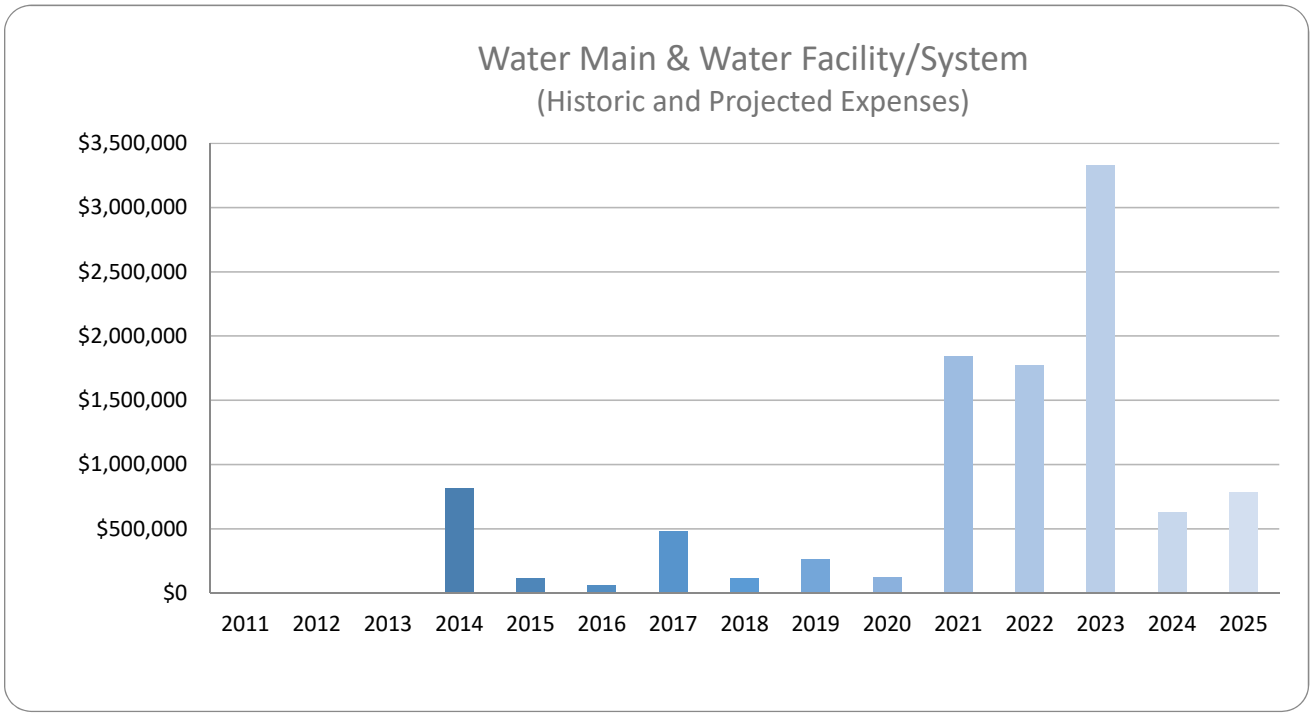
Water Main & Water Facility/System Improvements

The Village owns and maintains wells, towers, pumping stations, filtration systems and transmission mains to provide water to the Village and surrounding areas. Projects in this category include annual dollars to complete maintenance work for these facilities, studies to model the system, provide maintenance and emergency plans, evaluate water rates and water sources and water main and water service replacement projects. Annual maintenance work is necessary to maintain Village facilities and water supply services. Investment in studies allows the Village to proactively plan for facility repair and replacement, ensure that water sources are thoughtfully utilized, and establish water rates which cover the cost of operating and maintaining the Village system.



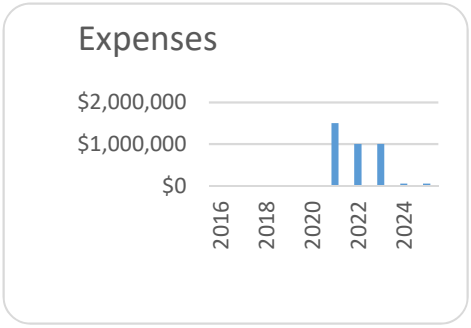
Financial Impact

	2011	2012	2013	2014	2015	
Historical				$810,350	$113,777	
	2016	2017	2018	2019	2020	Historical
Historical	$58,571	$474,676	$113,080	$262,889	$121,435	$1,030,651
	2021	2022	2023	2024	2025	Short Term
5-Year	$1,838,500	$1,770,000	$3,330,000	$627,500	$780,000	$8,346,000

Water Meter Replacement and Software Upgrade

Project Category	Water Distribution
Useful Life	20 Years
Project Type	Maintenance
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	2021
Project Work	2021-2023
Reoccurance	20 Years
Fund	Water Facility
Account(s)	50-690

Location	At existing water meters
Issue	The existing 20+ year old meter reading system is at the end of life for batteries. Costly maintenance/upgrade issues are occuring.
Solution	Select the best provider to install new meters and automated read systems both for now and into the future.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	**2022**	**2023**	**2024**	**2025**	**Short Term**
Short Term	$1,500,000	$1,000,000	$1,000,000	$50,000	$50,000	$3,600,000
	Year 6-10	**Year 11-15**	**Year 16-20**	**Long Term**	**Short Term**	**Total 20 Year**
Long Term	$250,000	$250,000	$250,000	$750,000	$3,600,000	$4,350,000

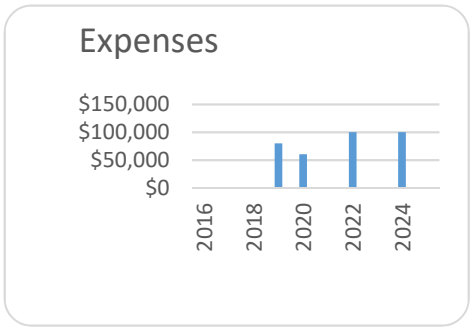
Water Well Inspections/Repairs (4 Total)

Project Category	Water Production
Useful Life	8 Years
Project Type	Maintenance
User Department	PW
Coordinator	PW
Current Budget	$100,000.00
Initial Proposal Date	On going
Design Work	N/A
Project Work	Biannual
Reoccurance	Biannual
Fund	Water Facility
Account(s)	50-690-51500

Location Four (4) Village Well Sites

Issue AWWA Standards state wells should be inspected every 5-10 years.

Solution Performing an inspection of one well every other year allows the Village to inspect all of its wells every eight years. An Inspection Program assists in finding issues in the wells, and make repairs before failures. This allows the Village to meet the supply and demand of its water consumers without disruptions.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical				$80,000	$60,000	$140,000
	2021	2022	2023	2024	2025	Short Term
Short Term		$100,000		$100,000		$200,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term	$200,000	$300,000	$200,000	$700,000	$200,000	$900,000

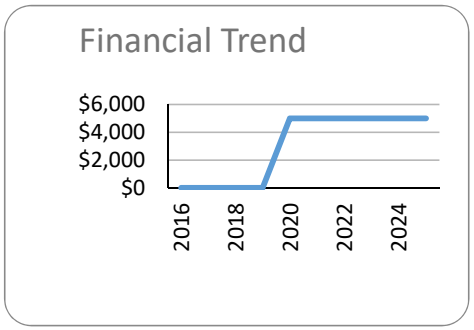
Water Tower and Reservoir Inspections/Repairs (6 Total)

Project Category	Water Production
Useful Life	5
Project Type	Maintenance
User Department	PW
Coordinator	PW
Current Budget	$10,000.00
Initial Proposal Date	2020
Design Work	N/A
Project Work	Yearly
Reoccurance	Yearly
Fund	Water Facility
Account(s)	50-690

Location Six (6) Water Distribution Sites

Issue AWWA Standards states tanks should be inspected every five years.

Solution The village has three water towers and three reservoirs. Performing one inspection per year allows the Village to inspect all sites in six years. This yearly program can be completed by inspections followed by budgeting repairs for the following year. An annual Inspection Program allows issues that are found in the water towers and reservoirs to be repaired before failures.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical					$5,000	$5,000
	2021	2022	2023	2024	2025	Short Term
Short Term	$5,000	$5,000	$5,000	$5,000	$5,000	$25,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term	$25,000	$25,000	$25,000	$75,000	$25,000	$100,000

Water Pumping Station VFD Installation

Project Category	Water Production
Useful Life	5 Years
Project Type	Maintenance
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2020
Design Work	N/A
Project Work	2021
Reoccurance	Yearly
Fund	Water Facility
Account(s)	50-690

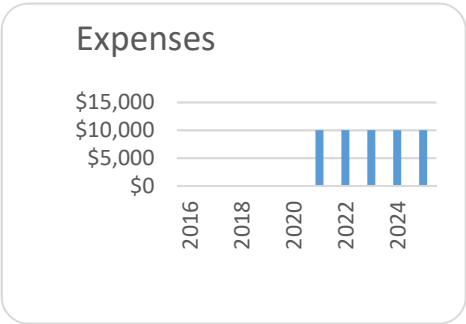
Location Water Distribution Sites

Issue

The Village water system relies on water storage tanks to provide water to all of its customers and to be used for fire protection. This type of system also puts extreme pressure on the water pumps and distribution system.

Solution

Variable frequency drives (VFDs) would allow the Village to run the water system without the water towers in emergencies. These VFDs also prolong the life of the pumps and watermains by slowly turning on and off the pumps when required.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term	$50,000	$50,000	$50,000	$150,000	$50,000	$200,000

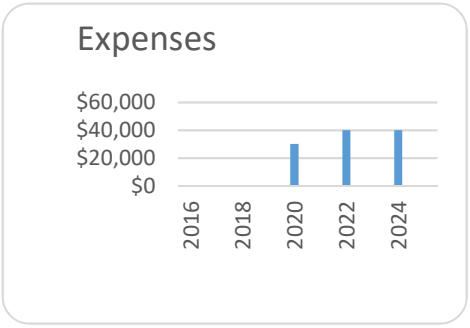
Water Pumping Station PLCs

Project Category	Water Production
Useful Life	20 Years
Project Type	Maintenance
User Department	PW
Coordinator	PW
Current Budget	$30,000.00
Initial Proposal Date	2020
Design Work	N/A
Project Work	2022
Reoccurance	Biannual
Fund	Water Facility
Account(s)	50-690

Location Water Distribution SItes

Issue The Village computer systems that run the water distribution stations are near the end of their life. If the system fails before replacement, the Village water distribution system will not provide water for customer use or for fire protection.

Solution Replacing the PLCs before failure will ensure that our customers and the Fire Department will have water without disruption.



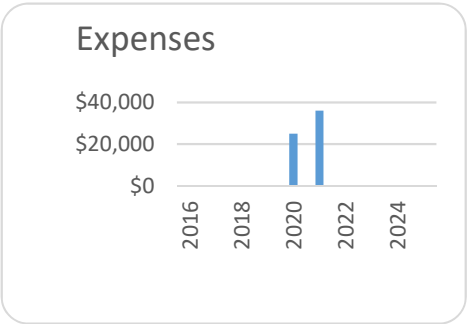
Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical					$30,000	$30,000
	2021	2022	2023	2024	2025	Short Term
Short Term	$0	$40,000	$0	$40,000	$0	$80,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term	$80,000	$95,000	$55,000	$230,000	$80,000	$310,000

Water Facility Risk & Resilience Assessment/Emergency Response Plan

Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2020
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location	Water Distribution Sites
Issue	The IEPA has mandated that by June 30, 2021, the Village perform a Risk & Resilience Assessment and prepare an Emergency Response Plan.
Solution	Completing this Assessment and Plan, will make the Village compliant with the IEPA's mandate. It will also assess the risk to the system from malevolent acts and natural hazards, assess resilience of infrastructure, assess monitoring practices, assess financial infrastructure, assess use, storage, or handling of various chemical by the system, and assess the operation and maintenance of the system.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical					$25,000	$25,000
	2021	2022	2023	2024	2025	Short Term
Short Term	$36,000					$36,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$36,000	$36,000

Water Master Plan

Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

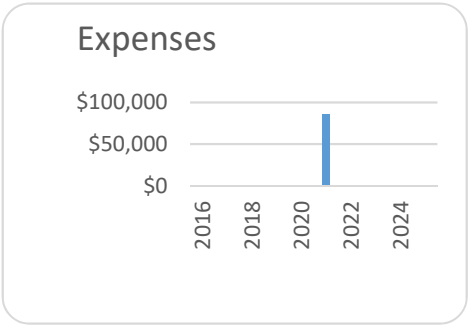
Location Water Distribution System

Issue

The Village has a water system that contains equipment that is dated and reaching the end of its useful life.

Solution

A Water Master Plan will provide the Village with a comprehensive assessment of the water systems current performance and possible future requirements. It will involve current system inventory, identify future need, prioritize projects, and provide a framework to work off of.



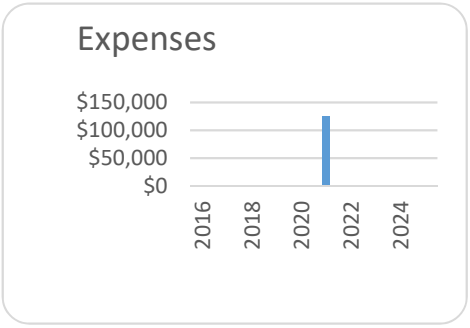
Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$85,000					$85,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$85,000	$85,000

Water System Model

Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location	Water Distribution System
Issue	The Village has a an aging distribution system that was not built for the current needs of its customers and Fire Department.
Solution	This study will assess the current demands on the distribution system and determine if the current system still meets demands, or if additional or larger watermains are necessary. This will also help the Village prioritize the replacement of its watermains.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$125,000					$125,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$125,000	$125,000

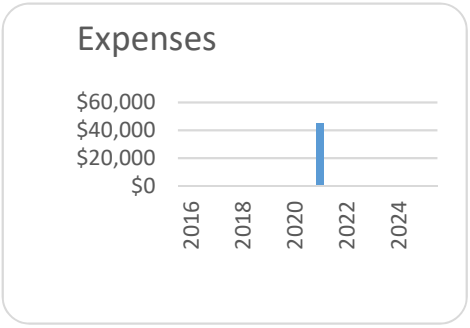
Water Softening/Lake Michigan Water Supply Study

Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location Water Distribution System

Issue The Village's water system contains hard water. While the water is safe to drink, it can cause customers to see a buildup of hard water on fixtures and surfaces. This was a common topic in the Comprehensive Plan Meetings.

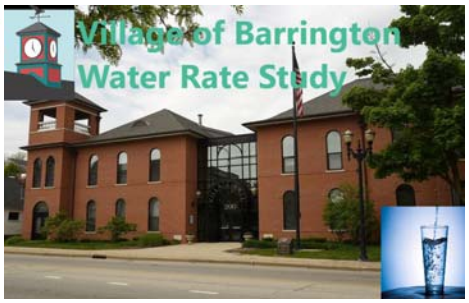
Solution Perform a study of the Village's current water system to evaluate the feasibility of installing water softening equipment or connecting to Lake Michigan water.



Financial Impact

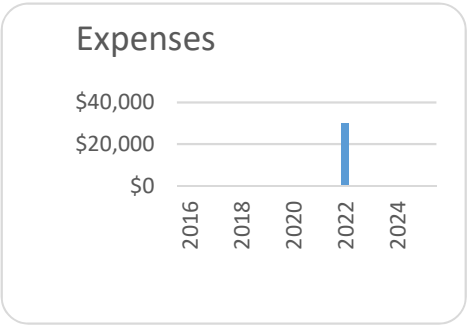
	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$45,000					$45,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$45,000	$45,000

Water Rate Study



Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2022
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location	Water System
Issue	The Village's water system is aging and is costing more to maintain each year. The current water rate is not sufficient to keep up with the increasing cost of maintenance and replacement.
Solution	Having a rate study performed will help balance the infrastructure needs, while supplying affordable water.



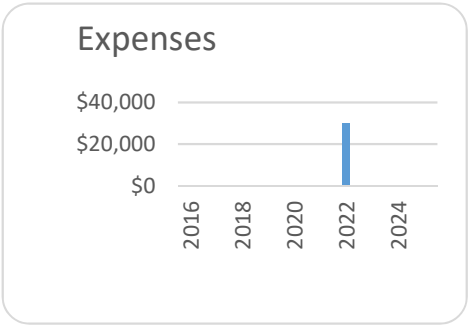
Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term		$30,000				$30,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$30,000	$30,000

Sustainable Source Water Assessment

Project Category	Water Production
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2022
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location	Water System
Issue	The 1996 Amendments to the Safe Drinking Water Act (SDWA) focused on pollution prevention to protect the safety of drinking water supplies and required states to create a Source Water Assessment Program (SWAP) for all public drinking water systems.
Solution	This study will identify land areas which provide water to each drinking water source, complete an inventory of existing and potential sources in those areas, and determine the susceptibility of each drinking water system to contamination.



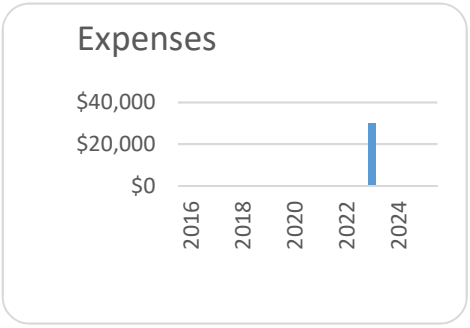
Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term		$30,000				$30,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$30,000	$30,000

Source Water Protection Plan

Project Category	Water Distribution
Useful Life	N/A
Project Type	Study
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2023
Design Work	N/A
Project Work	N/A
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location	Water System
Issue	Public water systems are responsible for meeting the requirements of the EPA and State drinking water programs under the Safe Drinking Water Act (SDWA). One of those requirements is a Source Water Protection Plan.
Solution	Perform a study to identify activities or projects needed to mitigate existing and future threats to source water quality and to improve the resilience of the water supply.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term			$30,000			$30,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$30,000	$30,000

Lead Water Service Line Replacement

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Grant
User Department	PW
Coordinator	PW
Current Budget	$10,000
Initial Proposal Date	Ongoing
Design Work	2021-2023
Project Work	2021-2023
Reoccurance	N/A
Fund	Water Facility
Account(s)	50-690

Location

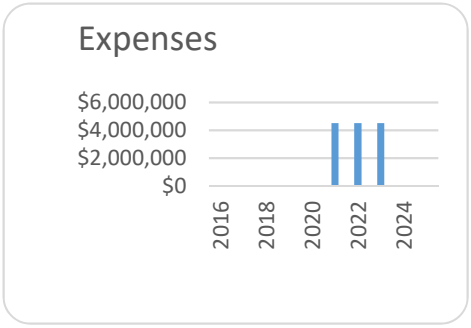
Main to meter

Issue

Lead water services provide drinking water to residential properties in various locations throughout the Village. These services no longer meet EPA regulations for pipe material.

Solution

The Village performed an inventory of potential lead service lines in the early 2000's. The next step is to replace all lead services with copper services to comply with current EPA requirements. There are approximately 900 lead services remaining in the Village. This project would be funded with State Revolving Funds Loans that provide up to 100% loan forgiveness.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000
	2021	**2022**	**2023**	**2024**	**2025**	**Short Term**
Short Term	$4,500,000	$4,500,000	$4,500,000			$13,500,000
	Year 6-10	**Year 11-15**	**Year 16-20**	**Long Term**	**Short Term**	**Total 20 Year**
Long Term				$0	$13,500,000	$13,500,000

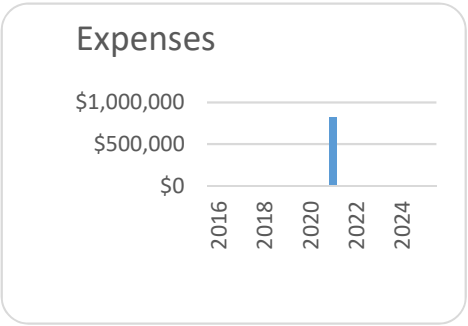
Hart Road & Main Street Watermain

Project Category	Water Production
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2020
Design Work	2019
Project Work	2021
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location Hart Road and Main Street (CN to Hager)

Issue The existing watermain has reached its useful life and is having frequent breaks.

Solution Replace the watermain with a new watermain.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$825,000					$825,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$825,000	$825,000

Iron Filtration System Replacement

Project Category	Water Production
Useful Life	20 years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2022
Design Work	2022
Project Work	2023
Reoccurance	20 years
Fund	Water Facility
Account(s)	50-690

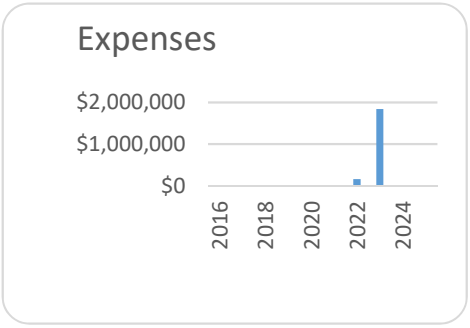
Location Bryant Ave Well House

Issue

The water produced from some of the Village wells have high iron content. The iron filtration tanks and system that remove the iron are starting to leak and not perform as efficiently leaving additional iron in the drinking water.

Solution

Making repairs to the current system is not cost effective and does not cover all of the issues. Installing a new iron filtration system will be more cost effective and produce water with less iron.



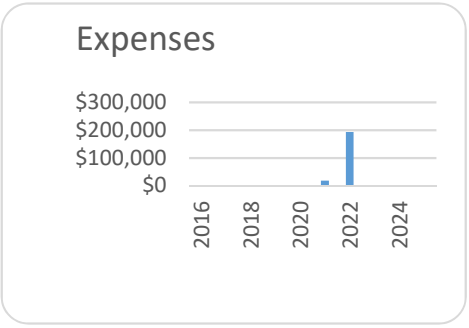
Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term		$160,000	$1,840,000			$2,000,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$2,000,000	$2,000,000

Lake Zurich Road Watermain Project

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	2021
Project Work	2022
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location	Lake Zurich Road (887 Bosworthfield Rd. to
Issue	The 8'' cast iron watermain has reached its useful life. This watermain is in close proximity of residential houses and when it breaks it creates a potential for major flooding to adjacent homes. Mature landscaping creates accessibility issues to make the repairs.
Solution	Replace 700 L.F. of watermain with new 8'' ductile iron pipe to a more accessible location. This will eliminate both the maintenance issues as well as the risk to the nearby houses.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$17,500	$192,500				$210,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$210,000	$210,000

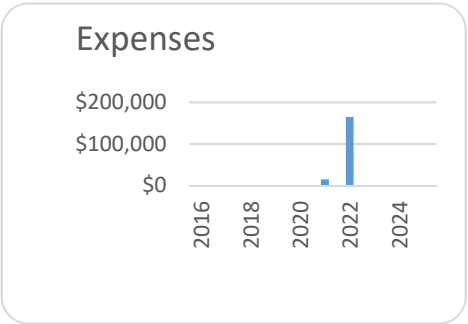
Roslyn Road Watermain Project

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2021
Design Work	2021
Project Work	2022
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location Roslyn Road (Hough St. to Prospect Ave.)

Issue This 6'' watermain has surpassed its useful life and numerous watermain breaks have occurred on this stretch of pipe over the last several years.

Solution Replace 650 L.F. of watermain with 8'' ductile iron pipe.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term	$15,000	$165,000				$180,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$180,000	$180,000

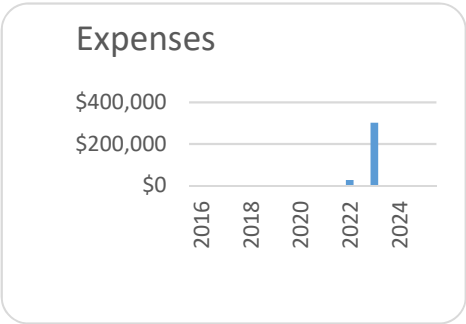
Lageschulte Street Watermain Project

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2022
Design Work	2022
Project Work	2023
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location Lageschulte St. (Lincoln Ave. to Main St.)

Issue This existing 6" watermain has reached its useful life experiencing frequent watermain breaks. It is also undersized for adequate fire protection for numerous businesses in this area.

Solution Replace 1,200 L.F. existing 6'' watermain with 8'' ductile iron pipe which will provide reliable service and adequate fire protection.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term		$27,500	$302,500			$330,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$330,000	$330,000

N. Cook Street Watermain Project

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2020
Design Work	2022
Project Work	2023
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location

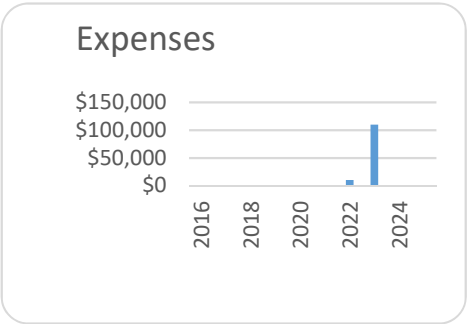
Cook St. (Main St. to Franklin St.)

Issue

The existing watermain has reached its useful life and is undersized for adequate fire protection in this area. Future redevelopment, which will result in increased capacity, is also highly likely.

Solution

Replace 350 L.F. of existing 6'' pipe with new 8'' ductile iron pipe to provide adequate fire protection and service reliability.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term		$10,000	$110,000			$120,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$120,000	$120,000

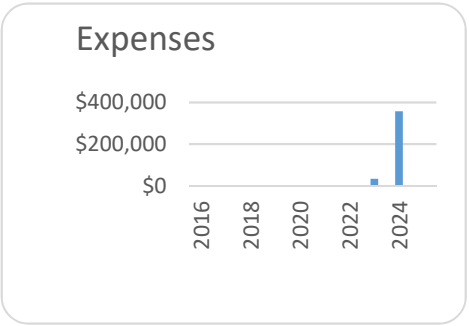
Lincoln Avenue Watermain Project

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2023
Design Work	2023
Project Work	2024
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

Location Lincoln Ave. (Hough St. to Dundee Ave.)

Issue The existing watermain has reached its useful life and currently has lead water services from the watermain to the b-box.

Solution Replace 1,350 L.F. of existing 6'' watermain with new 8'' ductile iron pipe and new copper water services from the watermain to the B-box for compliance with EPA regulations.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term			$32,500	$357,500		$390,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$390,000	$390,000

Hart Road and Route 14 Northwest Watermain Loop

Project Category	Water Distribution
Useful Life	50 Years
Project Type	Improvement
User Department	PW
Coordinator	PW
Current Budget	N/A
Initial Proposal Date	2024
Design Work	2024
Project Work	2025
Reoccurance	50 Years
Fund	Watermain Projects
Account(s)	50-680

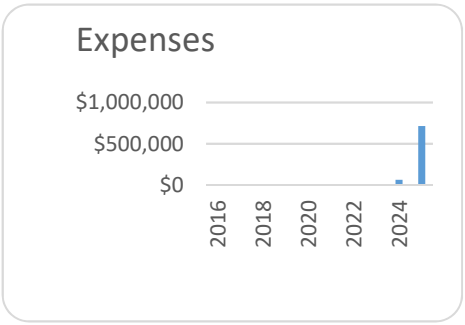
Location Taylor St. to 550 West Northwest Hwy.

Issue

The watermain distribution system is a dead end past 600 W. Northwest Hwy (Wickstrom Ford). Any type of watermain shut down (W. of Wickstrom Ford) disrupts water service to Wickstrom Dodge, Foundry Mall, Taylor St. and Paganica subdivision (Barrington Hills). This creates fire protection issues along with business closures.

Solution

Install a new watermain on E. Taylor Rd. and install 2,700 L.F. of 8'' ductile iron pipe from 550 W. Northwest Hwy. to Hart and Taylor St. This would create a watermain loop to provide water reliability and fire protection without disruption.



Financial Impact

	2016	2017	2018	2019	2020	Historical
Historical						$0
	2021	2022	2023	2024	2025	Short Term
Short Term				$65,000	$715,000	$780,000
	Year 6-10	Year 11-15	Year 16-20	Long Term	Short Term	Total 20 Year
Long Term				$0	$780,000	$780,000