

Capital Planning Water and Wastewater

City Council Planning and Development Committee Meeting

October 19, 2026

Wastewater System

- Wastewater Treatment Plant
- Approximately 200 miles of gravity sewer pipe, sizes range 4" to 102"
- 12 miles of sewer force main, sizes range 4" to 42"
- 36 sewer pumping stations
- 5,041 sewer manholes
- 3 sewer siphon pipes under the Merrimack River at three locations, sizes range 18" to 30"

Sources: Weston & Sampson (2025) and Woodard & Curran (2022).

Water System

- Water Treatment Plant – Kenoza Lake
- Over 270 miles of water distribution piping, sizes range 2" to 36"
- Approximately 9.25 miles of raw water transmission main, 16" to 24"
- Approximately 1,750 fire hydrants
- 5,250 valves, sizes range 2" to 36"
- 12 pumping stations identified in the 2010 Master Plan (3 raw water and 9 booster stations)
- 3 Water storage tanks - 3, 4, and 10 million gallons
- 4 Water supply reservoirs with approximately 6,707 acres of watershed
- 7 dams ranging from low to high hazard classifications

Stormwater System

- Approximately 95 miles of stormwater drainage piping, ranging from 6" to 60"
- 2,773 stormwater manholes
- More than 350 stormwater outfalls
- Catch basins and culverts throughout the City (quantities to be confirmed).

Source: Woodard & Curran, 2022 Asset Management Plan – Water & Wastewater.

Documents - Just to name a few!

Phase 2 Asset Management Plan – Water & Wastewater	2024
Phase 1 Asset Management Plan – Water & Wastewater	2022
Potable Water Distribution System Hydraulic Modeling	2024
Integrated Final Combined Sewer Overflow Long-Term Control Plan	2017
Comprehensive Plant Evaluation Report	2017
2010 Water Master Plan	2010
WWTF and SMSPS Evaluation Report	2018
5-Year CCTV Program Reports	Ongoing

Ongoing Projects

Project	Project Cost- Water	Project Cost - Wastewater
Phase 1 Locke St CSO Separation	\$3.2M	\$12.9M
Phase 2 Locke St CSO Separation	\$3.9M	\$14.7M
Five-Year CCTV Sewer Inspection Program	-	\$330K per year
Merrimack River Water Supply Well	\$26.6M	-
South Mill St Pump Station and Sewer Force Main	-	\$7.6M – Bypass Pumping & Header \$18.6M – Force Main & Site Piping
Drought Activities	TBD	-
WTP Sand Filters	\$2M	-
Carbon Filters	\$300K per year	-
Total:	\$37M	\$58M

Completed Projects

Project	Project Cost- W	Project Cost - WW	Year Completed
WTP Upgrade	\$41.2M	-	2022
Phase 1 Water and Sewer System Improvements	\$3.4M	\$7M	2020
Phase 2 Water and Sewer System Improvements	\$8.6M	\$3M	2023
Phase 3 Water and Sewer System Improvements	\$7.4M	\$9.5M	2025
Sewer Pumping Stations	-	\$2.7M	2026
Wastewater Sludge Dewatering	-	\$8.7M	2021
Phase 1 WWTP Odor Control	-	\$2.2M	2017
Phase 2 WWTP Odor Control	-	\$7.1M	2018
Merrimack Street Water, Sewer, and Drain Improvements	\$1.4M	\$1.1M	2026
Total:	\$62M	\$41.3M	

Over the past decade, the City of Haverhill has completed **over \$100 million** in water and wastewater infrastructure improvements.

Aging Infrastructure: A Regional Challenge

- Much of New England's water and wastewater infrastructure was built or expanded in the 1970s.
- Systems across the region are reaching similar ages and facing many of the same repair and replacement needs.
- Competition for contractors, specialized equipment, and funding adds pressure to project costs and schedules.

Planning for the Unexpected

- Haverhill has long-term capital plans, engineering studies, and ongoing infrastructure improvement programs.
- A major failure or drought can require immediate work before a scheduled capital project is ready to begin.
- Emergency response can change priorities, timing, and available funding — while planned work still needs to continue.

The question is not whether there is a plan, but how we adapt when conditions change.

Process

- Inventory and data review
 - Review and update GIS data for all water, wastewater, and stormwater assets
- Condition and performance assessment
 - Evaluate age, material, inspection data, and operational history
- Risk scoring - likelihood of failure and consequence of failure
 - Determine failure likelihood and consequence using standardized criteria
- Prioritize assets
 - Categorize segments into action levels from Immediate Action to Sample Assessment
- Plan Investments
 - Develop Priority and Secondary Asset Lists to guide the CIP and funding needs
- Implementation and continuous improvement
 - Develop Priority and Secondary Asset Lists to guide the CIP and funding needs

Regulations and Consent Decree

While the City continues to plan and prioritize infrastructure improvements, Consent Decree obligations and regulatory mandates require specific projects to be completed within established timelines.

Water Supply & Drought Preparedness

- **Asset Management Planning** – Assessed aging water infrastructure to identify risks and prioritize improvements.
- **Hydraulic Modeling** – Evaluated distribution system capacity, deficiencies, and future infrastructure needs.
- **Leak Detection** – Ongoing efforts to identify water loss, prioritize repairs, and conserve supply.
- **Water Main Replacement** – Continued rehabilitation and replacement of aging infrastructure to reduce breaks and improve reliability.
- **Pumping Station Improvements** – Upgrades to improve system pressure, capacity, and reliability.
- **Methuen Interconnection** – Pursuing 1 MGD of emergency water supply; delayed by MassDEP review of treatment chemical compatibility.
- **Merrimack River Collector Well (RWC)** – Long-planned additional water source delayed by rising costs, funding, loan authorization, and City Council's rejection of land acquisition.
- **Drought Management** – Implemented water restrictions, supply monitoring, and conservation measures.
- **Capital Improvement Planning** – Continued long-term planning and investment in water infrastructure.

The Challenge:

The City has identified infrastructure deficiencies and planned improvements. However, aging systems, drought conditions, rising costs, and regulatory and funding delays can accelerate the need for projects before they can be completed.

Wastewater Infrastructure & Emergency Preparedness

- **Asset Management** – Assess aging infrastructure and prioritize high-risk assets.
- **CCTV Inspections** – Five-year sewer inspection program to identify potential failures.
- **Sewer Rehabilitation** – Ongoing repairs and replacements to improve reliability.
- **Pumping Stations** – Continued upgrades across 36 pumping stations.
- **Force Main Replacement** – Previously included in the CIP; unexpected failure accelerated the project.
- **CSO Separation** – Ongoing improvements to reduce overflows and meet Consent Decree requirements.
- **Treatment Plant Upgrades** – Planned improvements to aging facilities.
- **Capital Planning** – Long-term investments balanced with funding and regulatory obligations.

The Challenge:

The force main was already identified for replacement, but failed ahead of schedule, requiring immediate investment and reprioritization of planned projects.

Planning was in place, but aging infrastructure does not always follow the planned replacement schedule.

Water Five-Year CIP – FY27 Budget

Water Capital Project List					
Project	FY27	FY28	FY29	FY30	FY31
Water Supply					
Water Supply Expenditures	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Merrimack River - Geophysical, Pump Test, & Permitting	\$ 585,900	\$ 469,200	\$ 97,300		
Merrimack River - Well Construction	\$ 4,100,000	\$ 3,900,000			
Merrimack River - Electrical/Piping Building Design			\$ 375,000	\$ 20,000	
Merrimack River - Electrical/Piping Building Construction				\$ 2,500,000	\$ 3,500,000
Merrimack River - Transmission Main Design	\$ 7,500	\$ 7,500			
Merrimack River - Transmission Main Construction		\$ 4,550,000	\$ 4,450,000		
Merrimack River - Engineering CA		\$ 435,000	\$ 465,000	\$ 255,000	\$ 345,000
Merrimack River - Property Acquisition					
Merrimack River - Property Acquisition - Additional	\$ 800,000				
Water Treatment					
Granular Activated Carbon Change	\$ 320,000	\$ 320,000	\$ 320,000	\$ 320,000	\$ 320,000
WTP Emergency Capital Repair	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
WTP Emergency Capital Repair		\$ 250,000			
Tanks - Design & Construction Administration			\$ 1,000,000		
Tanks - Interior Inspection & Cleaning				\$ 100,000	
Tanks - Water Quality Monitoring Station				\$ 750,000	
Pumping Stations					
Pump station equipment replacement	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Broadway Booster Replacement Design	\$ 132,000				
Broadway Booster Replacement Construction		\$ 2,700,000			
Scotland Heights Replacement Design	\$ 132,000				
Scotland Heights Replacement Construction			\$ 2,800,000		
Water Supply Dams					
Millvale Dam Rehabilitation				\$ 2,000,000	
Kenoza Lake South Embankment		\$ 1,000,000			
Transmission and Distribution					
Clean/Line 20"				\$ 5,100,000	
Locke St Area - Rehab/Replace Aged Mains Phase 1	\$ 2,608,284				
Locke St Area - Rehab/Replace Aged Mains Phase 2	\$ 3,900,000				
Locke St Area - Rehab/Replace Aged Mains Phase 3					\$ 800,000
Water Infrastructure Expense	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000
Water Main Repair/Replace - Paving CIP		\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Meters					
Small Meter Replacement		\$ 80,000	\$ 82,500	\$ 82,500	\$ 85,000
Large Meter Replacement		\$ 90,000	\$ 92,500	\$ 92,500	\$ 95,000
Fixed network for water meters	\$ 16,000	\$ 17,000	\$ 18,000	\$ 19,000	\$ 19,000
Buildings					
Water Maint Garage - Repairs and Maintenance	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Water Maint Garage - Window Replacement			\$ 100,000		
Vehicles and Equipment					
Utility Truck Replacement	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
W-8 plow truck replacement					
W-20 Replacement 10 wheel dump			\$ 200,000		
W-27 Replacement 6-wheeled dump		\$ 180,000			
Backhoe Replacement		\$ 250,000			
Misc. Equipment	\$ 25,000		\$ 25,000		\$ 25,000
Forklift				\$ 60,000	
Service Vans (2012 replacement, 1 new)	\$ 80,000		\$ 80,000		
Kubota MX6000 Tractor, Loader, & Flail Mower	\$ 85,000				
Zero Turn Mower - 72"	\$ 20,000				
Computer Hardware and Software					
Integrated IP Telephone System	\$ 25,000				
Stratus fault tolerant server - lease		\$ 150,000			
GIS Aerial		\$ 30,000			
Annual Capital	\$ 851,000	\$ 1,397,000	\$ 1,198,000	\$ 954,000	\$ 824,000
SRF Financing	\$ -	\$ -	\$ -	\$ 5,100,000	\$ -
Debt Financing	\$ 8,283,684	\$ 13,811,700	\$ 9,687,300	\$ 6,025,000	\$ 5,145,000
Capital Reserves	\$ -	\$ -	\$ -	\$ -	\$ -

Wastewater Five-Year CIP – FY27 Budget

Wastewater Capital Project List					
Project	FY27	FY28	FY29	FY30	FY31
Wastewater Treatment Plant					
Replace Bio filter media		\$ 130,000			\$ 130,000
WWTP Upgrade and SMSPS - Design	\$ 1,500,000				
WWTP Upgrade and SMSPS - Design (ARPA)					
WWTP Upgrade and SMSPS - Construction			\$ 41,280,000		
WWTP Add Alt Scope - Prelimin design					
WWTP Add Alt Scope - Final design					
WWTP Add Alt Scope - Construction			\$ 30,000,000		
Rebuild Primary Tank Chains and flights	\$ 275,000				
Valve and piping replacement	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
Miscellaneous equipment	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Rebuild grit classifiers		\$ 50,000			\$ 50,000
Building					
Roof Replacement on the Process Building	\$ 1,000,000				
Repair/Replace Entry Doors	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	
Miscellaneous Bldg Repairs/Renovation	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
South Mill St Pumping Station					
Exterior force main				\$ 3,000,000	
Pump rehab (included in WWTP updgarge)					
Replace/repair VFD's (12 year life)		\$ 400,000			
Replace Carbon Media		\$ 30,000			
Catanary Screen Rehab	\$ 150,000				
Miscellaneous	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
CSO Control Plan					
Locke Street Area Improvements (W-P Schedule)					
CSO Locke St Phase 1 - Design					
CSO Locke St Phase 1 -Construction	\$ 9,247,300				
CSO Locke St Phase 1 -Construction	\$ 3,639,812				
CSO Locke St Phase 1 - Post-Construction Eval		\$ 120,000			
CSO Locke St Phase 2 - Design					
CSO Locke St Phase 2 - Construction		\$ 14,667,000			
CSO Locke St Phase 2 - Post-Construction Eval			\$ 120,000		
CSO Locke St Phase 3 - Design			\$ 1,320,000		
CSO Locke St Phase 3 - Construction					\$ 16,200,000
CSO Locke St Phase 3 - Post-Construction Eval					
Wastewater Collection System					
CMOM program staffing or outsourcing	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
WW Infrastructure	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Sewer Repair and Rehab (From 5-Yr CCTV Program)	\$ 5,000,000			\$ 5,000,000	\$ 1,300,000
Pumping Stations					
Coffin, Danielle, Alvanos, Hanover PS Upgrades (Design)	\$ 215,000				
Coffin, Danielle, Alvanos, Hanover PS Upgrades (Construct)	\$ 2,485,000				
Golden Hill, Clydedale, Hyatt Ave. (Design)			\$ 236,500		
Golden Hill, Clydedale, Hyatt Ave. (Construction)			\$ 2,733,500		
Misc. Lift Station Improvements	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Generator Replacement		\$ 30,000			
Vehicles & Equipment					
WWTP Utility Vehicle	\$ 75,000				
Crossover Utility Vehicle	\$ 25,000				
Service trucks	\$ -	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Computer Hardware Software					
Stratus server for WWTP		\$ 75,000	\$ 75,000		
Stratus server for NDS, GIS, etc.		\$ 30,000			
Annual Capital	\$ 980,000	\$ 1,420,000	\$ 750,000	\$ 555,000	\$ 710,000
SRF Financing	\$ 16,732,300	\$ 14,667,000	\$ 44,013,500	\$ 5,000,000	\$ 17,500,000
Debt Financing	\$ 6,854,812	\$ 500,000	\$ 32,056,500	\$ 3,500,000	\$ 500,000
Capital Reserves	\$ -	\$ -	\$ -	\$ -	\$ -

Wastewater Five-Year Rate Forecast – FY27 Budget

5-Year Forecast - Summary								
			Budget	Mayor				
		Budget	Request	Allowed	Forecast	Forecast	Forecast	Forecast
		FY26	FY27	FY27	FY28	FY29	FY30	FY31
User rate		\$7.95	\$8.75	\$8.27	\$9.42	\$10.78	\$10.96	\$11.55
Percent increase		3.1%	10.1%	4.0%	13.9%	14.5%	1.7%	5.4%
Total Revenue		\$ 16,348,592	\$ 17,557,117	\$ 16,669,979	\$ 19,498,138	\$ 22,211,357	\$ 22,663,993	\$ 23,919,625
Total Expenditures		\$ 16,809,454	\$ 17,556,807	\$ 17,421,362	\$ 19,476,242	\$ 22,185,793	\$ 22,659,848	\$ 23,914,015
Surplus/(Deficit)		\$ (460,862)	\$ 310	\$ (751,383)	\$ 21,896	\$ 25,564	\$ 4,145	\$ 5,610
Year End Retained Earnings		\$ 6,553,883	\$ 6,554,192	\$ 4,702,499	\$ 4,724,395	\$ 4,749,959	\$ 4,754,103	\$ 4,759,713
Min. Retained Earnings (15%)		\$ 2,521,418	\$ 2,633,521	\$ 2,613,204	\$ 2,921,436	\$ 3,327,869	\$ 3,398,977	\$ 3,587,102
Impact to Rate Payer								
Ave. Residential Bill		\$594	\$654	\$618	\$704	\$806	\$819	\$864
Ave. Annual Increase		\$18	\$60	\$24	\$50	\$102	\$14	\$44
Average residential bill is based on usage of 60 gallons per person per day and 2.56 persons per household. This methodology is consistent with MWRA's Appendix C of their rate survey document.								

Water Five-Year Rate Forecast – FY27 Budget

5-Year Forecast - Summary							
	Budget FY26	Budget Request FY27	Mayor Allowed FY27	Forecast FY28	Forecast FY29	Forecast FY30	Forecast FY31
User rate	\$5.93	\$6.83	\$6.52	\$7.34	\$7.81	\$8.00	\$8.13
Percent Change	3.0%	15.2%	9.9%	7.5%	6.4%	2.4%	1.6%
Total Revenue	\$ 14,148,523	\$ 15,119,293	\$ 14,472,609	\$17,080,577	\$18,526,748	\$19,025,886	\$ 19,409,560
Total Expenditures	\$ 14,146,880	\$ 15,115,294	\$ 15,040,416	\$ 17,118,983	\$ 18,564,280	\$ 19,062,327	\$ 19,450,710
Surplus/(Deficit)	\$ 1,643	\$ 3,999	\$ (567,807)	\$ (38,406)	\$ (37,532)	\$ (36,441)	\$ (41,150)
Year End Retained Earnings	\$ 173,977	\$ 1,848,174	\$ 1,280,367	\$ 1,809,768	\$ 1,772,236	\$ 1,735,796	\$ 1,694,646
Min. Retained Earnings (15%)	\$ 2,122,032	\$ 2,267,294	\$ 2,256,062	\$ 2,567,847	\$ 2,784,642	\$ 2,859,349	\$ 2,917,607

Average Impact to Rate Payer							
Ave. Household Bill	\$443	\$510	\$487	\$549	\$584	\$598	\$608
Ave. Annual Increase	\$13	\$67	\$44	\$39	\$35	\$14	\$10

Average residential bill is based on usage of 60 gallons per person per day and 2.56 persons per household. This methodology is consistent with MWRA's Annual Water and Sewer Rate Survey.

Questions?