,150	$42,292	$45,067	$34,908	$24,782
Water Services	$133,658	$97,085	$171,581	$239,846	$128,266
Valves	$65,263	$18,027	$87,328	$62,031	$17,578
Snow & Ice Removal	$38,105	$14,235	$57,315	$49,963	$13,757
Assist Contractor	$96,170	$100,447	$78,722	$62,476	$62,695
JULIE Locates	$117,375	$107,064	$72,489	$57,619	$80,832
Equip/Facility Maint.	$86,794	$146,597	$66,482	$64,903	$117,705
Assist Other City Depts.	$26,713	$24,749	$22,224	$7,365	$8,866
Assist W&S Divisions	$4,617	$5,112	$4,318	$7,403	$3,620
Safety & Training	$31,543	$26,268	$15,641	$17,374	$7,406
Misc.	$60,838	$49,939	$40,554	$45,451	$31,633
Total	**$812,166**	**$754,972**	**$785,455**	**$769,316**	**$570,058**

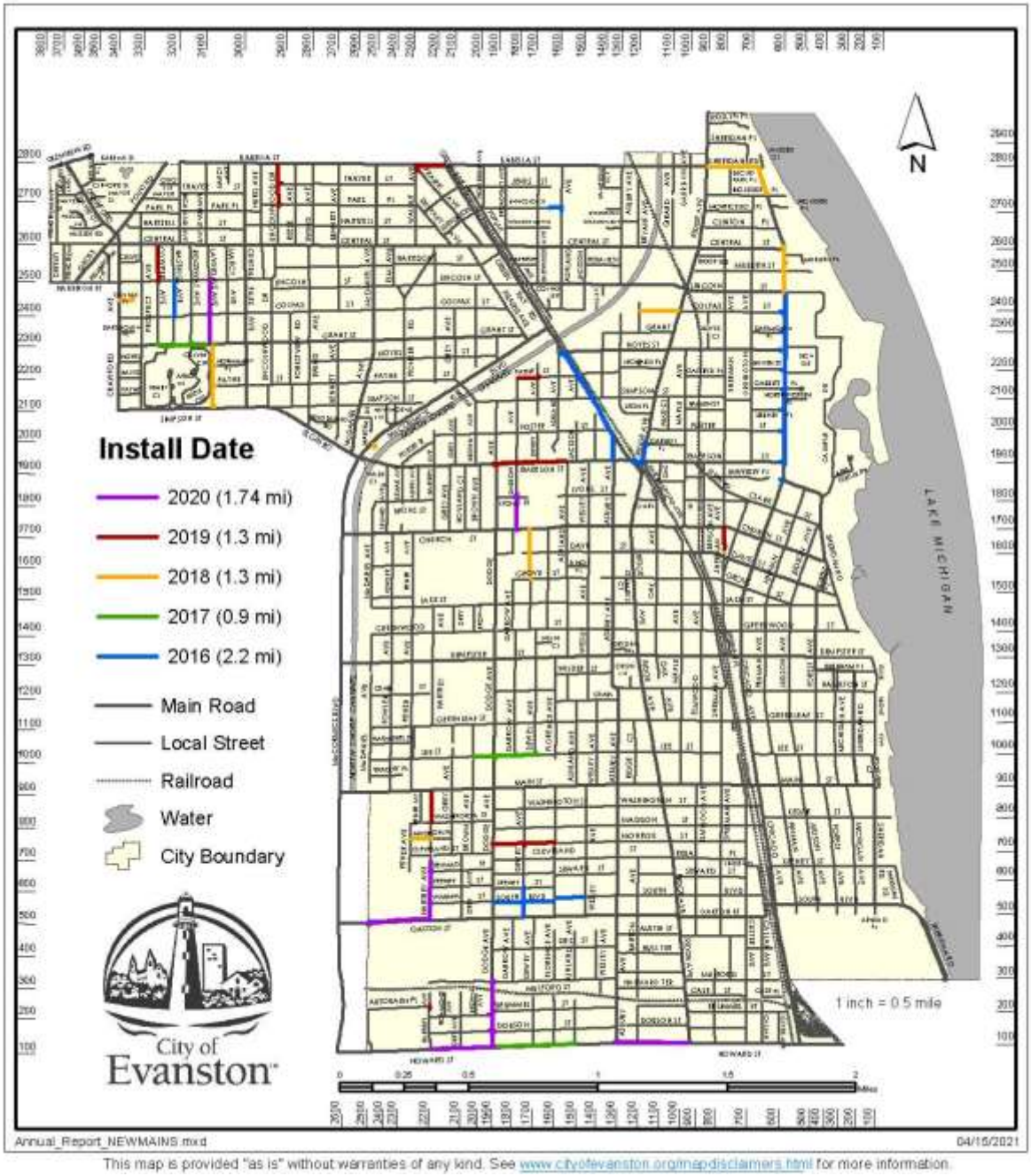


* Includes metered domestic water service accounts and unmetered fire service accounts.

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



This map is provided "as is" without warranties of any kind. See www.cityofevanston.org/mapdisclaimers.html for more information.

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 2020 survey found two leaks on a building water service pipe and three breaks on water mains. These defects were all successfully repaired, and the resulting estimated water savings for 2020 were over 13.53 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
2020	141	2	3	13.53 MG/Year
Totals	**735**	**11**	**13**	**59.87 MG**

In 2021 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.

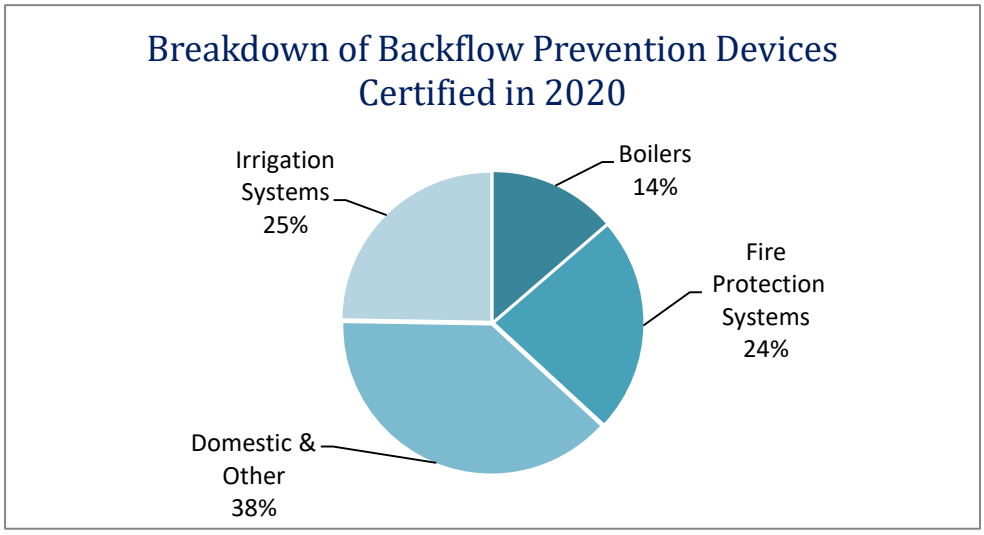
Cross Connection Control

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. In 2020, the City implemented a web-based software application, created by BSI, to manage its cross connection control program. This 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
2016	4,241
2017	4,364
2018	4,522
2019	4,642
2020	4,742



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.

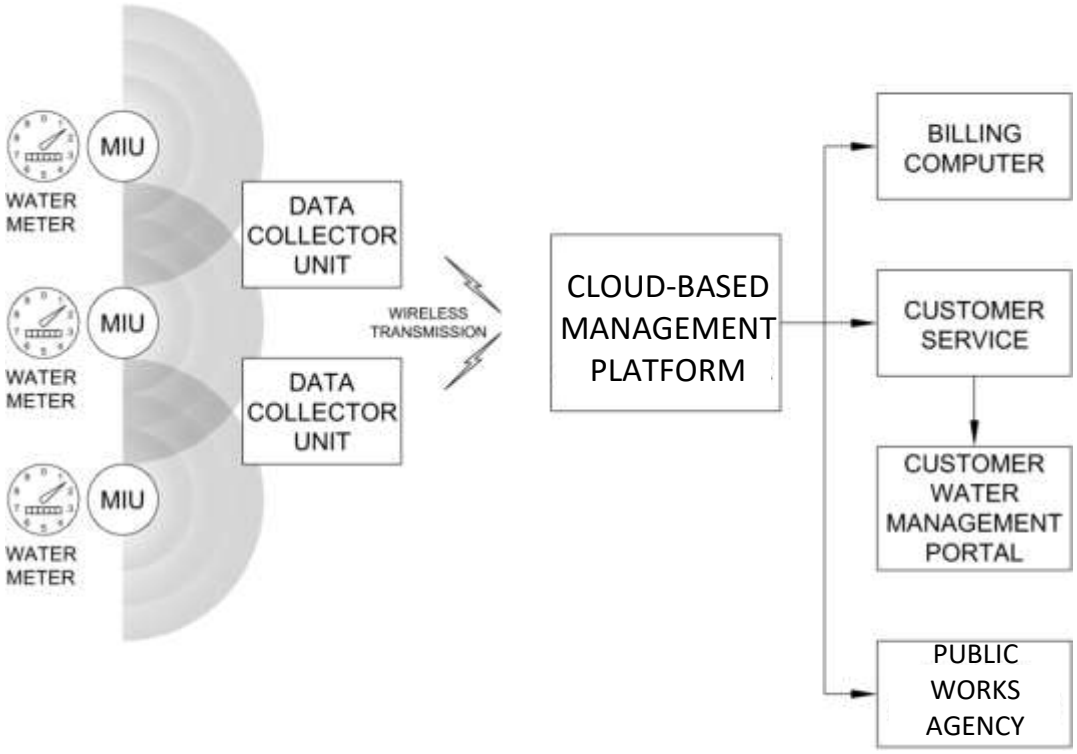
In 2013-2014, the Meter Division managed Evanston's migration to a new Advanced Metering Infrastructure (AMI) system, which has improved accuracy and efficiency of the water metering and billing processes. The AMI system also generates automated hourly meter reads and leak alerts for customers to help reduce water loss. In 2020, the AMI software was upgraded to a Cloud-Based Management Platform, the new Neptune 360. Current technology allows automatic system updates and 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) software. 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 in 2018 and currently with over 9,100 customers is the 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. Customers in the portal 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 Neptune Cloud-Based Management Platform System on a daily basis. The system receives updates automatically and is accessible anytime, anywhere through an internet connections and critical information is always available with just a few clicks.
- The Cloud-Based Management Platform 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 Cloud-Based Management Platform 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 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”	11,340
3/4"	1,225
1”	1,126
1.5”	258
2”	484
3”	65
4”	28
6”	4
8”	4
Total	14,534

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 1/1/2020
5/8” & 3/4”	$10.33
1”	$20.61
1 ½”	$38.58
2”	$60.74
3”	$106.97
4”	$171.35
6”	$302.12
8”	$511.54

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.

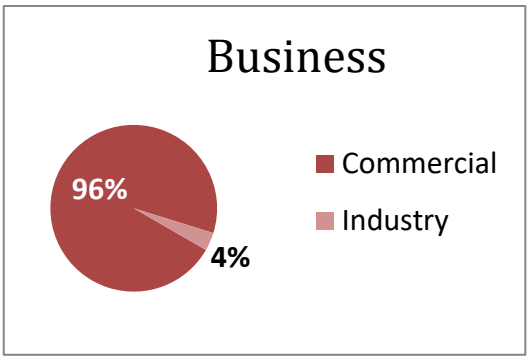
Water usage over the minimum is billed at $2.89 per CF effective 1/1/2020. This is equivalent to a rate of $3.86 per 1,000 gallons.

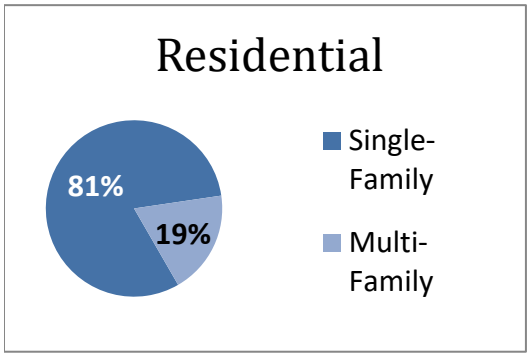
Water Customer Classes and Metered Usage

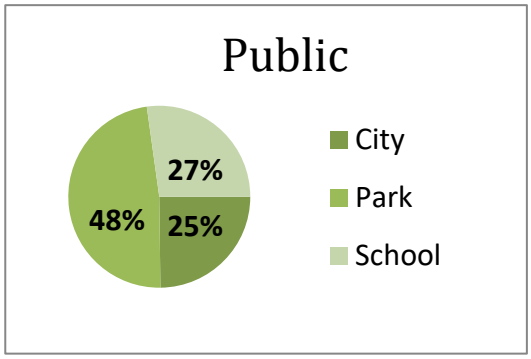
Billed by Category and Water Usage for 2020

Category	Number of Accounts	2020 Usage (100 CF)*
Metered Water Services		
Single-Family	10,891	1,177,703
Multi-Family	2,554	1,237,476
Commercial	930	953,343
Industry	34	12,604
City	31	11,780
Park	60	8,720
School	34	21,706
Subtotal	14,534	3,423,332
Unmetered Water Services		
Fire Services**	632	-
Totals	**15,166**	**3,423,332**

Water Service Accounts by Category:



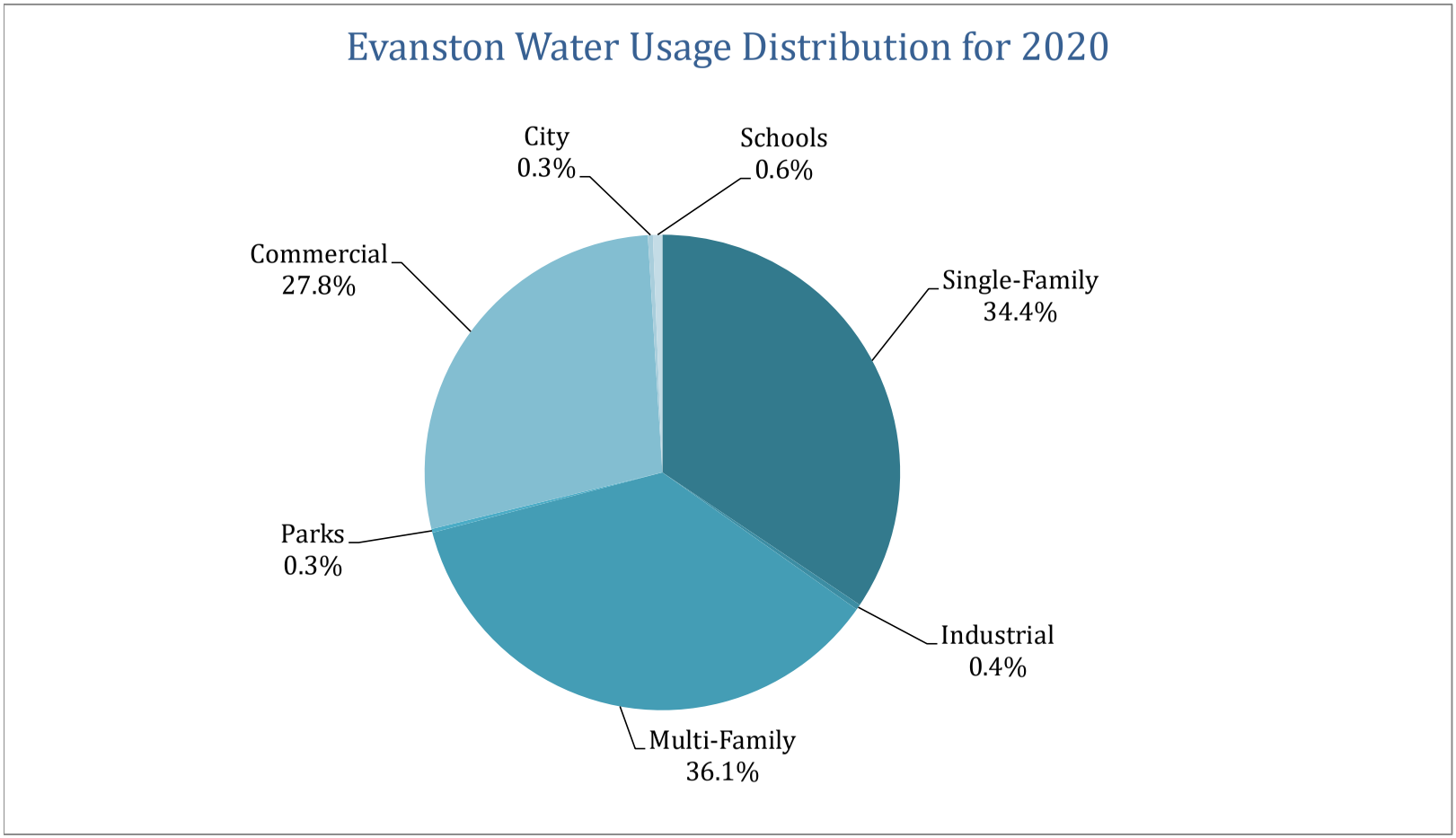




* Water usage is metered in units of 100 cubic feet (CF). 100 CF is approximately 748 gallons

** 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.

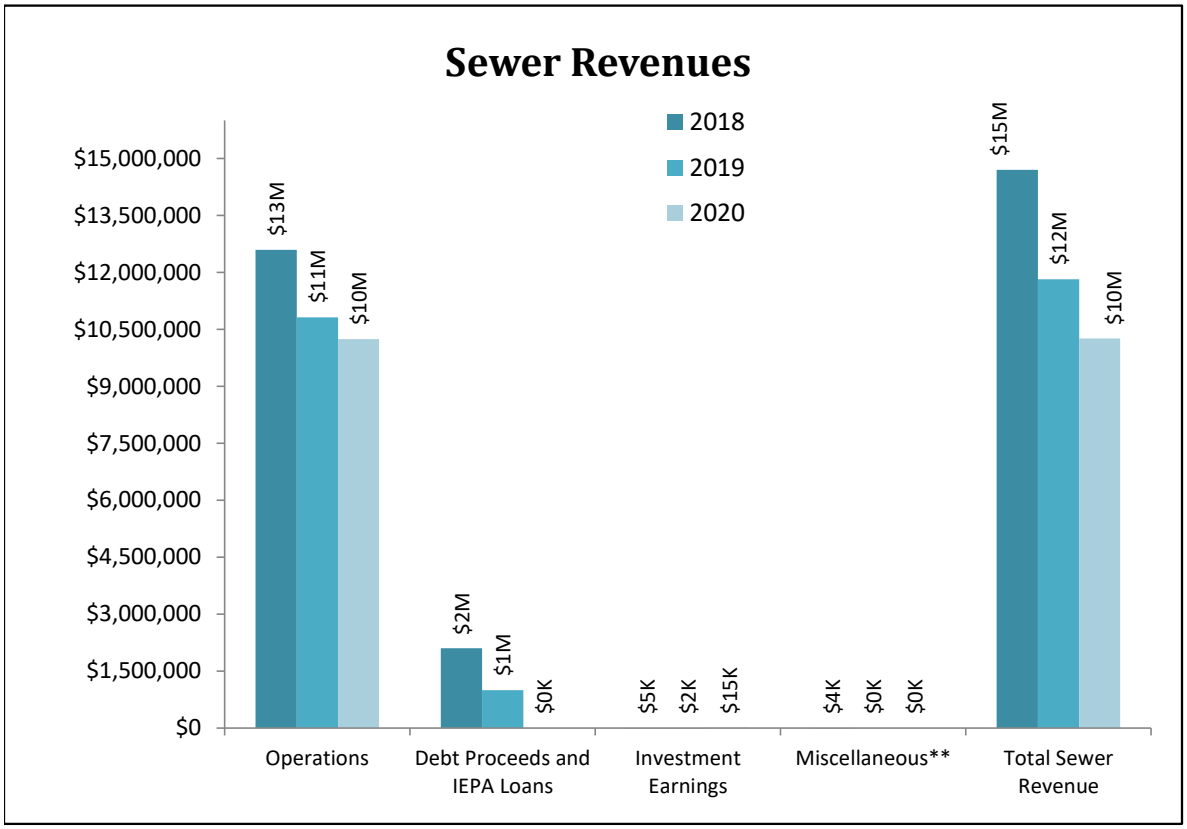
Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

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*

	2018	2019	2020
Operations	$12,589,650	$10,819,358	$10,242,066
Debt Proceeds and IEPA Loans	$2,100,000	$1,000,000	$0
Investment Earnings	$5,000	$2,185	$15,111
Miscellaneous**	$4,000	$0	$0
Total Sewer Revenue	$14,698,650	$11,821,543	$10,257,177

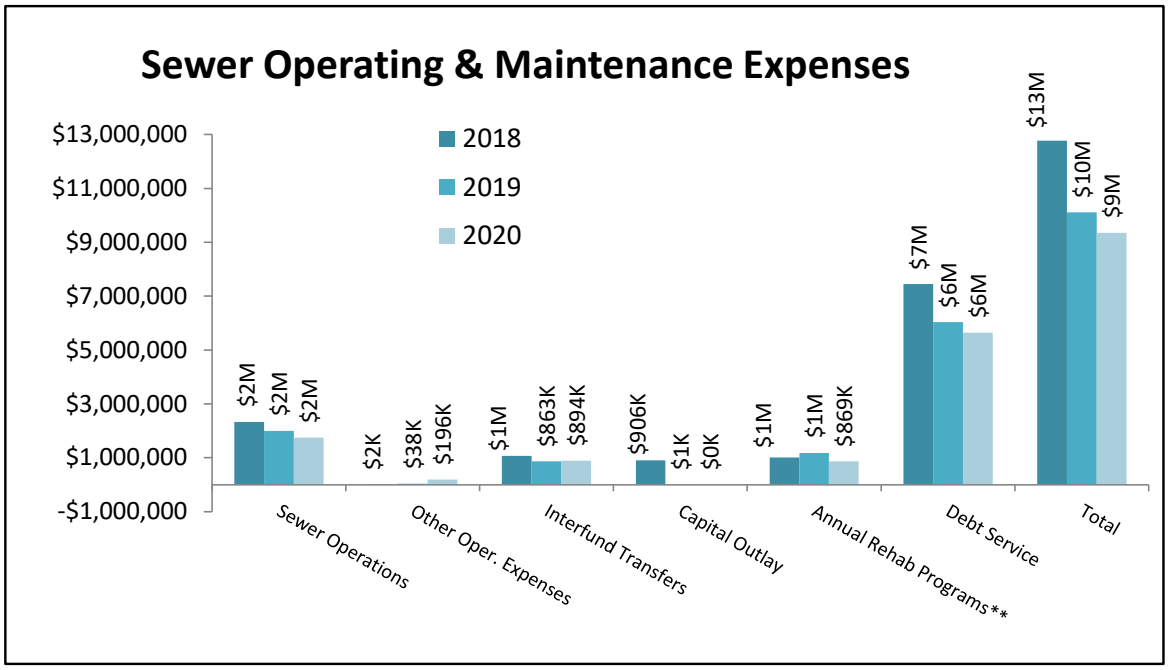


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports/. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

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

Sewer Operating & Maintenance Expenses*

	2018	2019	2020
Sewer Operations	$2,332,207	$1,996,867	$1,750,738
Other Oper. Expenses	$1,700	$38,212	$196,023
Interfund Transfers	$1,069,452	$863,402	$894,212
Capital Outlay	$905,883	$952	$0
Annual Rehab Programs**	$1,010,000	$1,175,661	$869,117
Debt Service	$7,447,026	$6,034,324	$5,644,596
Total	$12,766,268	$10,109,418	$9,354,686



* 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. Data presented on this page is based on preliminary information as the audited information is not yet available at the time the Annual Report has been published.

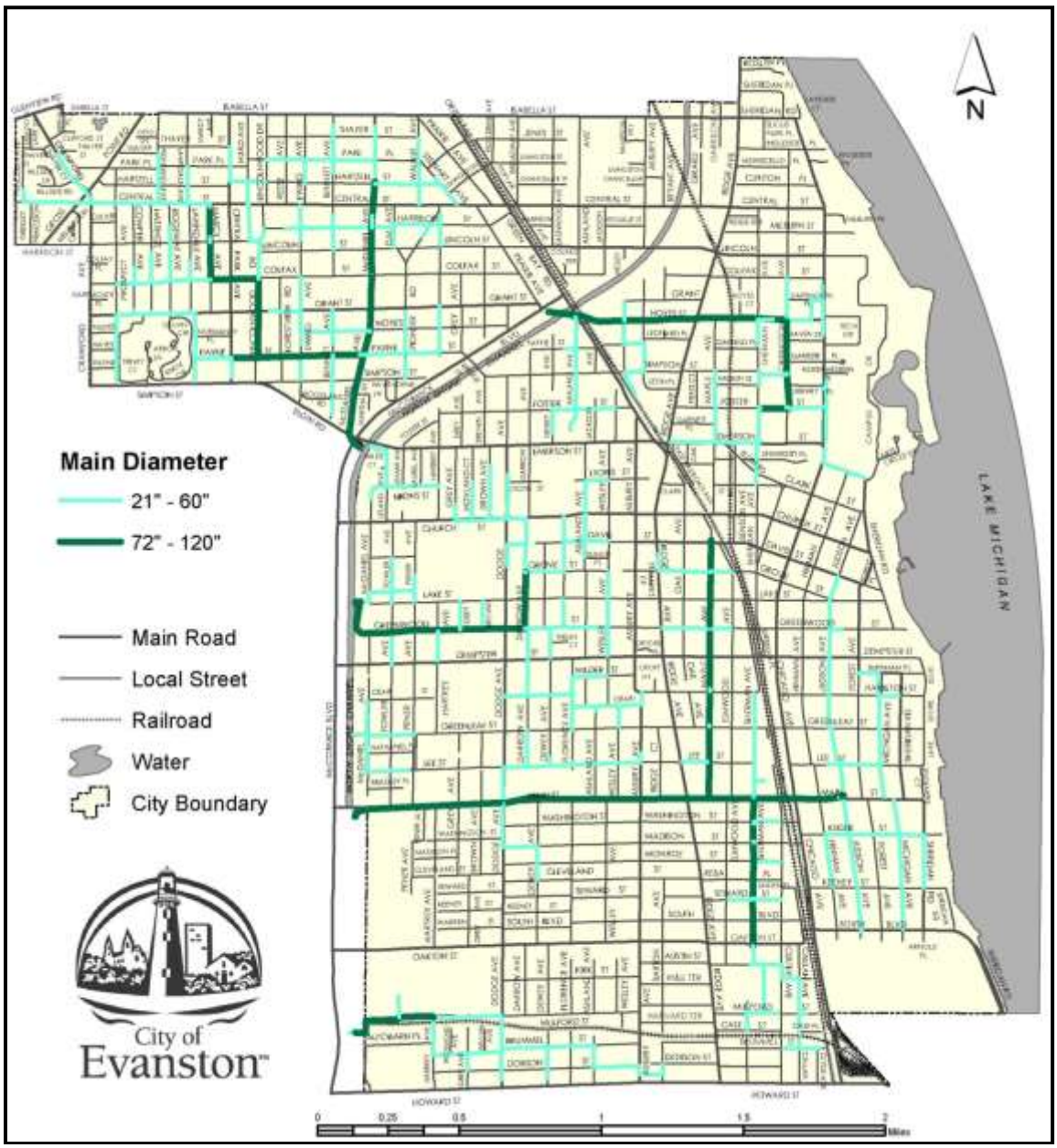
**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

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.

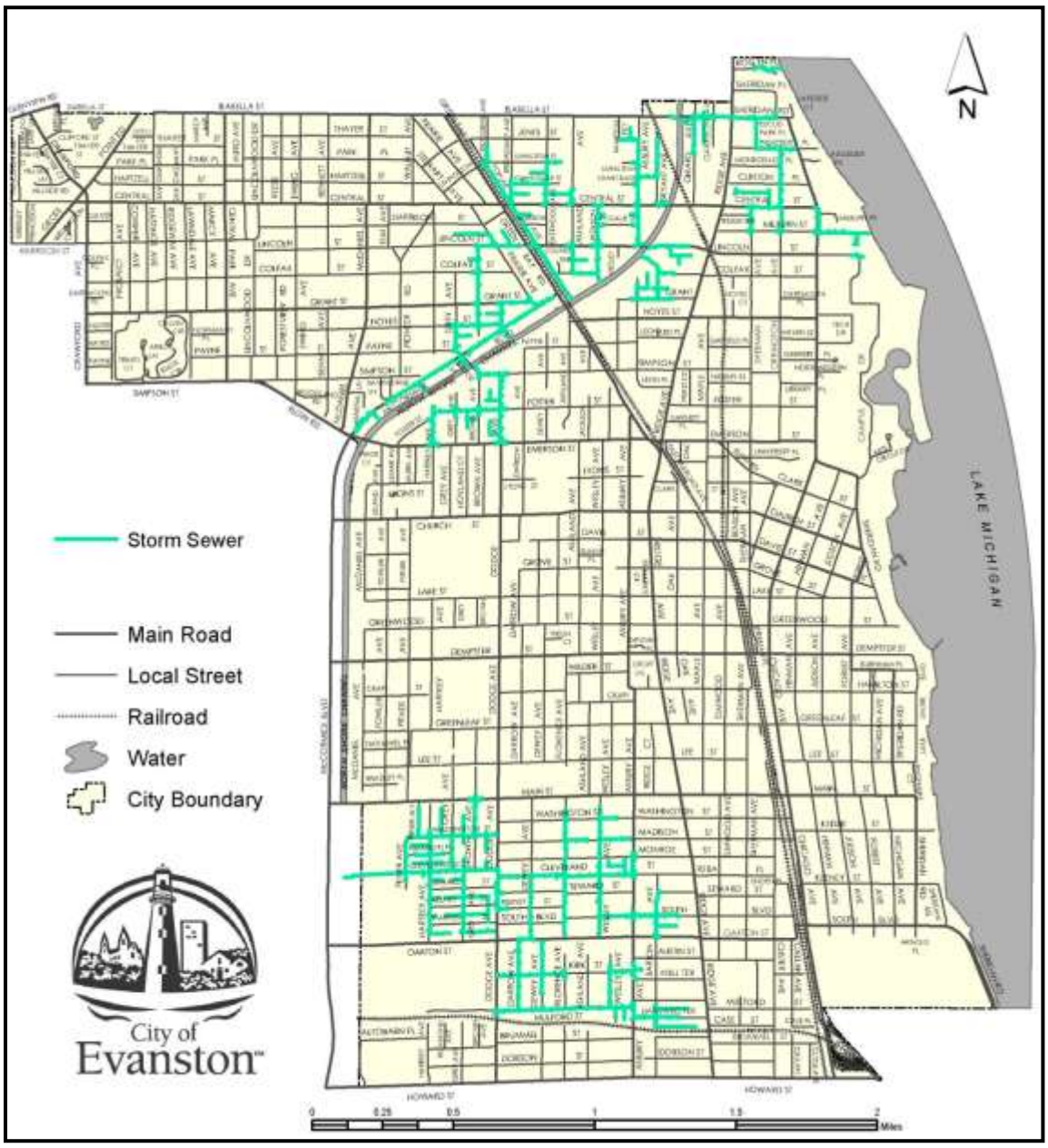
Major Relief Sewer System

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.

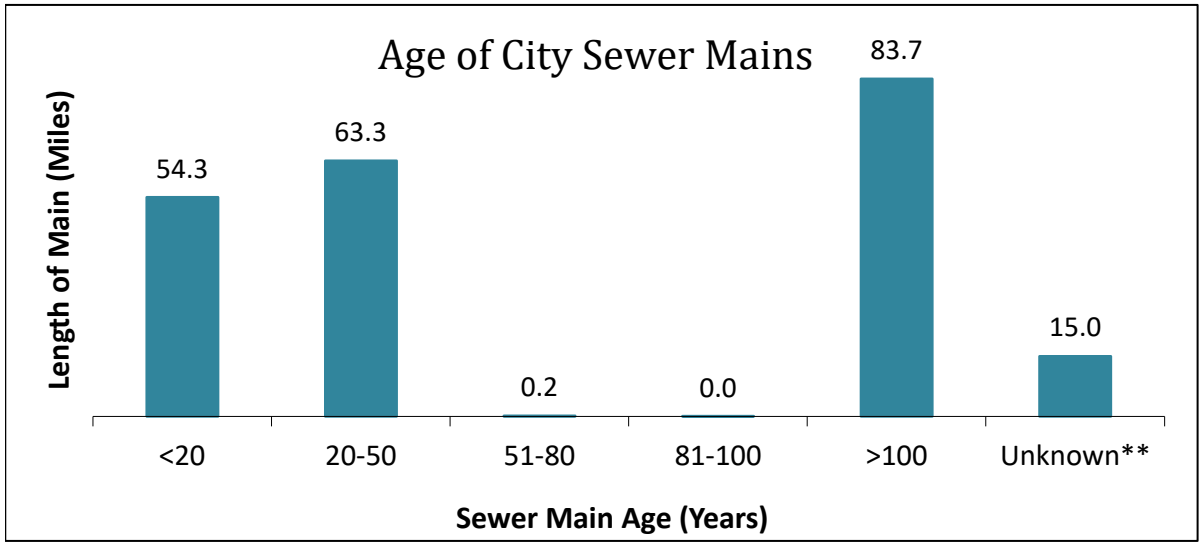


Sewer Mains

System Data and Maintenance

	Pipe Length (miles)				
Sewer Length by Type	2016	2017	2018	2019	2020
Combined Sewer	144.27	144.30	144.53	144.25	144.23
Relief Sewer	53.69	53.78	54.54	55.14	55.54
Storm Sewer	16.30	16.30	16.30	16.44	16.65
Total Length	214.26	214.38	215.37	215.84	216.42

Sewer Installation	Pipe Length (feet)				
and Maintenance	2016	2017	2018	2019	2020
Installed (new)	0	501	2,311	3,746	2,896
Replaced	0	178	760	281	84
CIPP Rehabilitation (Lining)	7,753	13,921	4,662	11,578	15,191
Spot Repair	2,943	1,048	3,107	1,495	3,219
Clean - Hydroflush	217,566	253,055	45,575	143,443	56,603
Clean - Root Cut	8,400	1,907	1,618	8,582	4,149
Inspection - General	28,492	19,881	9,509	6,292	7,154
Inspection - Televised	51,602	50,901	42,897	49,900	56,985
Inspection - Storm-related*	0	161	1,304	375	1,446



* 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"	1,789	0.34	196	0.04	540	0.10
8"	20,688	3.92	11,683	2.21	1,933	0.37
9"	125,048	23.68	7,258	1.37	987	0.19
10"	110,311	20.89	32,697	6.19	11,300	2.14
12"	221,381	41.93	29,616	5.61	10,758	2.04
14"	1,019	0.19	0	0.00	0	0.00
15"	93,072	17.63	6,411	1.21	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	132	0.03	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"	22,037	4.17	47,565	9.01	15,967	3.02
27"	6,020	1.14	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,083	3.61	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	22,377	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"	4,129	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	1,370	0.26	2,232	0.42	691	0.13
Totals	**761,537**	**144.23**	**293,263**	**55.54**	**87,896**	**16.65**

Total Sewer Main Length: 216.42 miles

Sewer Structures

System Data and Maintenance

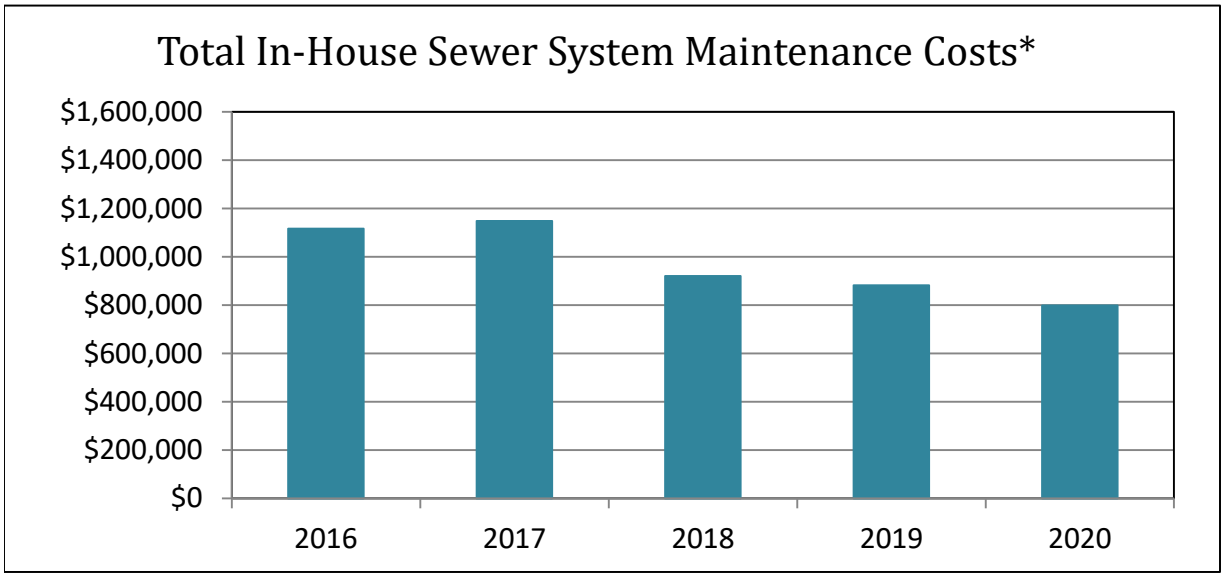
Number of Sewer Structures	2016	2017	2018	2019	2020
Manholes	5,583	5,588	5,620	5,637	5,644
Inlets	3,024	3,025	3,092	3,121	3,137
Catch Basins	6,246	6,241	6,280	6,291	6,217
Total	14,853	14,854	14,992	15,049	14,998

Sewer Structure Installation & Maintenance	2016	2017	2018	2019	2020
Installed (new)	3	4	27	41	23
Replaced	9	15	6	24	13
Repair	89	97	116	95	113
Clean	2,779	1,889	3,006	1,910	2,921
Inspect - General	156	196	668	187	252
Inspect - Storm-Related*	689	995	998	598	385

* 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	2016	2017	2018	2019	2020
Sewer Mains	$396,738	$377,668	$238,526	$267,761	$253,462
Sewer Structures	$388,196	$434,624	$360,072	$277,468	$297,034
Equip/Facility Maint.	$122,994	$164,159	$117,291	$113,110	$117,714
Assist W&S Divisions	$52,271	$41,226	$36,266	$21,835	$20,069
Snow & Ice Removal	$32,077	$12,423	$66,934	$50,086	$19,419
Assist Contractors	$16,955	$23,378	$20,102	$37,141	$26,010
Assist Other City Depts.	$61,226	$31,302	$41,396	$65,575	$28,378
Safety & Training	$30,844	$23,472	$26,350	$17,973	$8,298
Miscellaneous	$14,874	$39,778	$12,525	$30,605	$26,988
JULIE Locates	$357	$236	$648	$1,052	$1,270
Total	**$1,116,533**	**$1,148,265**	**$920,111**	**$882,606**	**$798,642**

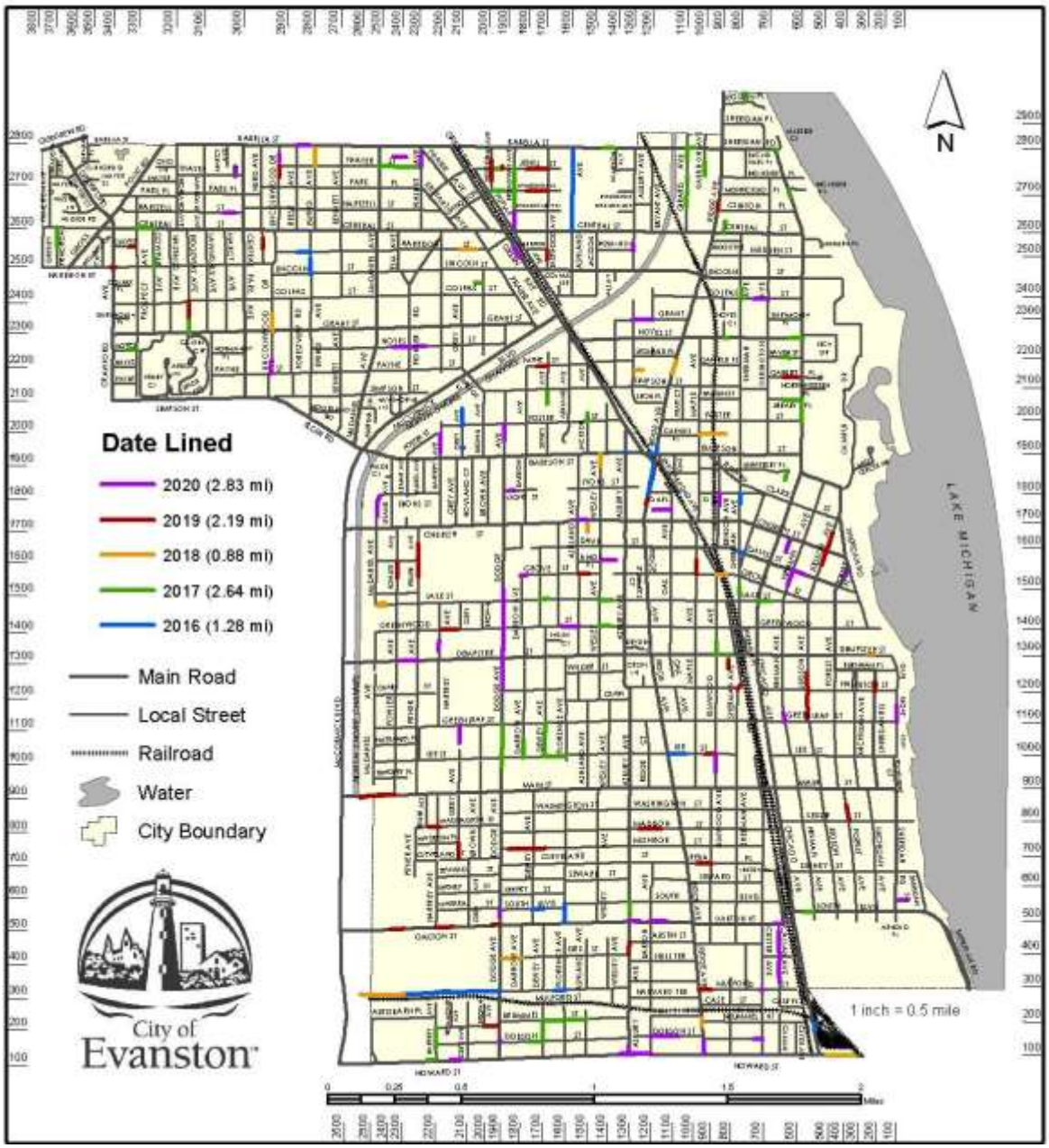


* Costs fluctuate from year to year due to changes in maintenance needs and prioritization of repair projects.

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 2020, due to weather, the remaining 0.81 miles of combined sewer mains to be lined in 2019 were completed in Quarter 1.



Green Infrastructure

Green infrastructure is an approach to managing precipitation by reducing and treating stormwater at its source while delivering environmental, social and economic benefits. In terms of green infrastructure, the City primarily uses porous pavement and rain gardens.

Component	Material Cost	Contractor Maintenance Cost	In-House Maintenance Cost	Total Cost
Porous Pavement	$0.00	$1,495.00	$2,558.03	$4,053.03
Rain Gardens	$10,390.22	$15,500.00	$936.78	$26,827.00
Totals	**$10,390.22**	**$16,995.00**	**$3,494.81**	**$30,880.03**