2022

ANNUAL REPORT

Evanston Public Works Agency

Water Production Bureau

Water and Sewer Utilities

Committed to serving the community for 149 years

2022 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

495,260 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

$57.4 million - Water Fund
$11.4 million - Sewer Fund
61.5 full-time equivalents (FTE) staff

General Information

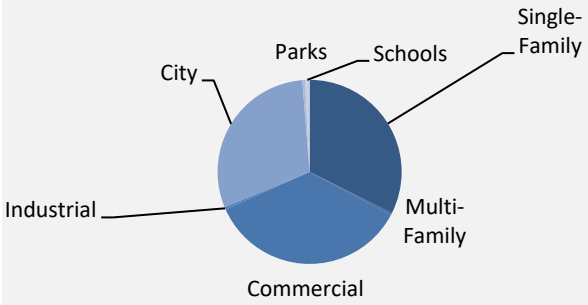
16,800 Million Gallons – Total Water Pumped in 2022
61 Million Gallons – Maximum Pumpage in One Day
July 1st – Day When the Maximum Pumpage occurred

51 Fire Hydrants Replaced/Repaired

3.1 Miles of Water Main Installed/Replaced/Rehabilitated
93 Water Main Valves Installed/Replaced/Rehabilitated
3.7 Miles of Sewer Main Installed/Replaced/Rehabilitated
16.6 Miles of Sewer Main Inspected
40.6 Miles of Sewer Main Cleaned
189 Sewer Structures Installed/Replaced/Repaired
2,635 Sewer Structures Cleaned

General Information

WATER USAGE BREAKDOWN FOR EVANSTON CUSTOMERS



13.6 Million kWh of Electric Power Used

122,439 Therms of Natural Gas Used

$51.53 per Million Gallon Pumped – Total Energy Cost (Electric & Gas)

CROSS CONNECTION CONTROL

4,867 Backflow Prevention Devices Certified in 2022

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 58 park drinking fountains.

Leak Detection Program Continued to Catch Leaks and Minimize Loss

156 miles of water main were surveyed, two (2) water service leaks and two (2) water main break was found. This resulted in 9.37 million gallons/year of water savings.

First Responder

2,648 hours Distribution division spent on First Responder events

1,645 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 2022.

- **Water Main Replacement:** Eastwood Avenue – Isabella Street to Livingston Street, Emerson Street – Leland Avenue to Hartrey Avenue, Ewing Avenue – Grant Street to Payne Street, Dempster Street – Hartrey Avenue to Dodge Avenue, Dewey Avenue – Oakton Street to Kirk Street, Forestview Road – Colfax Street to Payne Street, Isabella Street – Bryant Avenue to North Shore Channel, Lincoln Street – Poplar Avenue to Ashland Avenue
- **Combined Sewer:** CIPP Rehabilitation
- **Water Treatment Facility Improvements:** Completed the Supervisory Control and Data Acquisition (SCADA) System Upgrade Project.

Accomplishments and Goals

2022 MAJOR ACCOMPLISHMENTS

Greenleaf Street Large Diameter Sewer Lining

Completed the Greenleaf Street Large Diameter Sewer Rehabilitation Project.

30" Transmission Main Rehabilitation Project

Completed the 30" Transmission Main Rehabilitation Project.

Private Lead Service Line Replacement

This is the first year that the City has started to replace the private portion of any water service lines at no additional cost to the homeowner, if the material is lead and the property is eligible to participate.

SCADA Update Project

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

2023 MAJOR GOALS AND INITIATIVES

Raw Water Intake Improvement Project

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

Lead Service Line Replacement Program

Continue the development of a citywide lead service line replacement plans as a result of the enactment of Public Act 102-0613 as well as well as a corrosion control optimization study.

Electrical Improvements Projects

Continue the engineering phase of the Medium Voltage Switchgear Reliability and Generator Replacement Project, which includes replacement of outdated medium voltage switchgear and generators.

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Evanston Water and Sewer Utilities Annual Accomplishments and Performance Measures

Introduction

The Evanston Public Works Agency manages water and sewer operations for the City of Evanston. The Water Utility is responsible for operation and maintenance of the Water Treatment Plant, which supplies water to over 495,000 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, 2,200 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 217 miles of sewer mains ranging in size from less than 6-inch diameter to 120-inch diameter, including over 5,700 manhole structures and over 9,400 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 2022 adopted budget was approximately $68.8 million ($57.4 million Water Fund and $11.4 million Sewer Fund). Public Works Agency staff includes 61.5 full-time equivalents (FTEs).

Year-to-Year Public Works Agency Metrics

	2020	2021	2022
Total Water Pumped (millions of gallons)	16,934	17,635	16,800
Fire Hydrants Repaired or Replaced	59	55	51
Water Main Valves Repaired or Replaced	47	40	55
Water Main Replaced or Rehabilitated (miles)	1.3	1.2	3.0
Large Diameter Sewer Rehabilitated (feet)	2,369	1,272	3,600
Small Diameter Sewer Rehabilitated (feet)	12,823	13,031	11,174
Sewer Mains Inspected (feet of pipe)	65,585	78,263	87,683
Sewer Mains Cleaned (feet of pipe)	60,752	109,457	213,942
Sewer Structures Repaired or Replaced	126	119	152

2022 Major Accomplishments

Maintained High Quality of Service

Became a leader in the public drinking water industry by providing high quality service to over 504,000 customers in nine communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

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.

Coordination for 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.

Continue 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

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

Greenleaf Street Large Diameter Sewer Lining

Completed the Greenleaf Street Large Diameter Sewer Rehabilitation Project. Engineering design, bid and contract award has been finalized. State low-interest loan funding for the rehabilitation project has been secured.

30" Transmission Main Rehabilitation Project

Improved the water distribution system reliability by finishing construction on the 30" Transmission Main Rehabilitation Project.

Private Lead Service Line Replacement
First year of replacing the private portion of any water service lines at no additional cost to the homeowner, if the material is lead and the property is eligible to participate.

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

Roof and Masonry Improvements
Completed several roof improvements at the following locations: Filter Head House and Roof 22 (West Filter Building) and several masonry improvements at the following locations: Filter Head House, West Filter Building, Corridor between East and West Filter Building, Filtration Garage, Filtration Project Room, and Pump House.

Source Water Protection Plan
Completed the Source Water Protection Plan, which outlines a plan for maintaining a sustainable and abundant supply of safe, high-quality drinking water through a proactive and coordinated approach.

Sewer System Model Development
Developed an "all-pipes" hydrologic and hydraulic model the City's sewer system. This model represents the interaction of flows between the combined, storm, and relief sewers and overland flows. The model will help the City maintain its stormwater management system and better understand how it will continue to protect residents in the face of climate change.

2023 Major Goals and Initiatives

Maintain a High Quality of Service
Continue to be a leader in the public drinking water industry by providing high quality service to over 495,000 customers in ten communities, including vigilantly monitoring the quality and quantity of water provided to our customers.

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
Continue to 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.

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.

Development of Stormwater Master Plan

Continue 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.

Electrical Improvements Projects

Continue the engineering phase of the Medium Voltage Switchgear Reliability and Generator Replacement Project, which includes replacement of outdated medium voltage switchgear and generators.

Raw Water Intake Improvement Project

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

Lead Service Line Replacement Program

Continue to develop a citywide lead service line replacement plans as a result of the enactment of Public Act 102-0613 as well as well as a corrosion control optimization study. The corrosion control optimization study includes a desktop analysis, laboratory pipe scale analysis, and harvested pipe loop study analyzing water quality through a variety of chemical doses and pipe materials.

Lead Service Line Replacement Pilot Project

Begin construction on the Lead Service Line Replacement Pilot Project, which focuses on the replacement of private-side lead services in low-to-moderate income areas within the City on a first-come first-serve basis.

Standpipe Water Quality Study

Begin the engineering phase of the standpipe water quality study project to determine improvement options to each of the City's two standpipes and associated pump stations.

Roof Improvements

Begin construction on several roof improvements at the following locations: Roofs 2 and 4 (Pump Building), 7 (Service Building), 14, 19, and 20 (Filtration Offices), and 21 (West Filter Building).

Meter Replacement Project

Begin the Phase II citywide meter replacement project whereby approximately 1,000 meters and metering interface units will be replaced.

Plant Security Improvements

Begin water treatment plant security improvements based on the recommendations from the Risk and Resilience Assessment.

Combined Sewer Overflow Repair

Begin the engineering phase of the Combined Sewer Overf|ow sewer repair project.

Sewer Extension Program

Continue to perform an annual sewer extension program in conjunction with alley improvements.

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

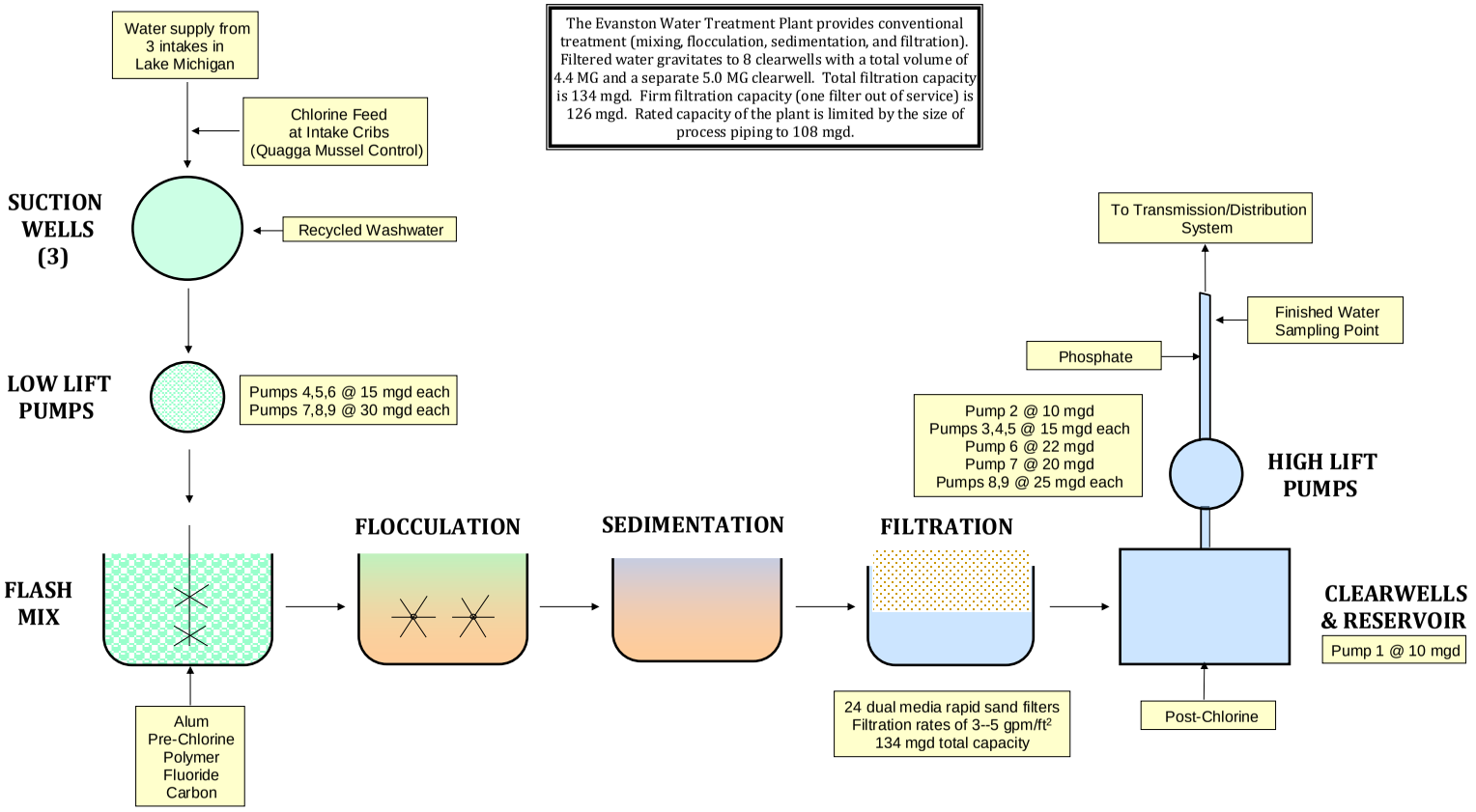
High Lift Pumps
1 – 10 mgd, submersible, electric motor driven
1 – 15 mgd, electric motor driven
2 – 25 mgd, electric motor driven
1 – 10 mgd, dual drive, electric/natural gas
2 – 15 mgd, dual drive, electric/natural gas
1 – 22 mgd, dual drive, electric/natural gas
1 – 20 mgd, natural gas engine
Total capacity of 157 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 2022)

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.

2021

- Completed the modernization of the Water Quality Laboratory.
- Completed the modernization of the filter plant freight elevator.
- Replaced the 54" Intake Heater Cable (installed in 2009).

2022

- Completed several roof improvements: Filter Head House and Roof 22 (West Filter Building)
- Completed several masonry improvements: Filter Head House, West Filter Building, Corridor between East and West Filter Building, Filtration Garage, Filtration Project Room, and Pump House

Notes:

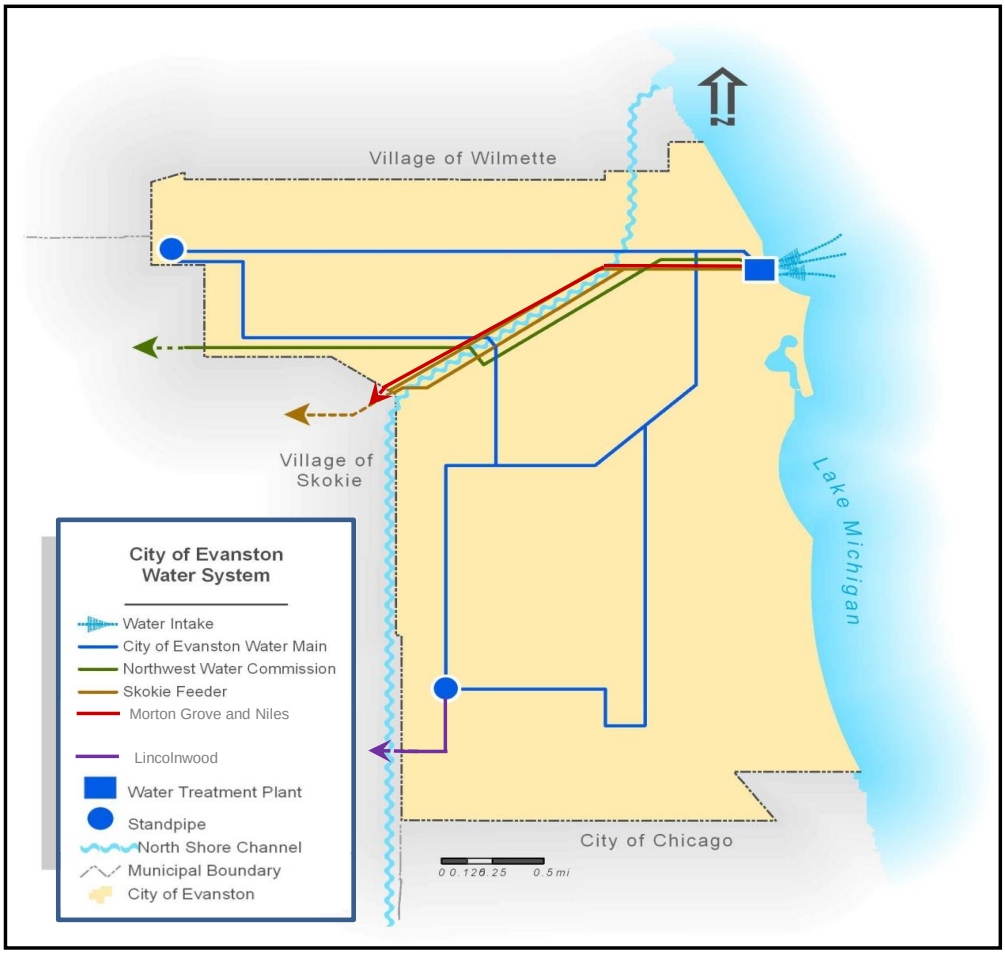
MG = million gallons	mgd = million gallons per day
HP = horsepower	kV = kilovolt
kW = kilowatt	kVA = kilovolt-ampere

Service Area & Customers

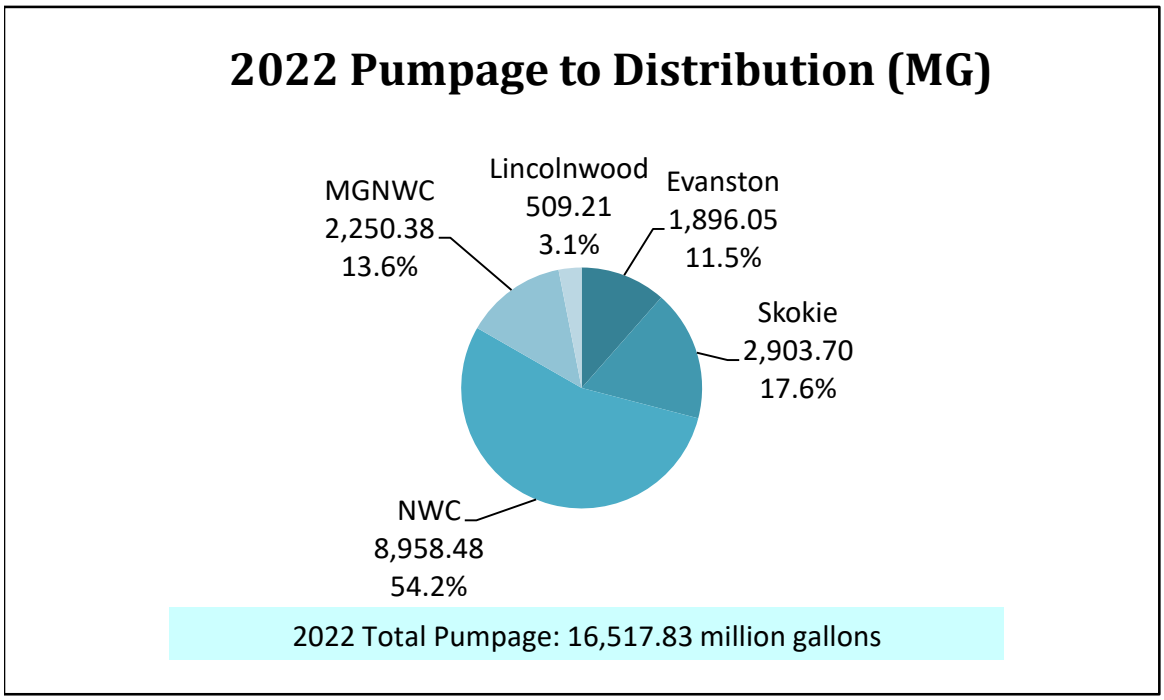
	Area (Square Miles)	2022 Persons*	2022 Businesses**
Evanston	7.8	77,517	8,459
Skokie	10.1	66,422	10,120
Linclonwood	2.7	13,191	2,208
MORTON GROVE - NILES WATER COMMISSION			
Morton Grove	5.1	24,712	3,237
Niles	5.9	30,345	3,957
NORTHWEST WATER COMMISSION			
Arlington Heights	16.6	76,000	8,255
Buffalo Grove	9.5	42,794	5,266
Palatine	13.6	66,321	6,867
Wheeling	8.7	38,499	4,611
Des Plaines	14.3	59,459	8,166
Total Served	**94.3**	**495,260**	**61,146**

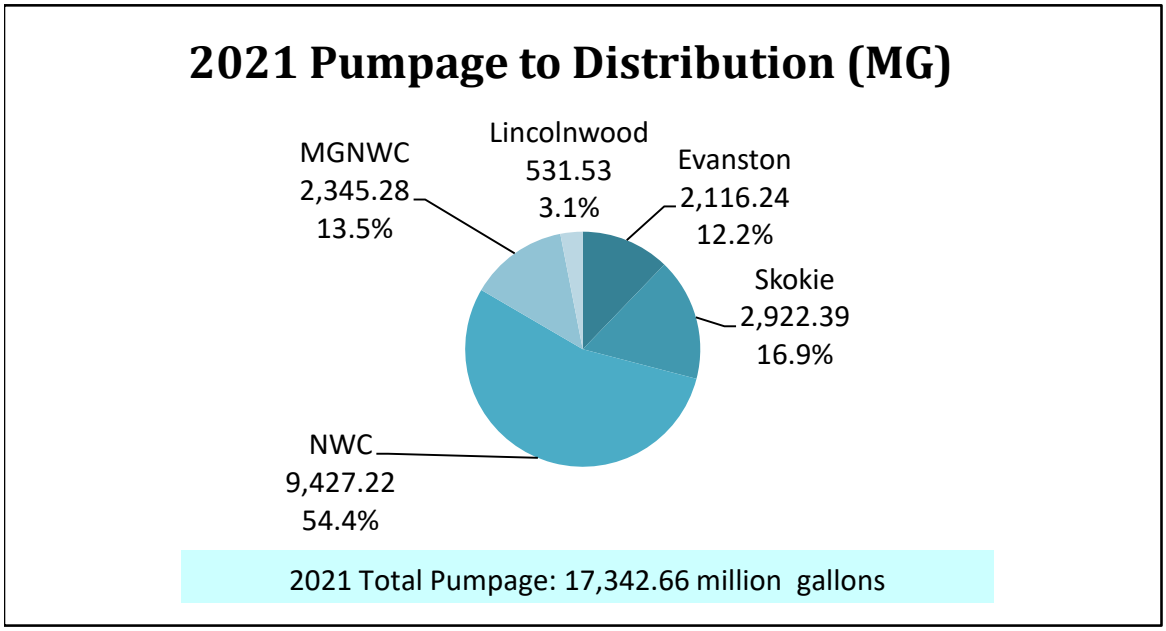
* U.S. Census Bureau, 2021

** U.S. Census Bureau, 2012 Estimate



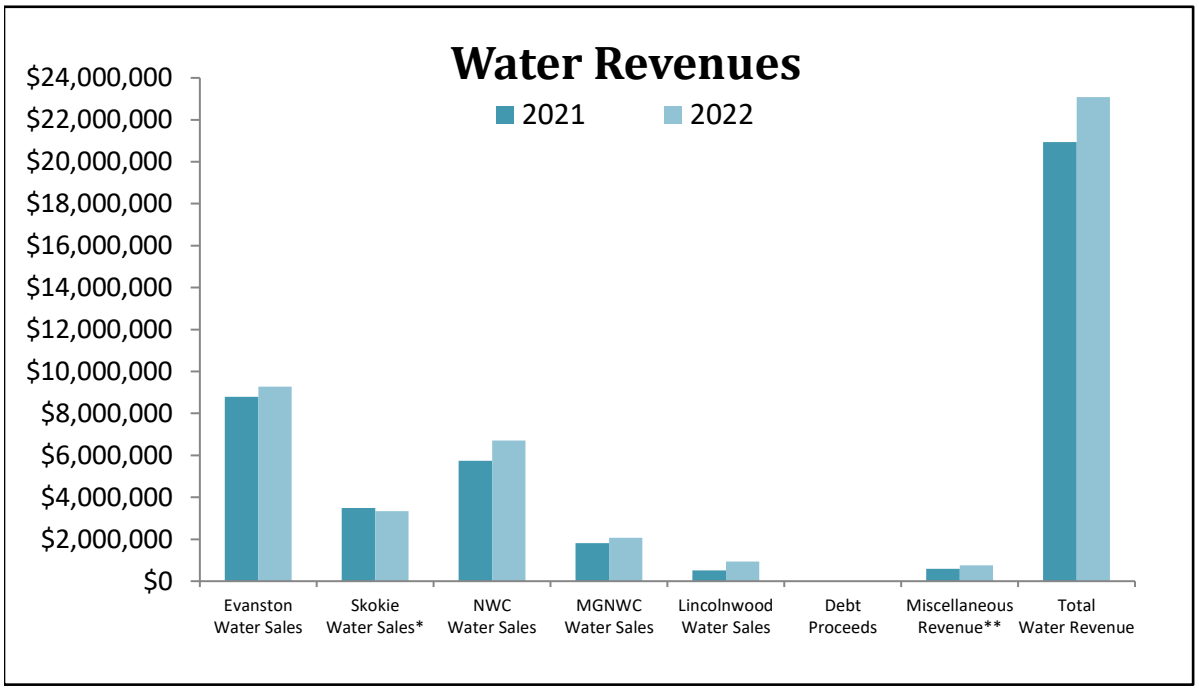
Pumpage to Distribution





Water Revenues

	2021	2022
Evanston Water Sales	$8,794,137	$9,279,074
Skokie Water Sales*	$3,491,947	$3,335,672
NWC Water Sales	$5,738,488	$6,713,589
MGNWC Water Sales	$1,813,040	$2,077,157
Lincolnwood Water Sales	$509,932	$931,224
Debt Proceeds	$0	
Miscellaneous Revenue**	$593,189	$749,046
Total Water Revenue	$20,940,733	$23,085,764

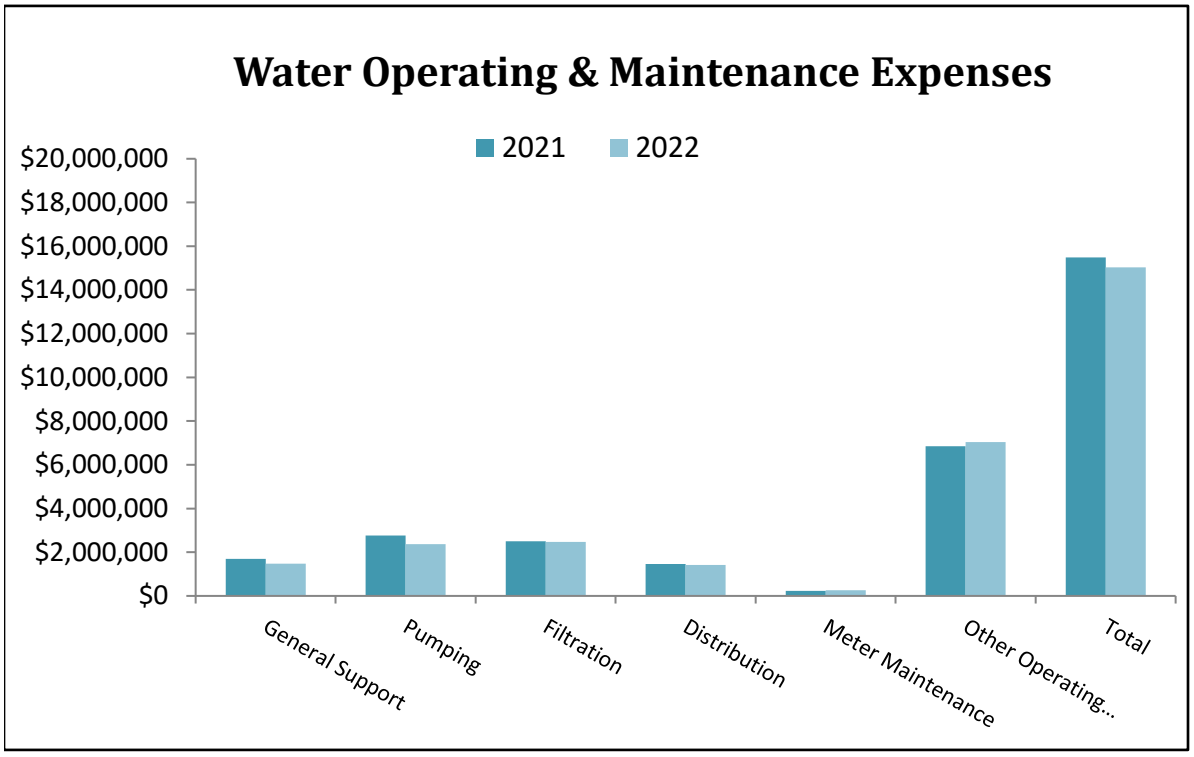


* Due to contract disputes this value represents the amount billed to Skokie. The amount paid in 2020 was $2,489,520

** 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*

	2021	2022
General Support	$1,700,684	$1,469,894
Pumping	$2,759,497	$2,369,797
Filtration	$2,492,821	$2,475,675
Distribution	$1,465,348	$1,423,472
Meter Maintenance	$224,093	$260,378
Other Operating Expenses**	$6,849,194	$7,031,823
Total	$15,491,638	$15,031,038



* 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	1,520	$69,861	$46,651	$5,960	$122,472
Snow & Ice Control	829	$35,934	$19,488	$0	$55,422
Hydrant - Inspect	5	$296	$56	$0	$352
Hydrant - Thaw	21	$555	$241	$0	$796
Meter/MIU - Replace	2	$85	$17	$70	$172
Service - Inspect	34	$2,047	$504	$70	$2,621
Service - Delinquency	8	$437	$84	$0	$521
Valve - Repair	2	$71	$23	$0	$94
Valve - Turn	42	$1,176	$322	$0	$1,498
Water Main - Check For Leaks	43	$2,310	$641	$0	$2,951
Water Main - Maintenance	76	$2,454	$2,833	$0	$5,288
Dist - Assist W&S Contractor	38	$1,831	$410	$113	$2,353
Dist - JULIE Locates	26	$1,457	$333	$0	$1,790
Dist - Assist PW Departments	4	$233	$120	$0	$353
Total	**2,648**	**$118,746**	**$71,724**	**$6,213**	**$196,683**

Sewer - First Responder Hours

Activity	Hours	Labor Cost	Equipment Cost	Inventory Cost	Total Cost
Basement Backups	272	$11,466	$7,278	$0	$18,744
Basement Flooding	32	$1,215	$779	$0	$1,993
Snow & Ice Control	829	$35,934	$19,488	$0	$55,422
Sinkholes	461	$15,991	$14,496	$25	$30,512
Sewer Main - Inspect	2	$82	$17	$0	$98
Sewer Structure - Inspect	38	$2,236	$809	$0	$3,044
Sewer - Assist PW Departments	2	$81	$83	$0	$164
Sewer - Assist W&S Contractor	1	$57	$11	$0	$69
Sewer - Facility Maintenance	1	$57	$11	$0	$69
Sewer - JULIE Locates	8	$472	$84	$0	$556
Total	**1,645**	**$67,590**	**$43,055**	**$25**	**$110,671**

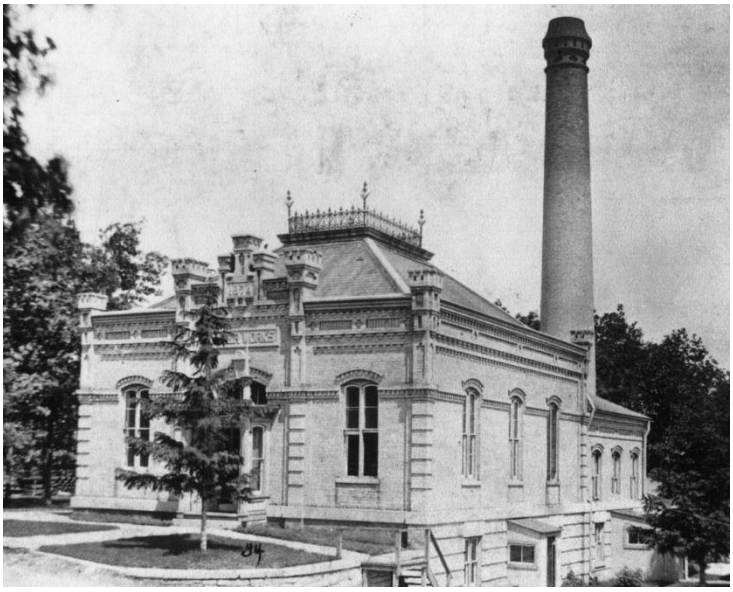
Pumping

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

2022 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-22	1,378.714	19.914	1,398.628	1,363.110	149.742	247.300	718.145	190.349	35.991
Feb-22	1,278.030	16.708	1,294.738	1,259.988	133.170	227.714	667.203	179.108	32.846
Mar-22	1,353.820	19.889	1,373.709	1,332.531	140.479	232.347	717.985	182.513	36.422
Apr-22	1,295.590	18.314	1,313.904	1,275.324	142.406	215.753	691.643	169.524	35.519
May-22	1,471.890	23.632	1,495.522	1,435.554	156.644	243.512	782.621	187.175	42.282
Jun-22	1,597.150	33.129	1,630.279	1,550.937	174.201	267.693	824.148	205.548	53.348
Jul-22	1,669.560	35.688	1,705.248	1,622.777	189.826	278.741	856.663	213.928	55.789
Aug-22	1,604.310	32.703	1,637.013	1,565.160	193.316	269.615	817.046	202.889	54.925
Sep-22	1,459.550	21.961	1,481.511	1,435.896	174.668	251.081	745.633	190.229	48.591
Oct-22	1,386.590	20.159	1,406.749	1,354.182	160.563	229.753	721.461	179.413	40.972
Nov-22	1,283.970	17.640	1,301.610	1,258.281	143.367	213.721	678.475	169.265	34.975
Dec-22	1,377.000	17.144	1,394.144	1,345.980	137.667	226.471	737.458	180.442	37.551
Total	**17,156.174**	**276.881**	**17,433.055**	**16,799.720**	**1,896.049**	**2,903.701**	**8,958.481**	**2,250.383**	**509.211**

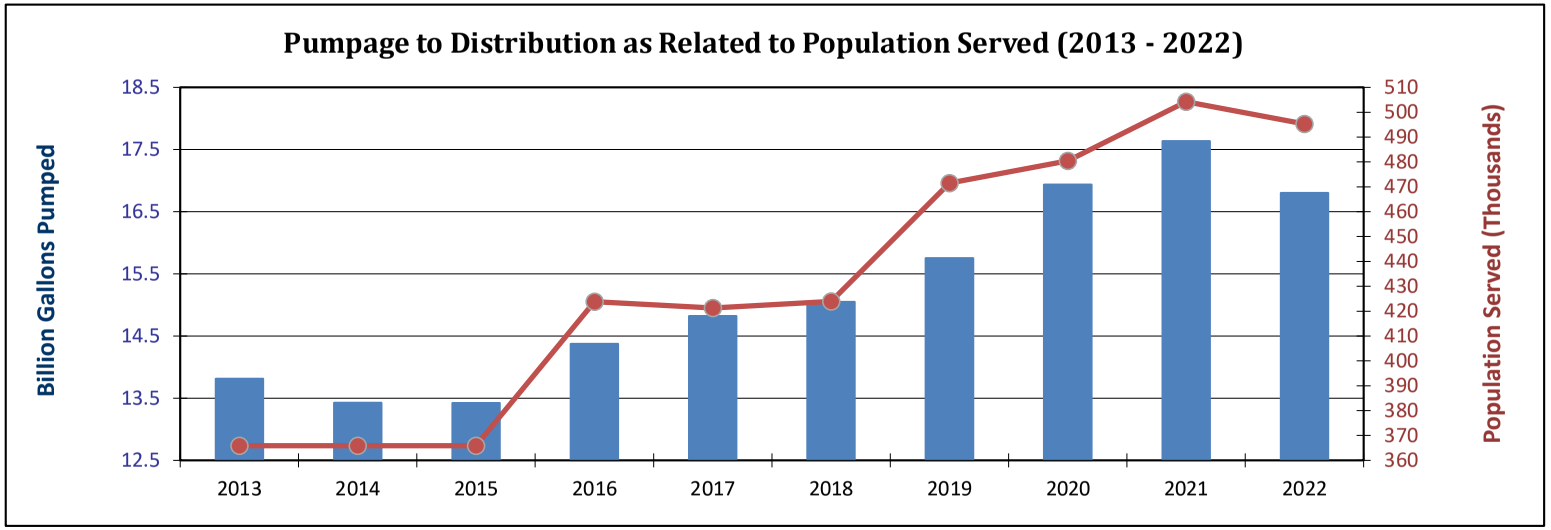
2022 Average Day Pumpage (MGD)

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-22	44.475	0.642	45.117	43.971	4.830	7.977	23.166	6.140	1.161
Feb-22	45.644	0.597	46.241	45.000	4.756	8.133	23.829	6.397	1.173
Mar-22	43.672	0.642	44.313	42.985	4.532	7.495	23.161	5.888	1.175
Apr-22	43.186	0.610	43.797	42.511	4.747	7.192	23.055	5.651	1.184
May-22	47.480	0.762	48.243	46.308	5.053	7.855	25.246	6.038	1.364
Jun-22	53.238	1.104	54.343	51.698	5.807	8.923	27.472	6.852	1.778
Jul-22	53.857	1.151	55.008	52.348	6.123	8.992	27.634	6.901	1.800
Aug-22	51.752	1.055	52.807	50.489	6.236	8.697	26.356	6.545	1.772
Sep-22	48.652	0.732	49.384	47.863	5.822	8.369	24.854	6.341	1.620
Oct-22	44.729	0.650	45.379	43.683	5.179	7.411	23.273	5.788	1.322
Nov-22	42.799	0.588	43.387	41.943	4.779	7.124	22.616	5.642	1.166
Dec-22	44.419	0.553	44.972	43.419	4.441	7.306	23.789	5.821	1.211
Average	**47.003**	**0.759**	**47.762**	**46.027**	**5.195**	**7.955**	**24.544**	**6.165**	**1.395**

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
2022	17,156.174	276.881	17,433.055	16,799.720	1,896.049	2,903.701	8,958.481	2,250.383	509.211
2021	17,447.814	263.208	17,711.022	17,634.799	2,116.239	2,922.386	9,427.219	2,345.277	531.534
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



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)
2022	77,517	67	66,422	120	283,073	87	55,057	112	13,191	106	495,260	91
2021	78,110	74	67,824	118	288,608	89	56,209	114	13,463	108	504,214	94
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

*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.

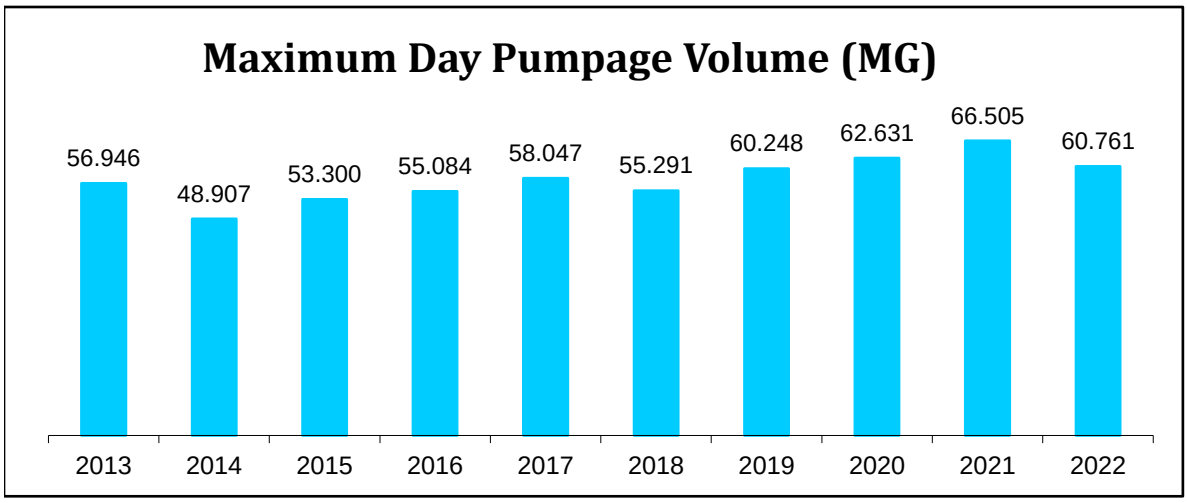
*In 2020, the City of Evanston began providing water to Lincolnwood starting in July.

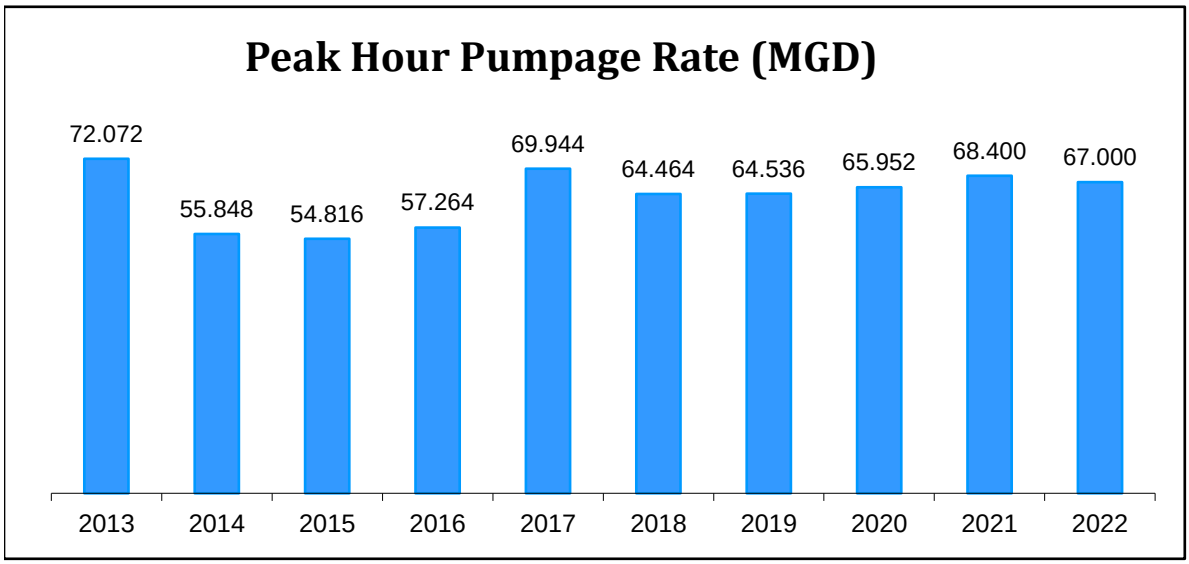
Maximum Pumpage to Distribution

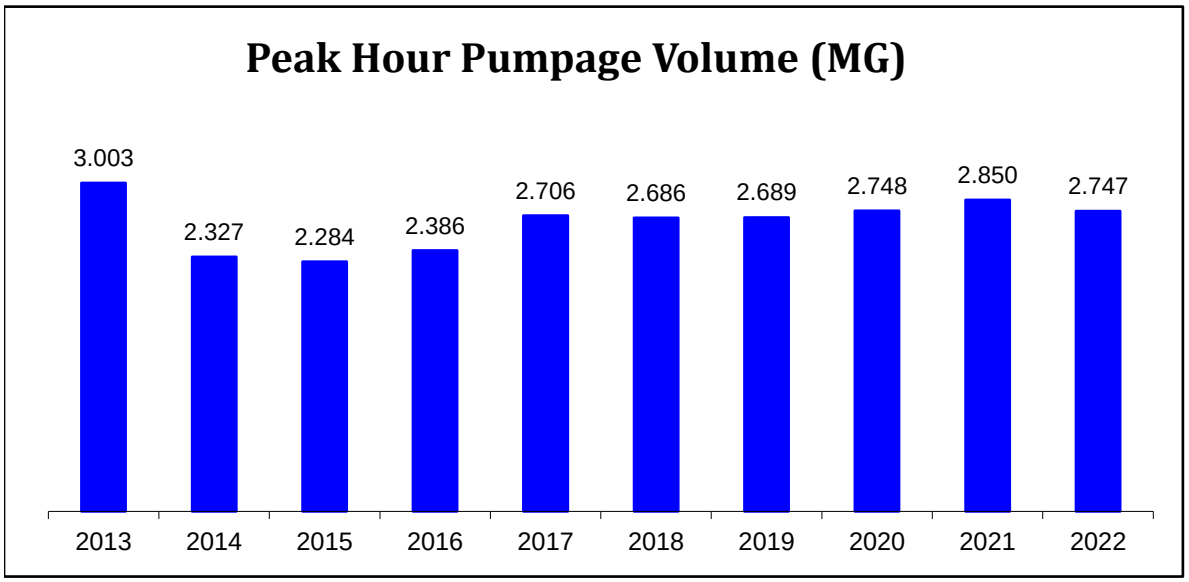
Year	*Max Day Pumpage Volume (MG)*	*Peak Hour Pumpage Rate (MGD)*	*Peak Hour Pumpage Volume (MG)*
2022	60.761	67.000	2.747
2021	66.505	68.400	2.850
2020	62.631	65.952	2.748
2019	60.248	64.536	2.689
2018	55.291	64.464	2.686
2017	58.047	69.944	2.706
2016	55.084	57.264	2.386
2015	53.300	54.816	2.284
2014	48.907	55.848	2.327
2013	56.946	72.072	3.003

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**
2022	July 1st	June 22nd	July 2nd	July 1st	June 30th	June 26th
	60.538	19.842	10.839	31.383	8.349	2.580
2021	June 11th	May 25th	June 11th	June 9th	June 11th	June 11th
	65.178	7.971	12.258	36.751	8.883	2.373
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	-	-

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
2022	13,575,693	$792,084	$0.058	808
2021	13,248,501	$1,011,347	$0.076	751
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

Natural Gas Used for Pumping and Emergency Engines

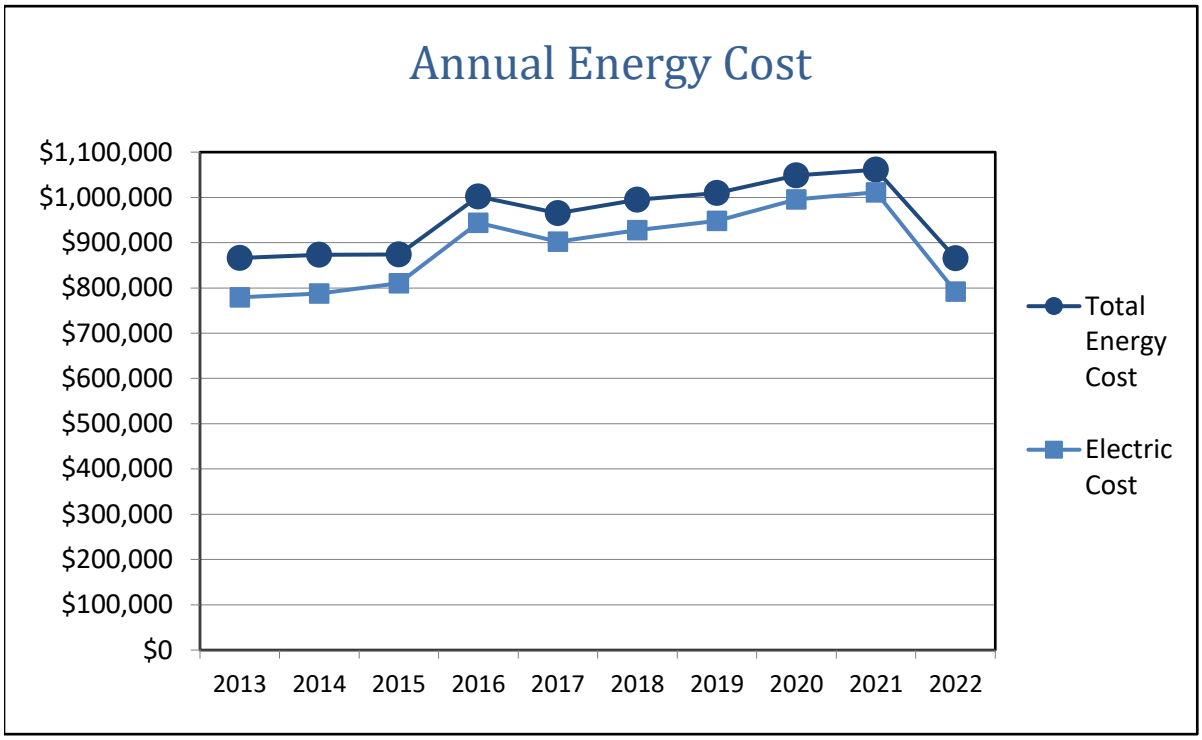
Year	Therms	Total Cost*	Average Unit Cost per Therm
2022	122,439	$73,623	$0.601
2021	124,522	$49,803	$0.400
2020	131,460	$53,586	$0.408
2019	127,891	$61,462	$0.481
2018	127,945	$67,419	$0.527

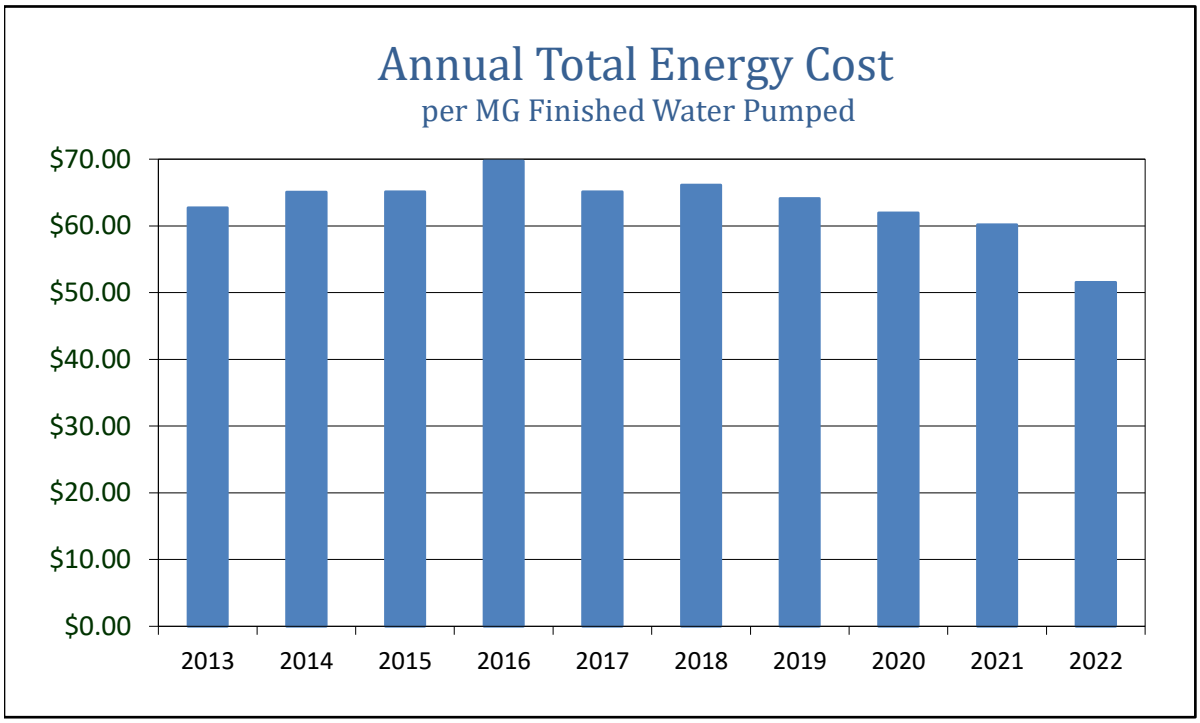
* Includes natural gas purchase and delivery charges.

Total Energy Cost (Electric & Gas)

Year	Total Cost	Cost Per Million Gallons Pumped
2022	$865,706	$51.53
2021	$1,061,150	$60.17
2020	$1,048,708	$61.93
2019	$1,009,404	$64.09
2018	$994,782	$66.10

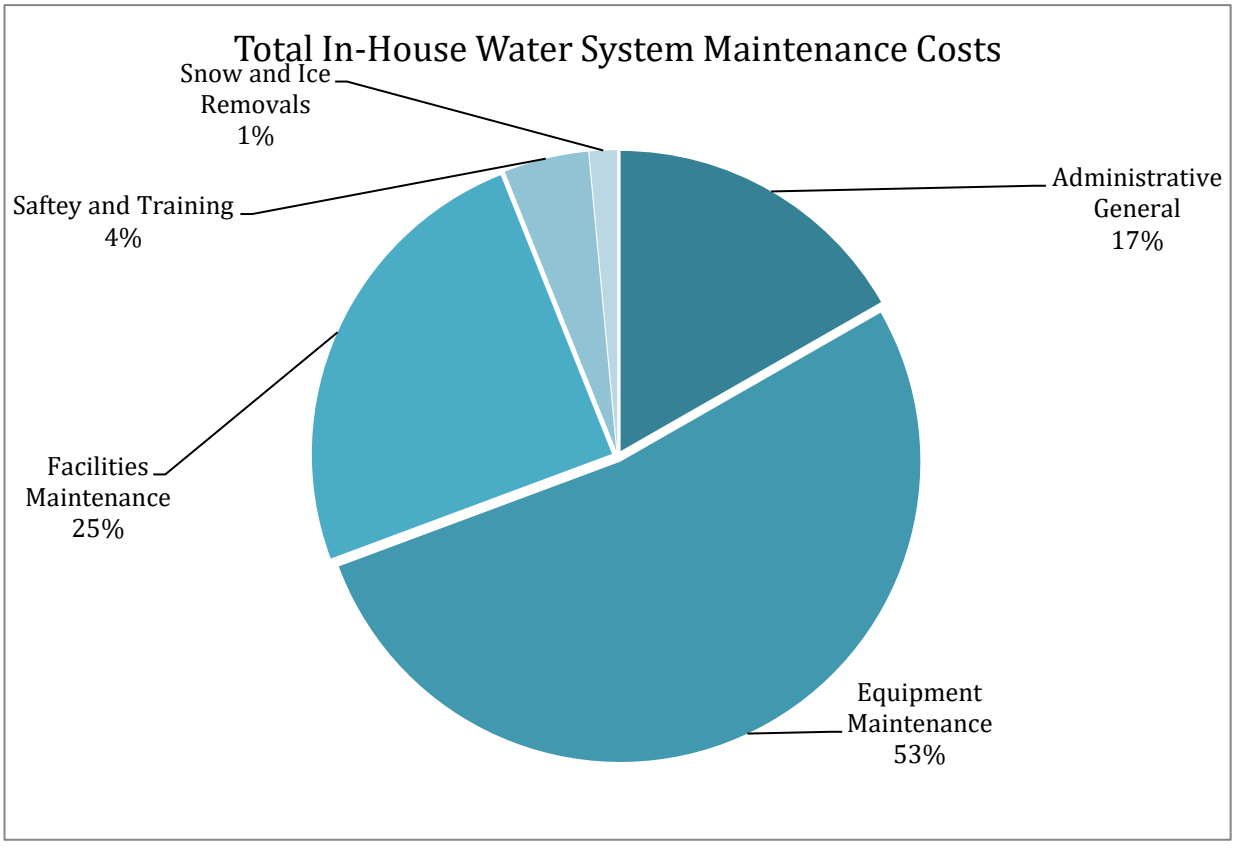
Energy Costs





Breakdown of In-House Maintenance Costs

Description	2021	2022
Administrative General	$3,488	$36,333
Assist Public Works	$0	$0
Assist Other Departments	$0	$0
Assist Contractor	$0	$0
Equipment Maintenance	$192,860	$114,231
Facilities Maintenance	$33,103	$53,467
JULIE Locates	$0	$0
Miscellaneous	$0	$0
Saftey and Training	$9,089	$9,903
Snow and Ice Removals	$2,175	$3,237
Total	**$240,715**	**$217,171**



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.

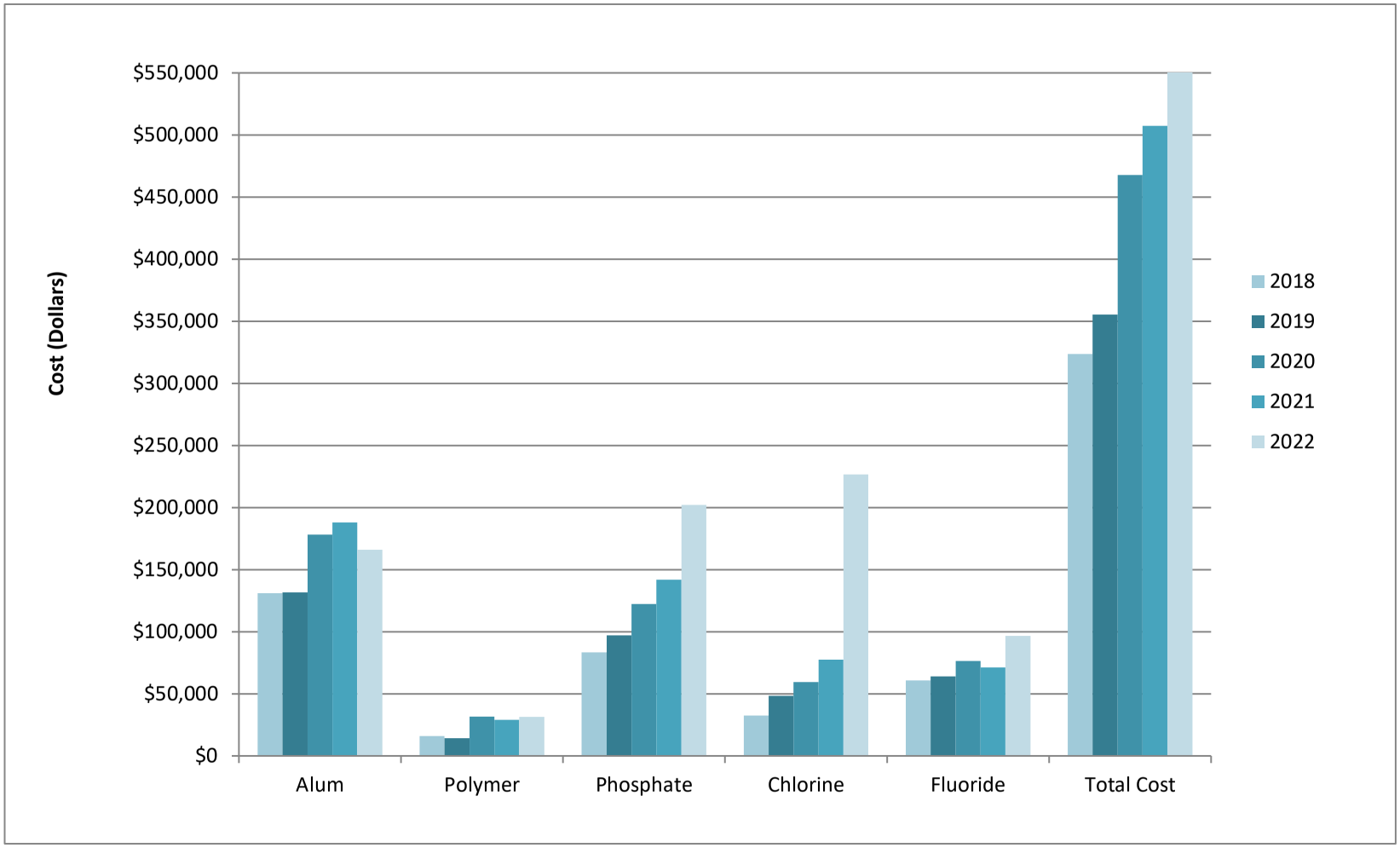
Filters 1 – 12, photo taken in 1924

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							
2022	57.5	99.0	47.8	$332.00 / dry ton	1,000,100	$166,017	$9.66
2021	64.0	100.8	49.1	$296.00 / dry ton	1,270,234	$187,995	$10.78
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
Chlorine							
2022	15.5	20.9	11.9	$1,285.00 / ton	352,628	$226,564	$13.19
2021	15.9	21.1	8.8	$439.00 / ton	352,784	$77,436	$4.44
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
Activated Carbon*							
Hydrofluosilicic Acid (Fluoride)							
2022	26.5	28.5	23.9	$410.00 / ton	471,940	$96,748	$5.63
2021	23.0	34.9	0.0	$353.00 / ton	403,100	$71,147	$4.08
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
Polymer							
2022	2.4	5.6	1.6	$1,400.00 / ton	45,000	$31,500	$1.83
2021	2.8	5.3	1.8	$1,296.00 / ton	44,880	$29,082	$1.67
2020	3.0	5.7	1.8	$1,220.00 / 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
Blended Phosphate							
2022	19.0	16.2	15.1	$6.496 / gallon	339,030	$202,049.4	$11.76
2021	16.6	18.6	15.0	$4.872 / gallon	317,237	$141,796	$8.13
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

* 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
2022	158.2	148.7	105,113	92,119
2021	181.2	170.1	104,693	92,880
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

Filter Washes*

	Total Washes per Year		Max # of Washes per Day	
Year	3 MGD	8 MGD	3 MGD	8 MGD
2022	626	591	6	6
2021	586	556	5	6
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

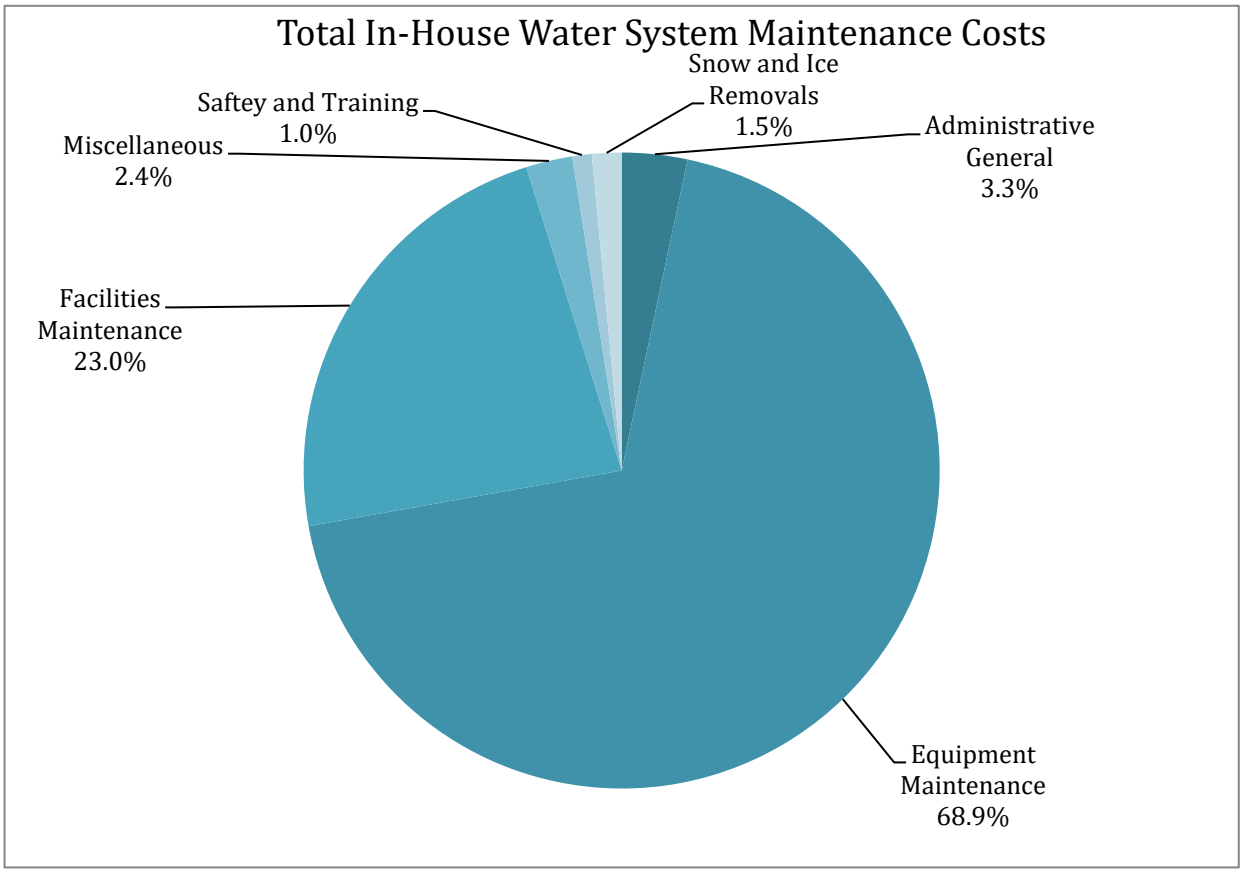
*In 2018, the filter run hours between washes were reduced from 300 hours to 100 hours in an effort to minimize mudball formation in the filter media

Wash Water

Year	Total (MG)	Avg Daily %	Max Daily %
2022	278.147	1.64	4.83
2021	261.751	1.49	4.89
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

Breakdown of In-House Maintenance Costs

Description	2021	2022
Administrative General	$5,889	$8,528
Assist Public Works	$0	$0
Assist Other Departments	$0	$0
Assist Contractor	$0	$0
Equipment Maintenance	$285,176	$176,326
Facilities Maintenance	$66,630	$58,776
JULIE Locates	$0	$0
Miscellaneous	$19,515	$6,032
Saftey and Training	$4,014	$2,532
Snow and Ice Removals	$4,019	$3,840
Total	**$385,243**	**$256,034**



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 (Colilert Method)		Positive for	Positive for
Year	Number Sampled	Total Coliform	E. coli
2022	981	3	0
2021	962	4	0
2020	960	0	0
2019	979	0	0
2018	984	1	0

Raw Water		Colony Count	
Year	Number Sampled	Average	Maximum
2022	730 (Twice Daily)	74	>200
2021	730 (Twice Daily)	119	>200
2020	732 (Twice Daily)	63	>200
2019	728 (Twice Daily)	56	>200
2018	730 (Twice Daily)	60	>200

After Primary Treatment		Colony Count	
Year	Number Sampled	Average	Maximum
2022	730 (Twice Daily)	0	0
2021	730 (Twice Daily)	0	0
2020	732 (Twice Daily)	0	0
2019	730 (Twice Daily)	0	0
2018	730 (Twice Daily)	0	0

Plant Tap A.M. and P.M. Samples		Colony Count	
Year	Number Sampled	Average	Maximum
2022	1460 (4 times Daily)	0	0
2021	1460 (4 times Daily)	0	0
2020	1464 (4 times Daily)	0	0
2019	1460 (4 times Daily)	0	0
2018	1460 (4 times Daily)	0	0

Odor, Turbidity, Temperature and Fluoride

Report of Evanston Water Quality Control Laboratory

Odor*

Year	Number of Tests
2022	0
2021	0
2020	371
2019	502
2018	498

*Testing was discontinued in 2021. Testing will resume if taste and/or odor problems arise.

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
2022	3.95	43.0	0.28	0.55	1.58	0.14	0.09	0.15	0.05
2021	5.92	60.2	0.36	0.60	1.60	0.22	0.11	0.17	0.07
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

Raw Water Temperature

Year	Average	Maximum	Minimum
2022	11.1°C / 52.0°F	23.4°C / 74.1°F	1.7°C / 35.1°F
2021	11.6°C / 52.8°F	23.7°C / 74.7°F	0.2°C / 32.4°F
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

Fluoride Content (EPA target is 0.7 ppm)

	Plant Tap			Distribution		
Year	Avg	Max	Min	Avg	Max	Min
2022	0.69	0.78	0.61	0.70	0.74	0.62
2021	0.66	0.76	0.00	0.67	0.75	0.00
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

Chlorine Residual (ppm)*

Report of Evanston Water Quality Control Laboratory

Filter Influent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2022	1.07	1.38	0.79	1.21	1.62	0.99
2021	1.05	1.29	0.70	1.19	1.49	0.81
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

Filter Effluent

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2022	0.99	1.94	0.77	1.11	1.40	0.87
2021	0.96	1.19	0.78	1.09	1.37	0.87
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

Plant Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2022	1.02	1.41	0.87	1.21	1.64	1.02
2021	1.02	1.24	0.87	1.20	1.42	0.87
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

Distribution Tap

	Free Residual			Total Residual		
Year	Avg	Max	Min	Avg	Max	Min
2022	0.85	1.16	0.61	0.95	1.30	0.71
2021	0.82	1.20	0.61	0.92	1.30	0.71
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

*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
2022	365	0.29	0.36	0.25
2021	365	0.28	0.37	0.23
2020	365	0.28	0.35	0.22
2019	365	0.27	0.37	0.22
2018	365	0.29	0.39	0.21

pH (EPA standard is 7.1 - 7.9)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2022	730	8.3	8.4	8.0	7.6	7.9	7.4
2021	730	8.3	8.5	8.0	7.6	7.8	7.3
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

Alkalinity (ppm)

Year	Number of Tests	Raw Water Avg	Max	Min	Plant Tap Avg	Max	Min
2022	730	104	128	87	96	110	84
2021	730	107	126	89	99	114	74
2020	732	108	119	95	100	114	85
2019	730	108	119	97	102	112	94
2018	730	108	117	97	101	112	93

Hardness (ppm as $CaCo_3$)

Year	Number of Tests	Raw Water Avg	Max	Min	Finished Water Avg	Max	Min
2022	730	142	155	134	139	149	128
2021	730	139	150	122	137	149	120
2020	732	136	147	121	134	149	120
2019	730	137	149	127	135	154	121
2018	730	137	147	127	134	152	120

Detected Substances: 2022 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	100.0% of samples meet 0.3 NTU; 0.15 NTU Highest single measurement	0.05 - 0.15	NO	Soil runoff
Total Coliform Bacteria	0	5% of Monthly Samples are Positive	NA	NA	NO	Naturally present in the environment
E. Coli Bacteria	0	A routine sample & a repeat sample are total coliform positive and one is also E. coli positive.	1.0%	NA	NO	Human and animal fecal waste
Fluoride (ppm)	4	4	0.7	single sample	NO	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate [measured as Nitrogen](ppm)	10	10	0.4	single sample	NO	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Sodium (ppm)	NA[1]	NA[1]	7.9	single sample	NO	Erosion from naturally occurring deposits
Barium (ppm)	2	2	0.022	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	25	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	0.13	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.
Cotinine (ppb)	NOT REGULATED	NOT REGULATED	0.0015	Single Sample	NO	Nicotine metabolite/waste water discharge
Sucralose (ppb)	NOT REGULATED	NOT REGULATED	0.15	Single Sample	NO	Artificial sweetener
Acesulfame-K (ppb)	NOT REGULATED	NOT REGULATED	0.041	Single Sample	NO	Artificial sweetener
Perfluorooctanesulfonic acid (PFOS)[3] (ppt)	14.0	4	2.3	2.1 - 2.3	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 2002.
Perfluorooctanoic acid (PFOA)[3] (ppt)	2	4	2.4	2.1 - 2.4	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 2015.

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.

3. In 2021,our PWS was sampled as part of the State of Illinois PFAS Statewide Investigation. Results from this sampling indicated PFAS were detected in our drinking water. PFOA was detected above the health advisory level and PFOS was detected below the health advisory level established by the Illinois EPA. Follow up monitoring is being conducted. Results can be found https://www.cityofevanston.org/government/departments/public-works/public-outreach/historical-pfsa-results

Detected Substances: 2022 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	30 [2]	13.8 - 47.7	NO	By-product of drinking water chlorination
Total Haloacetic Acids (ppb)	NA[1]	60	14 [2]	4.3 - 22.7	NO	By-product of drinking water chlorination
Chlorine (ppm)	4 MRLDG	4 MRDL	1.0 [3]	1.0 - 1.0	NO	Water additive used to control microbes

Lead & Copper	*MCLG*	*Action Level (AL)*	*90th Percentile*	*# of Sites Over AL*	*Violation*	*Source of Contamination*
Lead (ppb)	0	15	7.5	1	NO	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.16	0	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	7.4	7.9
Hardness (as mg $CaCO_3$/L)	139	128	149
Hardness (gpg)	8.1	7.5	8.7
Alkalinity (ppm)	96	84	110
Raw Water Temperature °F	52	35	74

Measured Parameter	*Evanston Result*
Calcium (ppm)	34
Chloride (ppm)	15
Dissolved Solids (ppm)	160
Magnesium (ppm)	12
Potassium (ppm)	1.5
Aluminum (ppb)	130

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

2022 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	0.05	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	0.25	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

2022 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

2022 Water Quality Data

Per and Polyfluoroalkyl Substances (PFASs)	MCLG	MCL	EEA MRL	Level Found
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 year in compliance with state law. The most recent compliance samples were taken in June, July, August, and September of 2022. Water was sampled from 40 homes with full lead service lines. The 90th percentile level for lead in these samples is 7.5 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 2022, 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 58 park drinking fountains.

PFAS Statement

Water Production Bureau

555 Lincoln Street
Evanston, Illinois 60201

T 847.448.8198
F 847.475.8851
www.cityofevanston.org

January 31, 2022

Re: IL EPA Drinking Water Sampling (PFAS)

Dear Water System Customer,

The Illinois Environmental Protection Agency (Illinois EPA) recently tested our water system for compounds known as Per- and Polyfluoroalkyl Substances (PFAS) as part of a statewide investigation of community water supplies. PFAS are a group of thousands of manmade substances that have been produced in the United States since the 1940s and utilized for a variety of applications ranging from water and stain-proofing to firefighting. Some PFAS have been phased out of production due to environmental and human health concerns, yet they persist in the environment and may contaminate surface and ground waters.

Neither the Illinois EPA nor the U.S. EPA have yet developed enforceable drinking water standards for PFAS. In the interim, Illinois EPA has developed health-based guidance levels for the small number of PFAS for which there is appropriate information to do so. The health-based guidance levels are intended to be protective of all people consuming the water over a lifetime of exposure. **It is important to understand that health-based guidance levels are not regulatory limits for drinking water.** Rather, the health-based guidance levels are benchmarks against which sampling results are compared to determine if additional investigation or other response action is necessary.

PFAS IN EVANSTON

Illinois EPA testing has determined that one PFAS chemical was detected in the City's drinking water just above the Illinois EPA Health-Based Guidance Level of 2.0 ppt for PFOA (The lowest concentration the laboratory can reliably detect is 2.0 ppt). **As a frame of reference, one part per trillion is roughly the equivalent of one drop in 20 Olympic-sized swimming pools.** The levels detected for PFOA were 2.2 ppt (9/2/2021), 2.3 ppt (11/16/2021), and 2.2 ppt (11/16/2021).

Communities along the west shore of Lake Michigan are seeing similar results at about 2 ppt on average.

City of Evanston PFAS Testing Results		
Date	City of Evanston Drinking Water	
	PFOS IEPA Guidance Level 14.0 (ppt) US EPA Guidance Level 70.0 (ppt)	PFOA IEPA Guidance Level 2.0 (ppt) US EPA Guidance Level 70.0 (ppt)
9/2/2021	2.4 ppt	**2.2 ppt**
11/16/2021	*2.3 ppt	***2.3 ppt**
11/16/2021	**2.2 ppt	****2.2 ppt**

*indicates confirmation sample results, **indicates duplicate confirmation sample results

The concentrations detected in City water are well below the US EPA published Lifetime Health Advisory Level of 70 parts per trillion (ppt). Notably, both the US EPA Lifetime Health Advisory Levels and Illinois EPA Health-Based Guidance Levels are measured in ppt, where many drinking water compounds are measured in parts per billion (ppb).

Our water may contain other PFAS at concentrations greater than or equal to the lowest concentration the laboratory can reliably detect, known as the minimum reporting level. However, neither the Illinois EPA nor the U.S. EPA currently have health-based guidance levels for these additional compounds. Results can also be found on the PFAS Investigation Network Interactive Map webpage: https://illinois-epa.maps.arcgis.com/apps/opsdashboard/index.html#/d304b513b53941c4bc1be2c2730e75cf.

PFAS are present in many consumer goods, including food packaging and personal care products, and scientists have found values of PFAS in blood of nearly all individuals tested. Exposure to high levels of PFAS may cause adverse health effects such as increased cholesterol levels, increased risk for thyroid disease, low infant birth weights, reduced response to vaccines, pregnancy-induced hypertension and increased risk of liver and kidney cancer as seen in studies of laboratory animals. **Exposure to PFAS above the recommended health-based guidance levels does not necessarily mean that a person will get sick or an adverse health effect will occur.** Health-based guidance levels are conservative estimates. The possible health effects from PFAS are dependent on how much a person is exposed to and how long they are exposed to it. Exposure to PFAS above recommended health-based guidance levels for periods of time may mean that a person is at a greater risk of experiencing these adverse effects.

2

NEXT STEPS

The City is following recommendations from the Illinois EPA and closely monitoring the latest health-based guidance. We will continue monitoring PFAS values through quarterly sampling at the direction of the Illinois EPA. The most recent test results will be added to the above chart on the City's PFAS webpage once available.

We will begin evaluating treatment options to reduce public exposure to PFAS in potable water provided by the Evanston Water Utility. The City will continue to closely monitor the situation and ensure information is communicated with community members and wholesale water customers.

Based on these initial results, Evanston will perform additional sampling beginning January 2022 and will keep the community updated and informed.

Additional information regarding PFAS, the statewide PFAS investigation network, and the impact to public health can be found in the attached fact sheet as well as on the Illinois EPA PFAS webpage: https://www2.illinois.gov/epa/topics/water-quality/pfas/Pages/default.aspx.

The confirmed sampling results for the Evanston Water Utilityare also available on Illinois EPA's Drinking Water Watch system at http://water.epa.state.il.us/dww/index.jsp.

If you have questions, please contact:

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Barb Lieberoff, Office of Community Relations
epa.pfas@illinois.gov
217-524-3038

Illinois Department of Public Health
Brian Koch, Division of Environmental Health
Brian.Koch@illinois.gov
217-782-5830

3

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).

PFAS – Per- and Polyfluorinated Substances.

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.

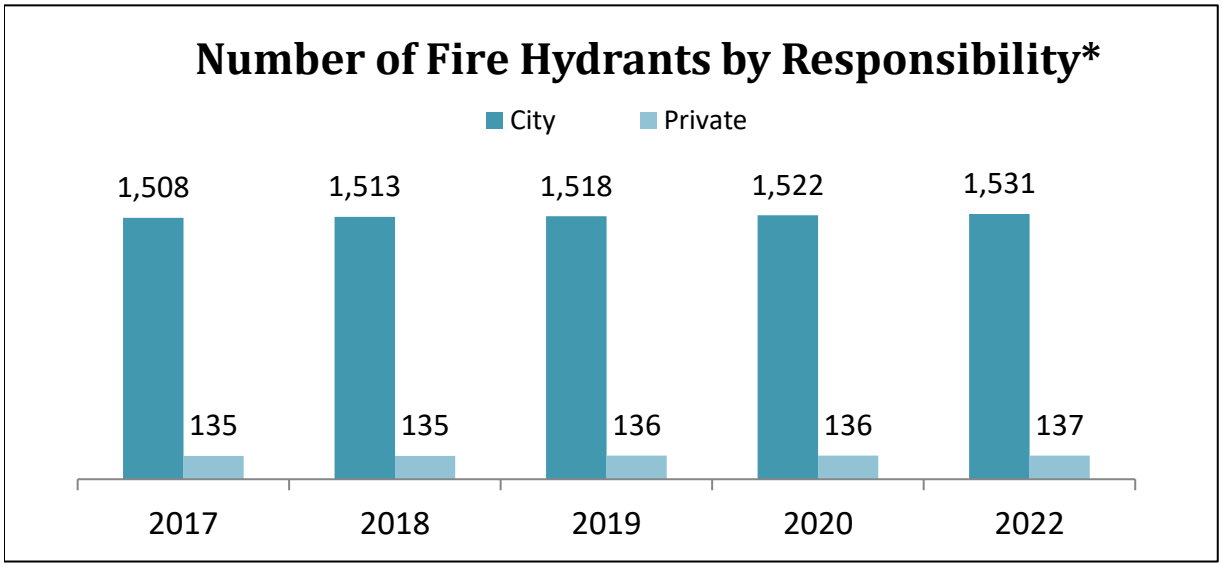
Pieces of wood water main from Evanston's original water distribution system.

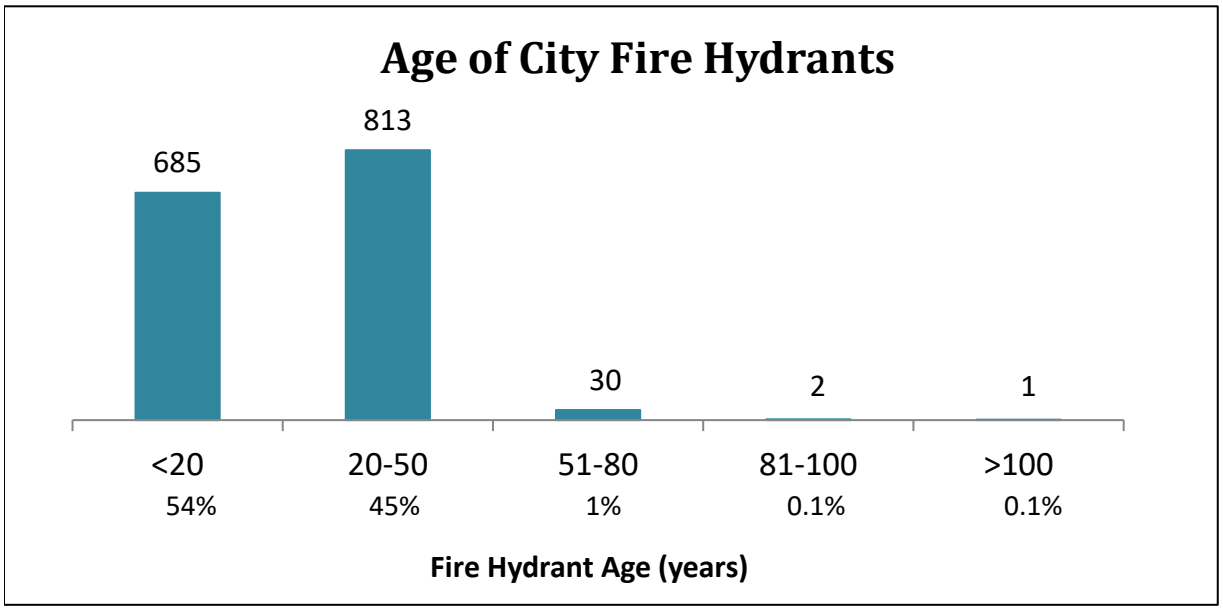
Fire Hydrants

System Data and Maintenance

Fire Flow Testing	2018	2019	2020	2021	2022
Fire Department	1,491	1,445	1,485	1,482	1,486
Public Works Agency	19	15	13	19	22

Installation & Maintenance	2018	2019	2020	2021	2022
Installed (new)	5	3	6	4	11
Replaced	14	19	23	14	16
Repaired	569	311	36	41	35





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

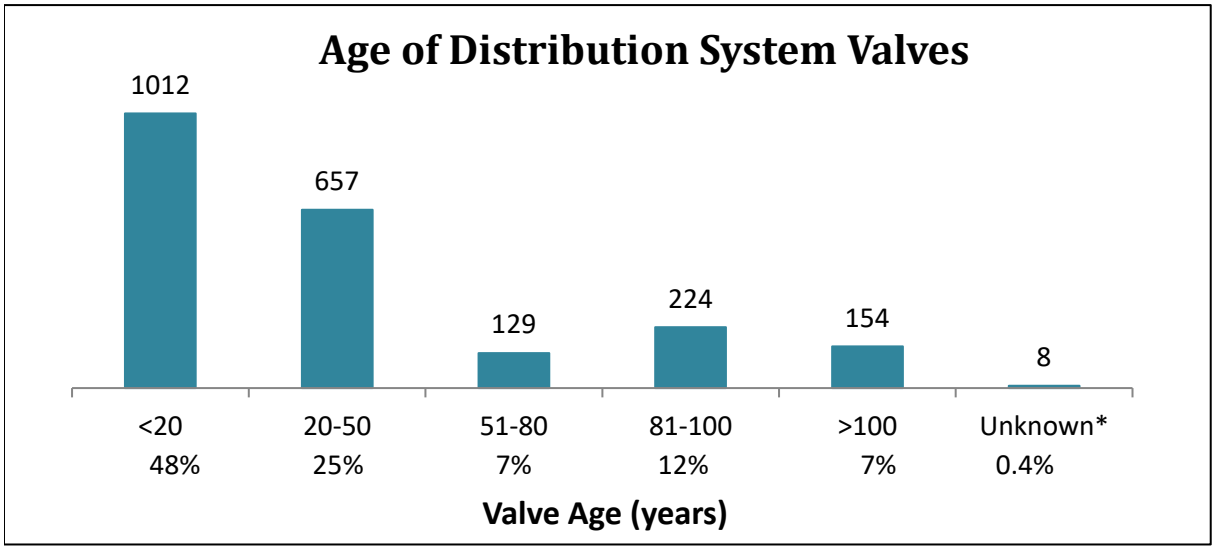
Water Distribution System Valves

System Data and Maintenance

Testing & Inspection	2018	2019	2020	2021	2022
In-House	848	524	537	826	595
Contractor	0	0	0	0	0

Installation & Maintenance	2018	2019	2020	2021	2022
Installed (new)	16	19	19	28	38
Replaced	20	19	20	31	50
Repaired	30	24	27	9	5

Number of Valves by Size	2018	2019	2020	2021	2022
4" or smaller	23	23	23	23	23
6"	965	961	958	971	981
8"	540	554	557	564	569
10"	200	205	204	210	214
12"	253	253	257	258	264
14"	2	2	2	2	2
16"	50	50	53	49	52
18"	5	6	6	6	6
20"	2	2	2	2	2
24"	38	33	34	34	35
30"	13	13	13	13	19
36"	13	13	13	13	13
42"	2	2	2	2	2
48"	2	2	2	2	2
Total	2,108	2,119	2,126	2,149	2,184



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

Water Mains

System Data and Maintenance

Improvements (lineal feet)	2018	2019	2020	2021	2022
Replaced by City	0	0	0	0	0
Replaced by Contractor	6,673	6,780	6,692	6,401	12,891
Installed New by Contractor	0	0	2,485	2,059	736
Rehabilitated by Contractor	0	0	0	0	2,834

Water Main Break Repairs	2018	2019	2020	2021	2022
Blow-Out	22	20	29	24	24
Shear Break	9	8	3	14	14
Damage	1	0	0	2	1
Total	32	28	32	40	39

Pipe Sizes (length in miles)*	2018	2019	2020	2021	2022
4" or smaller	1.37	1.37	1.37	1.41	1.41
6"	71.63	70.81	70.00	69.93	69.81
8"	29.57	30.35	30.71	30.77	30.95
10"	13.16	13.16	12.94	13.31	13.28
12"	17.95	17.95	17.95	17.96	18.01
14"	0.37	0.37	0.37	0.37	0.37
16"	6.27	6.27	6.27	6.26	6.26
18"	0.83	0.83	0.83	0.83	0.82
20"	0.56	0.56	0.56	0.56	0.56
24"	8.63	8.63	9.10	8.92	8.92
30"	1.69	1.69	1.69	1.69	1.66
36"	3.30	3.30	3.30	3.30	3.32
42"	0.04	0.04	0.04	0.04	0.04
48"	0.68	0.68	0.68	0.68	0.68
Total	156.03	155.99	155.78	156.00	156.09

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

Water Services

System Data and Maintenance

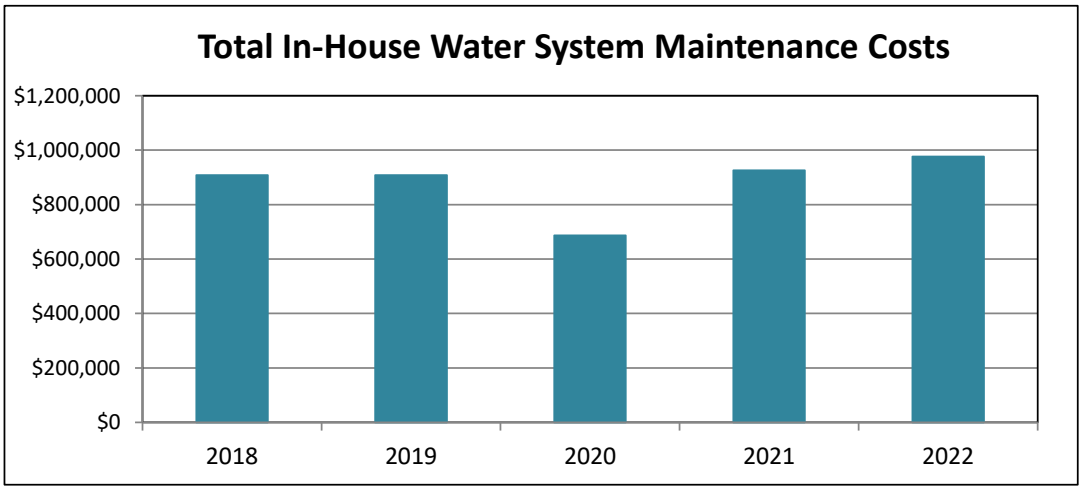
Water Service Accounts: 15,263

Installation & Maintenance	2018	2019	2020	2021	2022
New Services Installed	7	15	7	10	7
Service Taps Replaced	42	64	75	72	60
Services Replaced by Contractor	102	136	82	189	191
Service Leaks Repaired	14	10	11	6	10

Breakdown of In-House Maintenance Costs

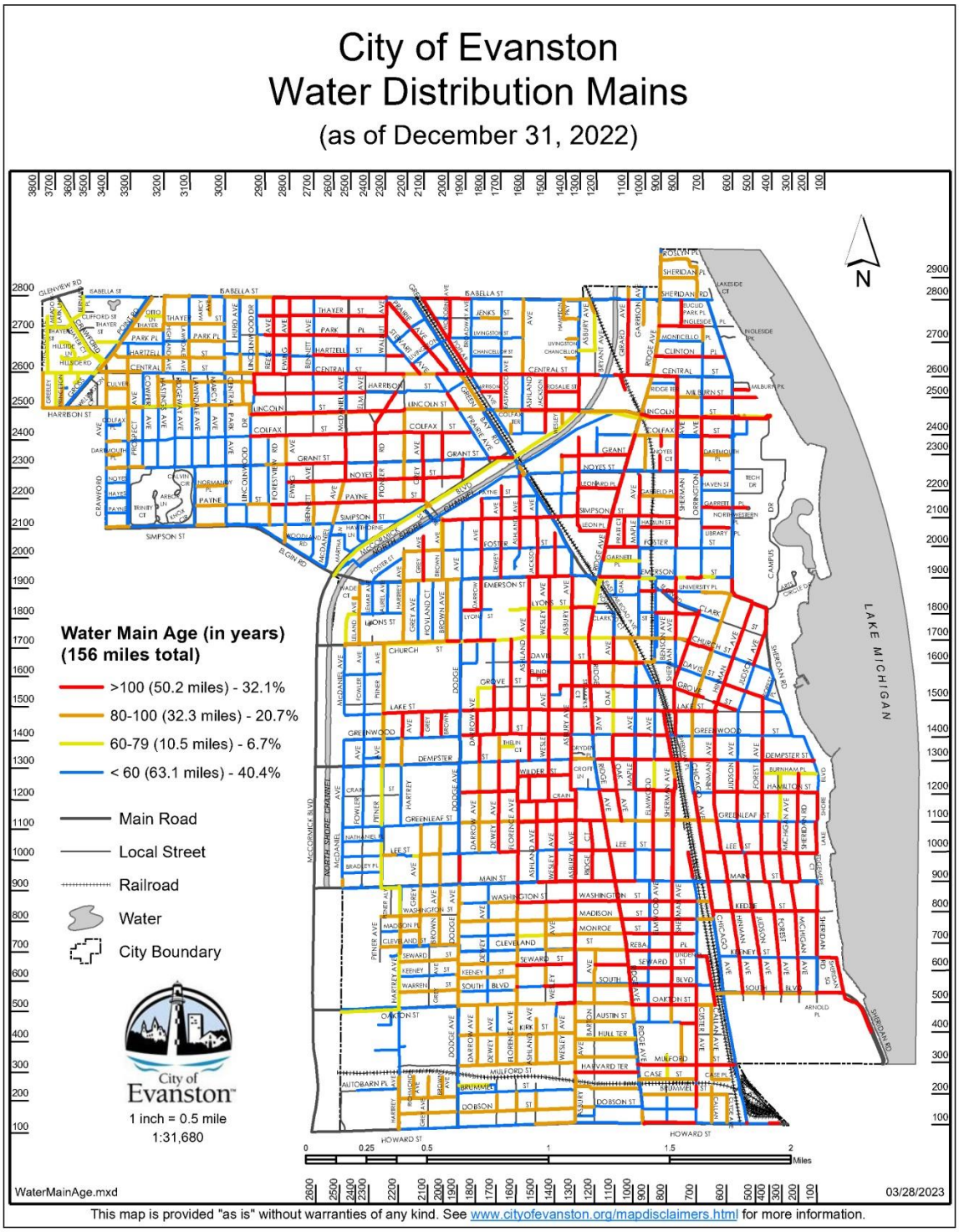
	2018	2019	2020	2021	2022
Water Mains*	$123,734	$119,977	$72,920	$148,054	$174,272
Fire Hydrants	$45,067	$34,908	$24,782	$35,965	$26,407
Water Services	$171,581	$239,846	$128,266	$286,098	$250,628
Valves	$87,328	$62,031	$17,578	$51,509	$28,645
Drinking Fountains	$3,348	$13,885	$6,849	$12,604	$5,520
Water Meters	$91,575	$100,570	$85,809	$92,897	$103,757
Water Quality	$27,861	$24,962	$24,328	$19,775	$19,995
Snow & Ice Removal	$57,315	$49,963	$13,757	$23,681	$55,422
Assist Contractor	$78,722	$62,476	$62,695	$52,794	$73,826
JULIE Locates	$72,489	$57,619	$80,832	$66,709	$81,226
Equip/Facility Maint.	$66,482	$64,903	$117,705	$58,735	$74,497
Assist Other City Depts.	$22,224	$7,365	$8,866	$3,279	$7,722
Assist W&S Divisions	$4,318	$7,403	$3,620	$2,140	$1,425
Assist Public Works	$0	$0	$0	$3,470	$3,169
Safety & Training	$15,641	$17,374	$7,406	$14,385	$11,595
Administrative General	$40,554	$45,451	$31,633	$53,426	$59,069
Total	**$908,239**	**$908,733**	**$687,044**	**$925,521**	**$977,175**

*Water Main includes Leak Detection In-House Maintenance Cost of $16,940



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

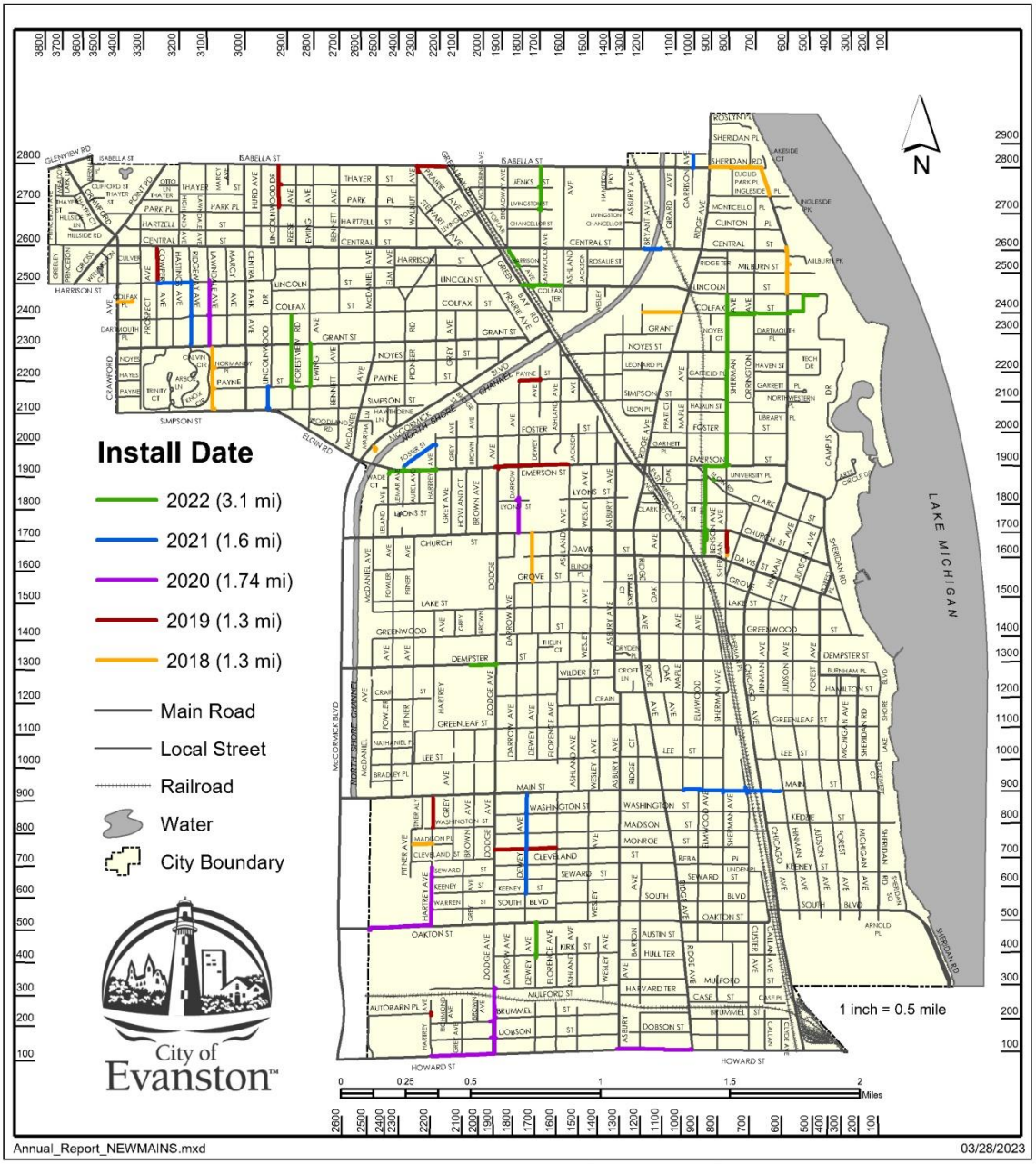
Water Main Age



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

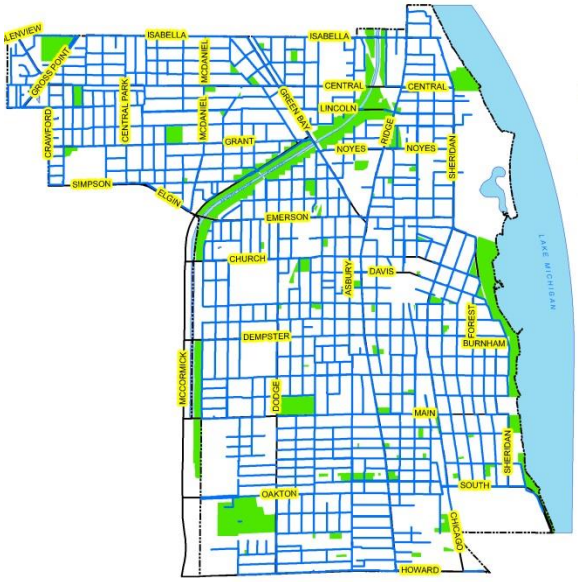


This map is provided "as is" without warranties of any kind. See www.cityofevanston.org/mapdisclaimers.html for more information.

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 2022 survey found two leaks on a building water service pipe and two breaks on water mains. These defects were all successfully repaired, and the resulting estimated water savings for 2022 were over 9.37 Million Gallons (MG).

Year	Miles of Water Main Surveyed	Water Service Leaks Found	Water Main Breaks Found	Water Savings After Repairs
2018	143	3	3	14.06 MG/Year
2019	146	1	2	8.85 MG/Year
2020	141	2	3	13.53 MG/Year
2021	139	3	1	5.74 MG/Year
2022	156	2	2	9.37 MG/Year
Totals	**725**	**11**	**11**	**51.55 MG/Year**

In 2022 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.

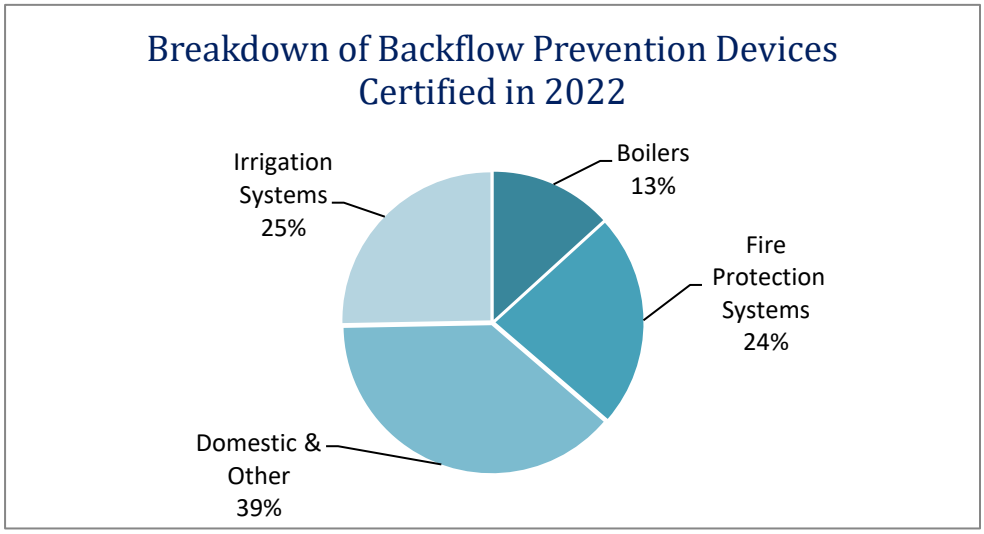
Cross Connection Control

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
2018	4,522
2019	4,642
2020	4,742
2021	4,782
2022	4,867



Metering

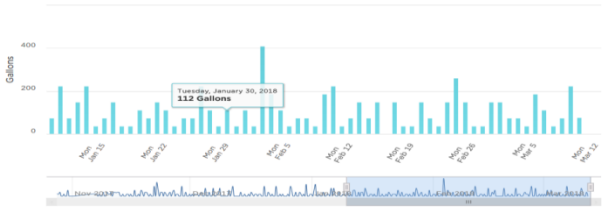
The Meter Division manages water meter reading and billing for Evanston's 14,598 retail water and sewer customers, working with the City's Collector's Office to process water/sewer bill payments and cross connection control fees. The Meter Division also coordinates with the Distribution Division to manage 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.

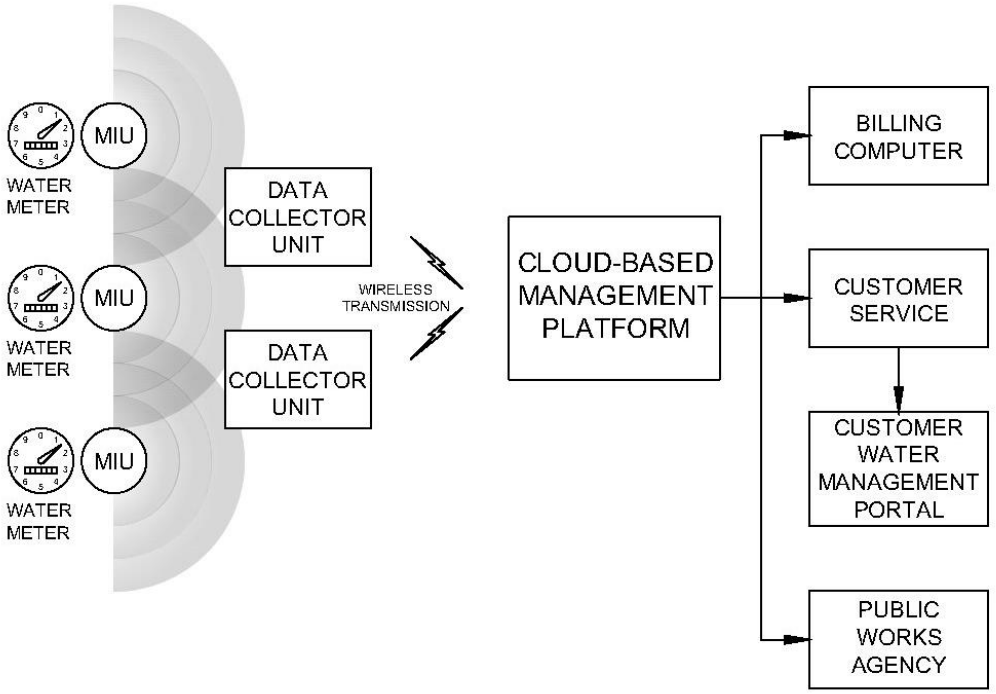
In 2017 a contractor was hired to exchange and replace out 5,732 old meters that are 20 years old and to obtain better resolution of the meter reading.

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 9,633 customers in the Customer portal, WaterSmart 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.



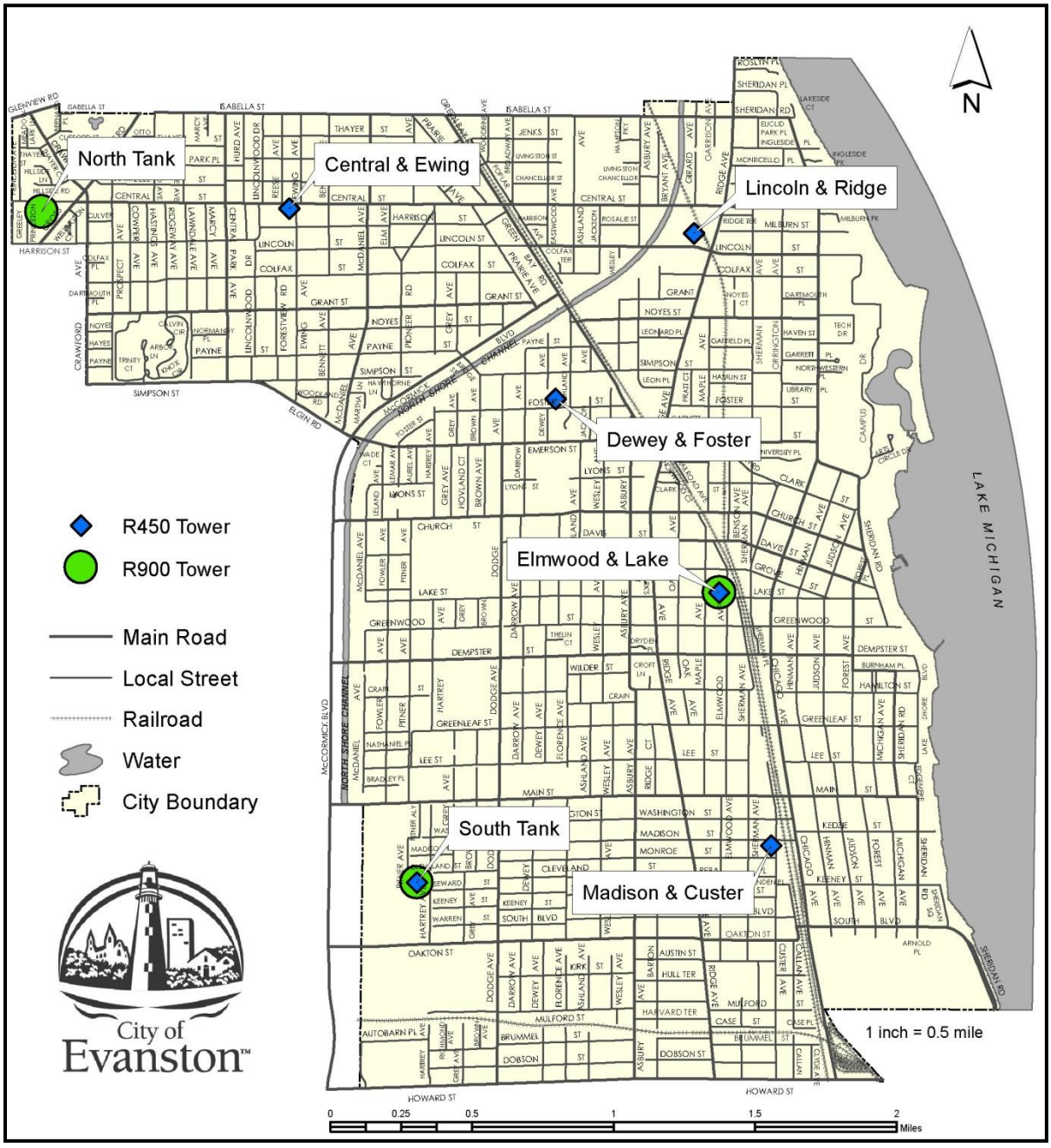
Automatic Metering Infrastructure (AMI) System



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 a total of 9 DCUs located on various buildings throughout the community. We have added 3 additional DCU's to handle the new upgraded R900 MIU. 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”	11,064
3/4"	1469
1”	1213
1.5”	260
2”	493
3”	64
4”	27
6”	4
8”	4
Total	14,598

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 1/1/2022
5/8” & 3/4”	$11.31
1”	$22.57
1 ½”	$42.66
2”	$66.53
3”	$117.16
4”	$187.18
6”	$330.97
8”	$560.29

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.

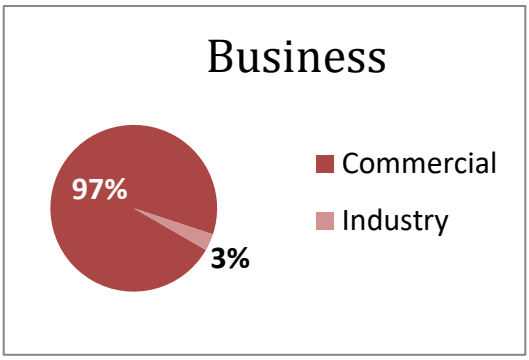
Water usage over the minimum is billed at $3.17 per 100 CF effective 1/1/2022. This is equivalent to a rate of $4.24 per 1,000 gallons.

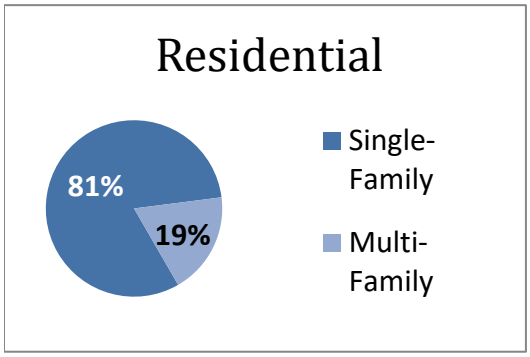
Water Customer Classes and Metered Usage

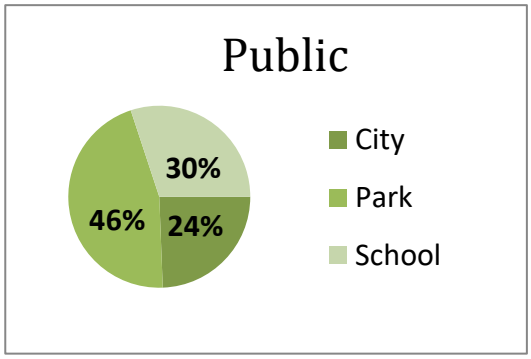
Billed by Category and Water Usage for 2022

Category	Number of Accounts	2022 Usage (100 CF)*
Metered Water Services		
Single-Family	10,948	897,739
Multi-Family	2,516	1,048,677
Commercial	978	885,367
Industry	33	9,233
City	30	7,854
Park	56	10,588
School	37	33,715
Subtotal	14,598	2,893,173
Unmetered Water Services		
Fire Services**	665	
Totals	**15,263**	**2,893,173**

Water Service Accounts by Category:



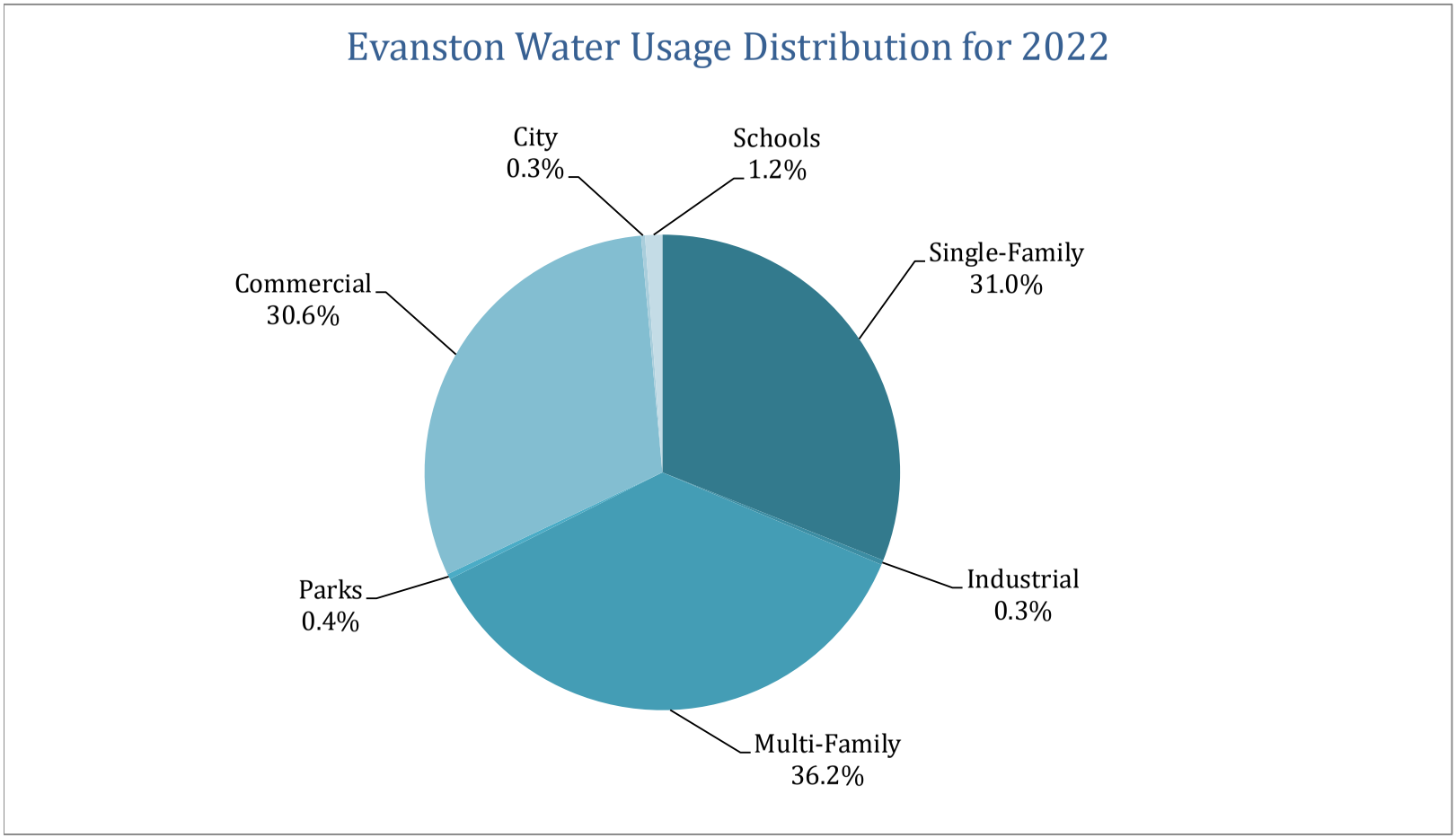




* Water usage is metered in units of 100 cubic feet (CF). 100 CF is approximately 748 gallons

** 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.

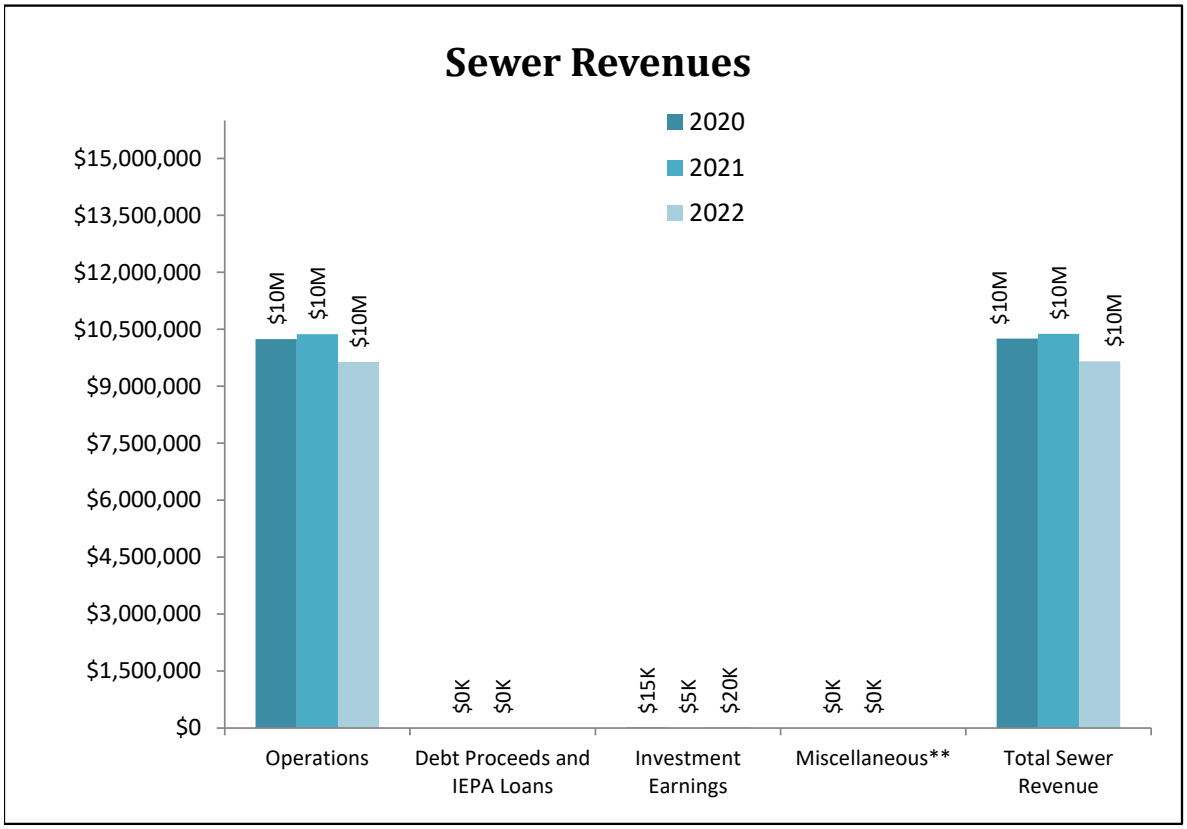
Sewer Division staff operate a sewer cleaning truck to remove debris from a catch basin.

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*

	2020	2021	2022
Operations	$10,242,066	$10,373,597	$9,638,057
Debt Proceeds and IEPA Loans	$0	$0	
Investment Earnings	$15,111	$4,547	$20,366
Miscellaneous**	$0	$0	
Total Sewer Revenue	$10,257,177	$10,378,144	$9,658,422

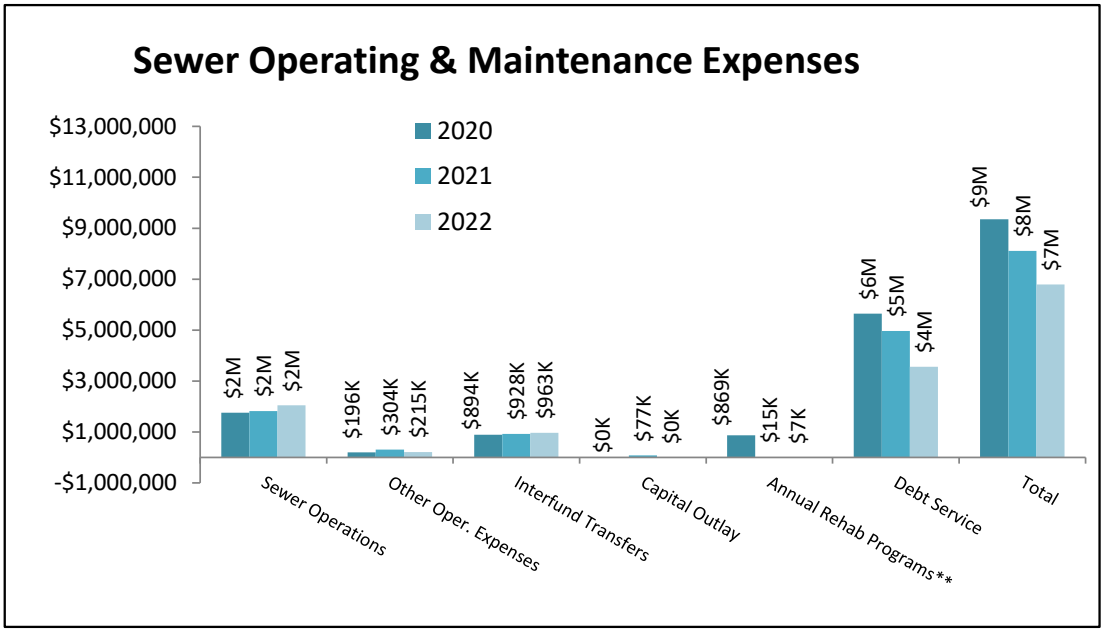


* Financial data are based on actual expenses and do not include audit adjustments such as depreciation and inventory. For audited financial records, see the Comprehensive Annual Financial Report for the City of Evanston, https://www.cityofevanston.org/government/transparency/budget-financial-reports/.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

	2020	2021	2022
Sewer Operations	$1,750,738	$1,819,816	$2,041,943
Other Oper. Expenses	$196,023	$303,860	$215,045
Interfund Transfers	$894,212	$927,636	$963,354
Capital Outlay	$0	$76,776	$45
Annual Rehab Programs**	$869,117	$14,802	$7,472
Debt Service	$5,644,596	$4,963,593	$3,564,855
Total	$9,354,686	$8,106,483	$6,792,715



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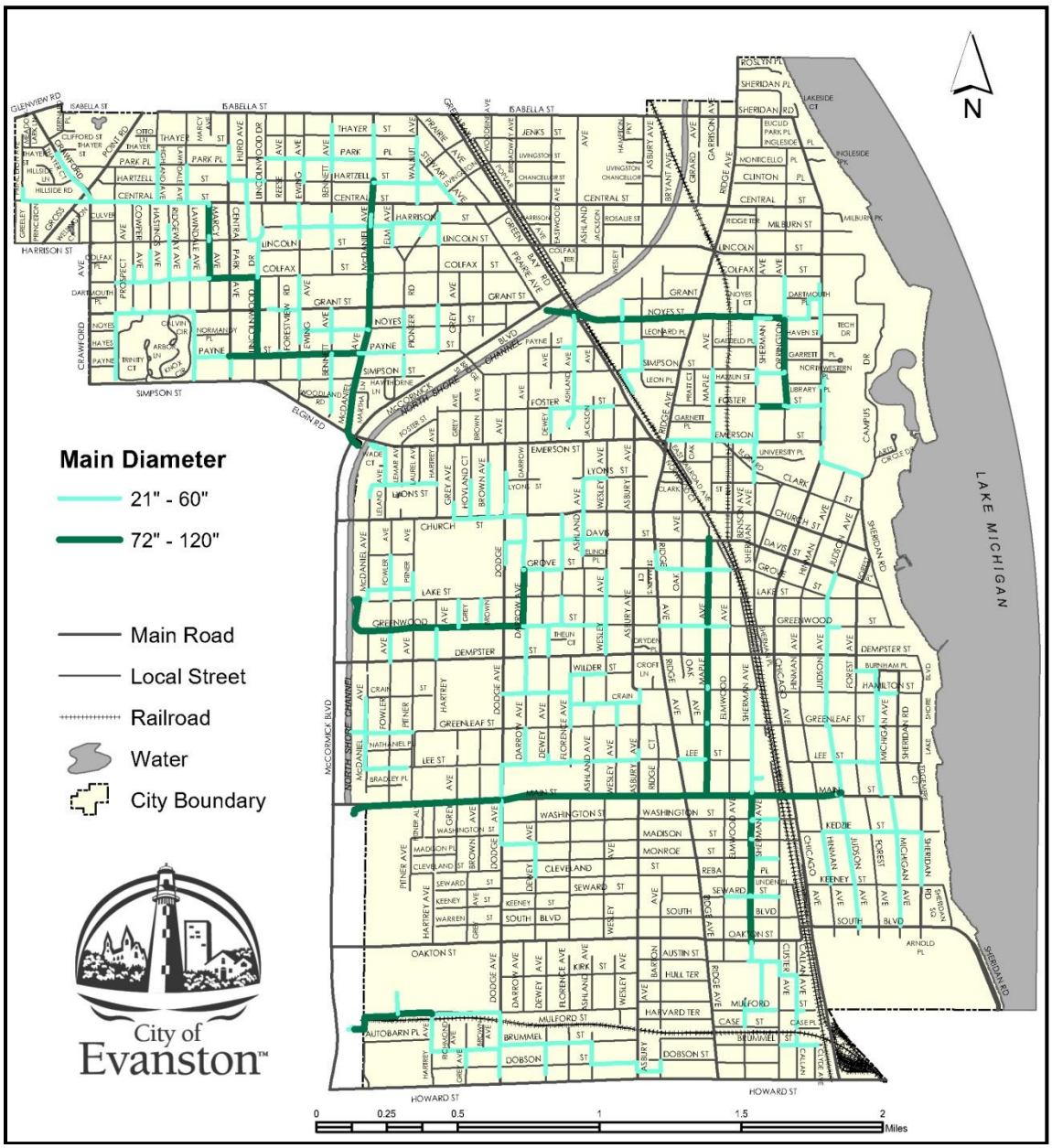
**Includes CIPP sewer rehabilitation, drainage structure replacement, stormwater management improvements, and emergency sewer repairs

Major Combined Sewer System

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

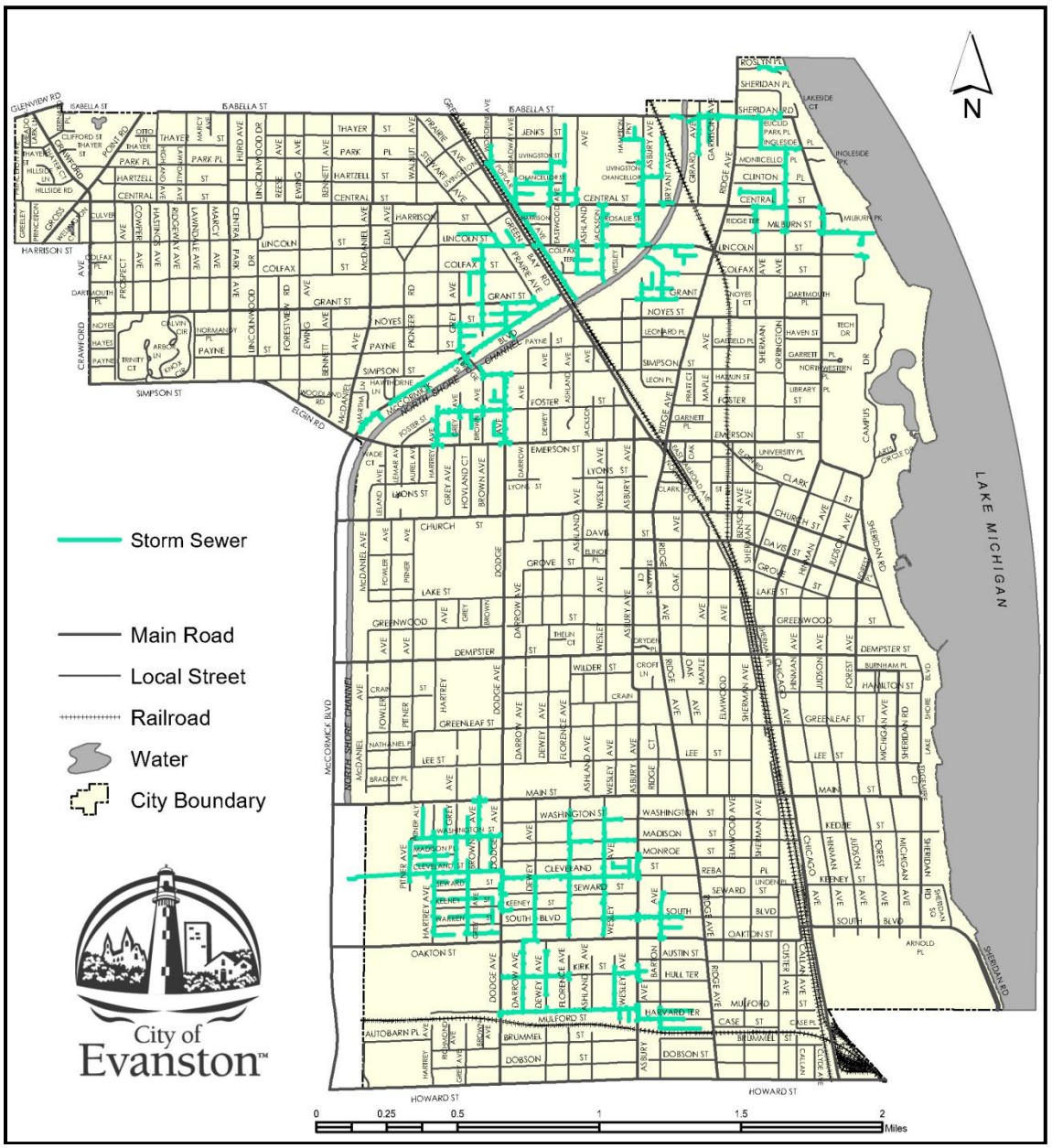
Major Relief Sewer System

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



Major Storm Sewer System

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

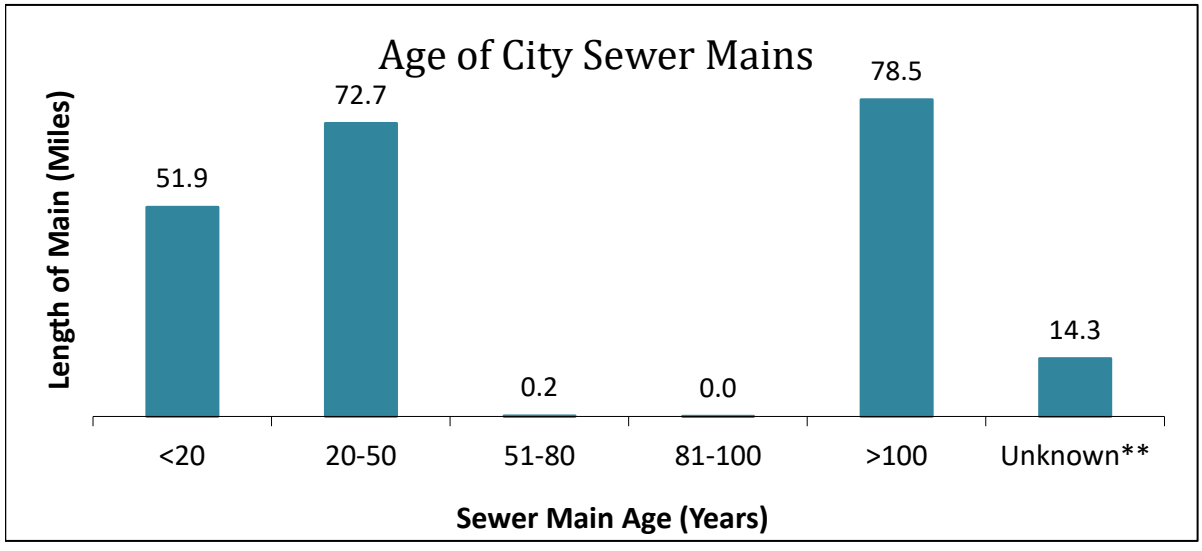


Sewer Mains

System Data and Maintenance

	Pipe Length (miles)				
Sewer Length by Type	2018	2019	2020	2021	2022
Combined Sewer	144.53	144.25	144.23	144.28	144.48
Relief Sewer	54.54	55.14	55.54	55.72	55.87
Storm Sewer	16.30	16.44	16.65	16.72	17.16
Total Length	215.37	215.84	216.42	216.72	217.51

Sewer Installation and Maintenance	Pipe Length (feet)				
	2018	2019	2020	2021	2022
Installed (new)	2,311	3,746	2,896	1,023	1,486
Replaced	760	281	84	287	55
CIPP Rehabilitation (Lining)	4,662	11,578	15,191	14,301	14,826
Spot Repair	3,107	1,495	3,219	4,480	3,046
Clean - Hydroflush	45,575	143,443	56,603	95,900	201,476
Clean - Root Cut	1,618	8,582	4,149	13,557	12,466
Inspection - General	9,509	6,292	7,154	3,387	3,506
Inspection - Televised	42,897	49,900	56,985	74,876	84,177
Inspection - Storm-related*	1,304	375	1,446	0	0



* 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"	3,092	0.59	256	0.05	0	0.00
6"	2,454	0.46	340	0.06	540	0.10
8"	21,225	4.02	12,155	2.30	1,883	0.36
9"	125,729	23.81	7,280	1.38	945	0.18
10"	110,559	20.94	32,383	6.13	11,673	2.21
12"	221,099	41.87	30,720	5.82	13,084	2.48
14"	1,019	0.19		0.00		0.00
15"	91,518	17.33	6,426	1.22	5,248	0.99
16"	2,244	0.43	7,057	1.34	872	0.17
18"	63,284	11.99	16,609	3.15	7,858	1.49
20"	8,093	1.53	132	0.03		0.00
21"	14,927	2.83	2,612	0.49	1,912	0.36
22"	867	0.16		0.00		0.00
24"	22,104	4.19	47,660	9.03	15,970	3.02
27"	6,015	1.14	6,373	1.21	3,240	0.61
30"	6,973	1.32	19,088	3.62	3,907	0.74
33"	3,771	0.71	1,309	0.25	476	0.09
36"	19,597	3.71	18,237	3.45	6,730	1.27
39"	421	0.08		0.00		0.00
40"	377	0.07		0.00		0.00
42"	6,709	1.27	12,297	2.33	3,570	0.68
45"	1,029	0.19		0.00		0.00
48"	12,431	2.35	22,236	4.21	7,968	1.51
51"	1,104	0.21		0.00		0.00
54"	1,969	0.37	3,153	0.60	609	0.12
57"	784	0.15		0.00		0.00
60"	7,424	1.41	5,214	0.99	3,633	0.69
72"	4,104	0.78	11,651	2.21		0.00
78"	778	0.15	5,452	1.03		0.00
84"	0	0.00	88	0.02		0.00
96"	0	0.00	2,366	0.45		0.00
108"	0	0.00	5,033	0.95		0.00
113"	0	0.00	9,275	1.76		0.00
120"	0	0.00	7,340	1.39		0.00
Unknown	1,171	0.22	2,232	0.42	503	0.10
Totals	**762,870**	**144.48**	**294,973**	**55.87**	**90,618**	**17.16**

Total Sewer Main Length: 217.51 miles

Sewer Structures

System Data and Maintenance

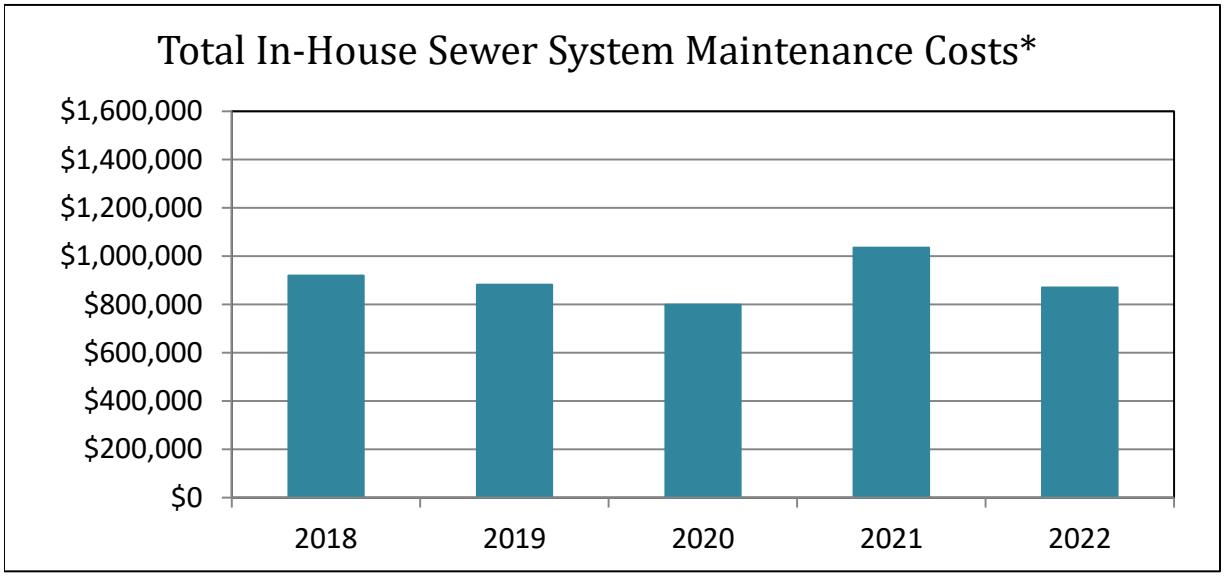
Number of Sewer Structures	2018	2019	2020	2021	2022
Manholes	5,620	5,637	5,644	5,652	5,657
Inlets	3,092	3,121	3,137	3,147	3,171
Catch Basins	6,280	6,291	6,217	6,229	6,241
Total	14,992	15,049	14,998	15,028	15,069

Sewer Structure Installation & Maintenance	2018	2019	2020	2021	2022
Installed (new)	27	41	23	21	37
Replaced	6	24	13	22	31
Repair	116	95	113	97	121
Clean	3,006	1,910	2,921	2,749	2,635
Inspect - General	668	187	252	475	121
Inspect - Storm-Related*	998	598	385	368	323

* 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

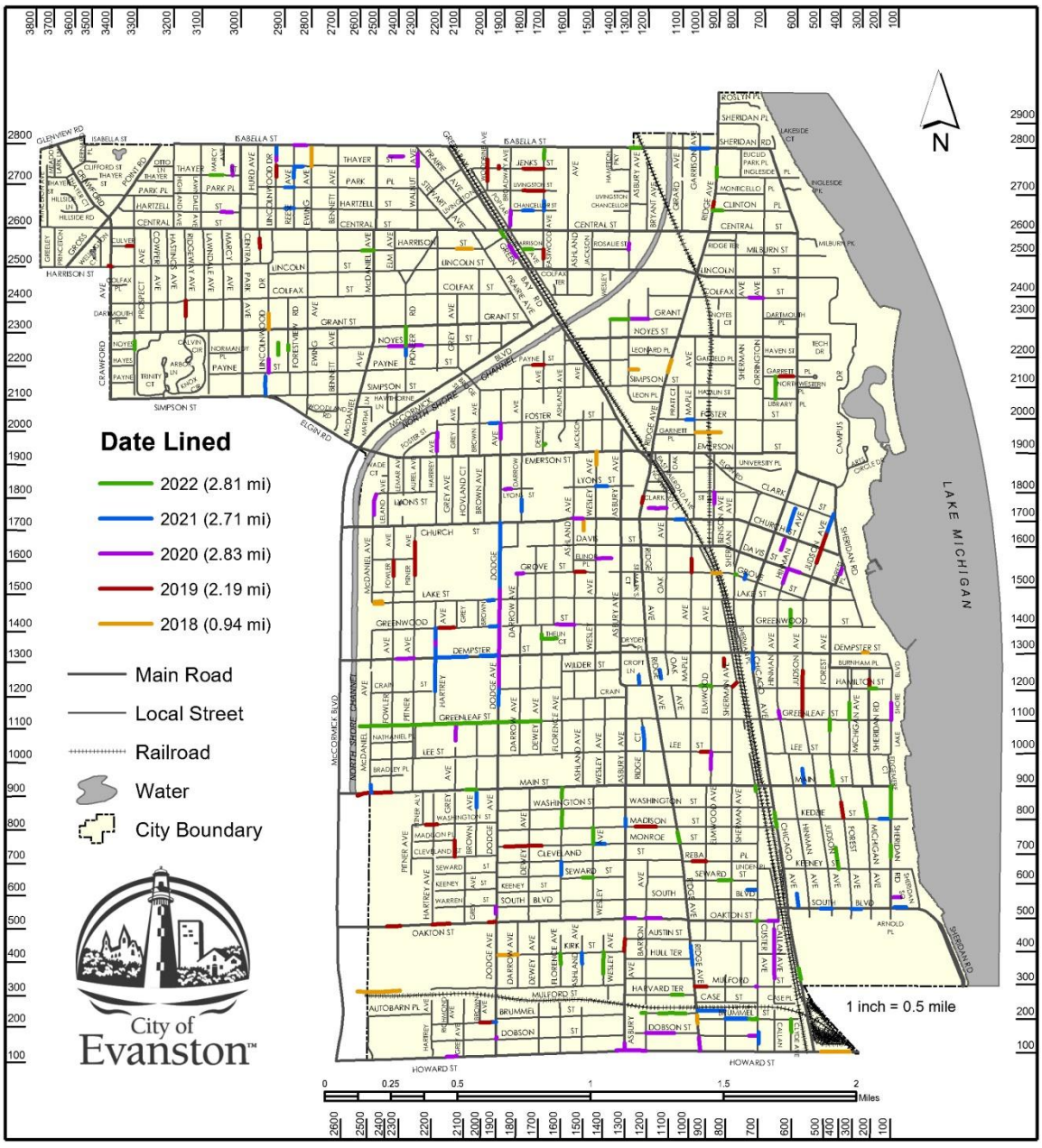
Description	2018	2019	2020	2021	2022
Sewer Mains	$238,526	$267,761	$253,462	$290,247	$358,479
Sewer Structures	$360,072	$277,468	$297,034	$425,842	$265,244
Equip/Facility Maint.	$117,291	$113,110	$117,714	$86,502	$102,324
Assist W&S Divisions	$36,266	$21,835	$20,069	$23,813	$15,926
Snow & Ice Removal	$66,934	$50,086	$19,419	$114,898	$32,253
Assist Contractors	$20,102	$37,141	$26,010	$22,039	$25,108
Assist Other City Depts.	$41,396	$65,575	$28,378	$26,789	$33,893
Assist Public Works	$0	$0	$0	$5,394	$1,567
Safety & Training	$26,350	$17,973	$8,298	$23,465	$14,662
Administrative General	$12,525	$30,605	$26,988	$14,793	$20,937
JULIE Locates	$648	$1,052	$1,270	$1,412	$556
Total	**$920,111**	**$882,606**	**$798,642**	**$1,035,194**	**$870,949**



* 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).



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	$2,670.00	$1,836.00	$4,506.00
Rain Gardens	$0.00	$16,500.00	$0.00	$16,500.00
Totals	**$0.00**	**$18,450.00**	**$1,702.00**	**$20,152.00**