



FY24 Through FY28

Capital Improvement Program

Engineering, Highway and Stormwater Requests

AYER DEPARTMENT OF PUBLIC WORKS

PRESENTED

DECEMBER 1, 2022

DPW Capital Improvement Plan Objectives

The Ayer DPW continues to be committed to the ongoing maintenance and repair of capital assets, recognizing the critical value of civic infrastructure to the economic, aesthetic and functional viability of the Town.

The Five-Year Capital Improvement Plan includes projects that continue major rehabilitation of Town assets and new investments in capital infrastructure.

Capital Project Criteria

Proposed Ayer DPW Capital Improvement Program is based on:

- Regulatory Requirements
- Public Safety and Public Health
- Maintaining Level of Service (Asset Management Based Approach)
- Reducing Operations Costs
- Integration With Other Town Projects
- Implementing resiliency and sustainability in infrastructure
- Grant Funding Opportunities
- Promoting Economic Development
- **IMPROVING THE COMMUNITY**

DPW Capital Challenges

- Aging Infrastructure

- Reliable water supply is critical to our community
- Water pipes 120 years old
- Sewer pipes 70 years old
- Drainage pipes are various ages, materials and sizes
- Bridges and culverts failing
- WWTP built in 1982
- DPW Highway Garage built in 1970
- Main Street was reconstructed in 1985

- Road & sidewalk improvements funded with Chapter 90, annual capital budget and other grants

- American Rescue Plan Act (ARPA) and Infrastructure Investment and Jobs Act are potential opportunities for Ayer

DPW Capital Challenges

- PFAS Contamination of water supply has had a significant impact on the DPW capital and operating budgets as well as staff time
- Wastewater Discharge Permit issued by EPA with New Limits and Collection System Requirements – effective November 1, 2022
 - WWTP Upgrades
 - Collection System and I/I Improvements
- 2018 Stormwater Permit was issued by EPA
 - Outfall Improvements
 - Drainage Infrastructure
- DPW applies for grants to reduce costs
- DPW performs in-house engineering and value engineering to reduce costs & save money

DPW Capital Challenges

- Current economic conditions
 - Inflation / Cost Increases
 - Supply Chain
 - Difficulty Hiring

American Rescue Plan Act (ARPA)

Potential uses of ARPA funds:

- Supporting public health expenditures
- Addressing negative economic impacts
- Premium pay for essential workers
- Water, wastewater, and broadband infrastructure
- Replace lost public sector revenue



Total Ayer ARPA Funds = \$2,449,840*

Previously allocated:

Up to \$600,000 – Spectacle Pond Transmission Water Main Replacement
Up to \$700,000 – Westford Road Sewer Replacement

*Must be committed by December 31, 2024 and spent by December 31, 2026

Infrastructure Investment and Jobs Act (IIJA)

MA \$9.5B



How will the money be distributed?

1. NON-COMPETITIVE FUNDING ALLOCATION PROCESSES

- States receive money based on formulas (population, etc.) and make decisions about which projects deserve funding.
- Specifically for Water, Wastewater, Stormwater – 10-30% allocated through SRF process by the State. 50% is set-aside for rural and financially distressed communities.

2. EARMARKS AND COMPETITIVE GRANT PROCESSES

Infrastructure Investment and Jobs Act (IIJA)



Which projects will qualify for funding?

- Roads, Bridges, & Major Projects: \$110B
- Passenger and Freight Rail: \$66B
- Safety and Research: \$11B
- Public Transit: \$39.2B
- Broadband: \$65B
- Airports: \$25B
- Ports and Waterways: \$17.4B
- Water/Wastewater/Stormwater Infrastructure: \$54B
- Power and Grid: \$65B
- Resiliency: \$46B
- Low-Carbon and Zero-Emission School Buses & Ferries: \$7.5B
- Electric Vehicle Charging: \$7.5B
- Reconnecting Communities: \$1B
- Addressing Legacy Pollution: \$21B

What Did We Do Last Year?

- Replaced poor condition water mains on Birch and McDowell Streets
- Completed Stormwater Asset Management Plan
- Completed East Main Street Reconstruction (MassDOT)
- Replaced culvert on Nashua Street, installed bioretention cell on Oak Ridge Drive
- Replaced sidewalks, curbing and repaved portions of Central Ave, Pleasant Street, School Street, and Page Street
- Completed and Activated Spectacle Pond WTP PFAS Treatment
- Continued construction of Phase 3 Wastewater Treatment Plant upgrade
- Designed and replaced poor condition sewer main on Westford Road
- Designed/bid Spec Pond Water Transmission Main Replacement
- Designing Wright Way Pump Station upgrades

What Did We Do Last Year?

- Beginning implementation of Tree Management Plan
- Completed Park Street Design Grant with AOECD
- Designing Main Street TIP Project
- Began construction of MassWorks West Main Street Reconstruction
- Repaired DPW Highway Maintenance Garage roof
- Received proposals for Barnum Road Bridge repair design
- Procured and received valves for Central Ave and Main Pump Stations
- Began operations of Woodlawn Cemetery, conducted 8 burials and 3 lot sales
- Assisted Parks Department with Kiddie Junction Playground replacement
- Assisted Conservation Commission with Flannagan Pond Public Access Study
- Installed Streetlights in Pingry Hill neighborhood

Ongoing Capital

TOWN OF AYER CAPITAL BUDGET STATUS - November 2022			
DEPARTMENT OF PUBLIC WORKS			
Division	Item Requested	Amount	Status
Administration	Main St & Columbia Street Design Engineering	\$200,000	Design justification workbook submitted. Public input for cross-section sought, more public involvement as progress.
Administration	Admin Vehicle	\$35,000	Ordered then order not fulfilled, seeking new order
Highway	Road Paving	\$200,000	Combined with Chapter 90 - Central Ave (portion), Pleasant St (portion), School St, Page Street, have \$50,000 allocated toward West Main MassWorks
Highway	Barnum Rd Bridge Repair Engineering/Permitting	\$100,000	Reviewing Design Proposals submitted by 3 engineering firms
Highway	West Main St Bridge	\$1,200,000	Project was bid and low bid was \$2.25M. DPW is evaluating alternatives
Highway	1-Ton Pickup w/ Plow	\$60,000	Purchased, await arrival
Highway	Sandy Pond Road Sidewalk Design	\$25,000	Hired consultant, design in progress
Highway	Garage Roof Repair	\$20,000	Completed
Stormwater	Stormwater Utility Implementation	\$25,000	Will begin with new Town Engineer
Stormwater	Stormwater Asset / Master Plan Grant	\$40,000	Final Master Plan complete, presentation to Select Board scheduled for December 6, 2022
Stormwater	Biofiltration/Outfall Improvements	\$50,000	Construction to begin this Fall or next Spring on outfall on Groton Harvard Road
Water	Spec Pond PFAS Treatment	\$6,200,000	Complete
Water	Annual Water Main Replacements	\$300,000	Completed water main replacements for Birch, McDowell, portion of Westford Road
Water	Filter Media Replacement	\$350,000	Preparing for Bid now that PFAS construction is complete and out of the way
Water	Water Utility Truck w/ Plow	\$60,000	Complete
Water	Water Meter Reader Vehicle	\$35,000	Complete
Water	New Well Source Approval	\$120,000	Received proposals, reviewing for next steps
Wastewater	Inflow/ Infiltration Repairs	\$750,000	Completed Westford Road sewer replacement. Apply remainder toward FY24 I/I
Wastewater	WWTP Upgrades	\$3,800,000	under construction
Wastewater	Central Ave / Main Pumping Station Vale and Piping Upgrades	\$100,000	Received valves, procuring Contractor for install
Water/Wastewater	Portable Generator	\$150,000	Procurement underway

DPW General Fund Capital Plan Engineering Division

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	DPW Security Gate Upgrade	\$20,000				
Yearly Totals		\$20,000	\$0	\$0	\$0	\$0

DPW Security Gate Upgrade



DPW Security Gate Upgrade





DPW Security Gate Upgrade

- Current gate requires manual usage, safety issues
- Used by all Departments who access fuel station (DPW, Police, Fire, Building, Facilities, Ayer Housing Authority, Parks)
- Industry standard to have automated secure entrance with entrant tracking off-business hours
- Price
 - My initial contact with a vendor indicated to carry \$20,000 for the gate given the DPWs in-kind services (trenching/backfill). However, I have subsequently learned of a formal price proposal obtained in 2019 for \$57,750 which included the Town performing in-kind services.

DPW General Fund Capital Plan - Highway Division

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Road Paving	\$85,000	\$85,000	\$90,000	\$90,000	\$90,000
2	Salt storage facility		\$400,000			
3	Highway Garage Renovate Existing FY25 Design, FY26 Construction		\$400,000	\$4,700,000		
4	6-Wheel Dump Truck w/plow and spreader		\$275,000			
5	W Main St/Shirley Street Bridge Replacement	\$2,500,000				
6	Barnum Rd Bridge Repairs (Construction)		\$350,000			
Yearly Totals		\$2,585,000	\$1,510,000	\$4,790,000	\$90,000	\$90,000

Road Paving \$85,000

Road Paving funding is currently from MassDOT Chapter 90 and Town Capital Appropriation

Annual Chapt 90 amount = \$240K

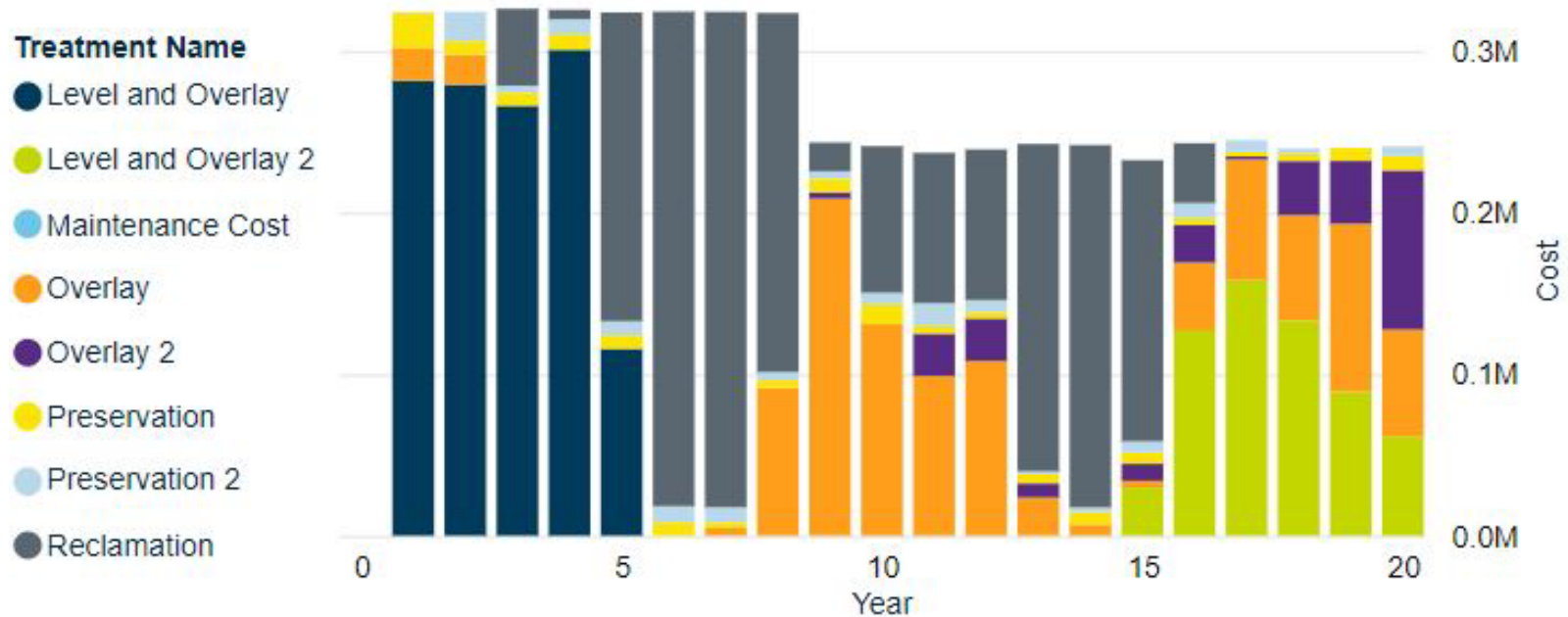
Ayer Pavement Management Model (Predictor)

- Town wide PCI = 72 (out of 100)
- Predictor Pavement Model indicates a budget of \$325,000 will raise PCI to 80 (acceptable) by 2029 and then likely maintain via Chapter 90

Additional funding will allow us to keep up with the Town needs

Paving/preservation projects include Third St, West Main Street, Bennetts Crossing neighborhood, Cambridge Street

Road Paving \$85,000



West Main St Bridge \$2.5M

West Main St Bridge was bid and was over budget (Oct 2020)

- Low bid = \$2,547,000
- Including engineering and contingencies total funding needed = \$3,170,000
- Funding available \approx \$1,000,000

Options Under Evaluation

- Alternative presumed at this time: Town appropriate additional funding, rebid as designed, reapply for Small Bridge Grant (\$500k)
- Meeting scheduled for December 14th with stakeholders (DPW, Police, Fire, MassDOT, TM office, Bridge Engineer) to finalize recommendation for both bridges
- At the same time, the Town continues to seek infrastructure grant funding
 - MassDOT reimbursement?
 - New small bridge grant application
 - BIL – so far nothing applicable
 - MassWorks, TIP, Other

DPW General Fund Capital Plan

Stormwater Capital Plan

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Stormwater Biofiltration/Outfall Improvements		\$50,000		\$50,000	
2	Stormwater Culvert Improvements	\$260,000	\$1,300,000	\$1,300,000	\$1,300,000	\$1,300,000
3	Stormwater Storm Drain Upgrades	\$200,000	\$230,000	\$230,000	\$230,000	\$230,000
4	Upper Flannagan Pond Dam Repairs Phase 2- Dam Design & Permitting Phase 3 - Dam Modifications	\$50,000	\$300,000			
5	Balch Pond Dam Repairs Phase 2- Dam Design & Permitting Phase 3 - Dam Modifications			\$50,000	\$300,000	
Yearly Totals		\$510,000	\$1,880,000	\$1,580,000	\$1,880,000	\$1,530,000

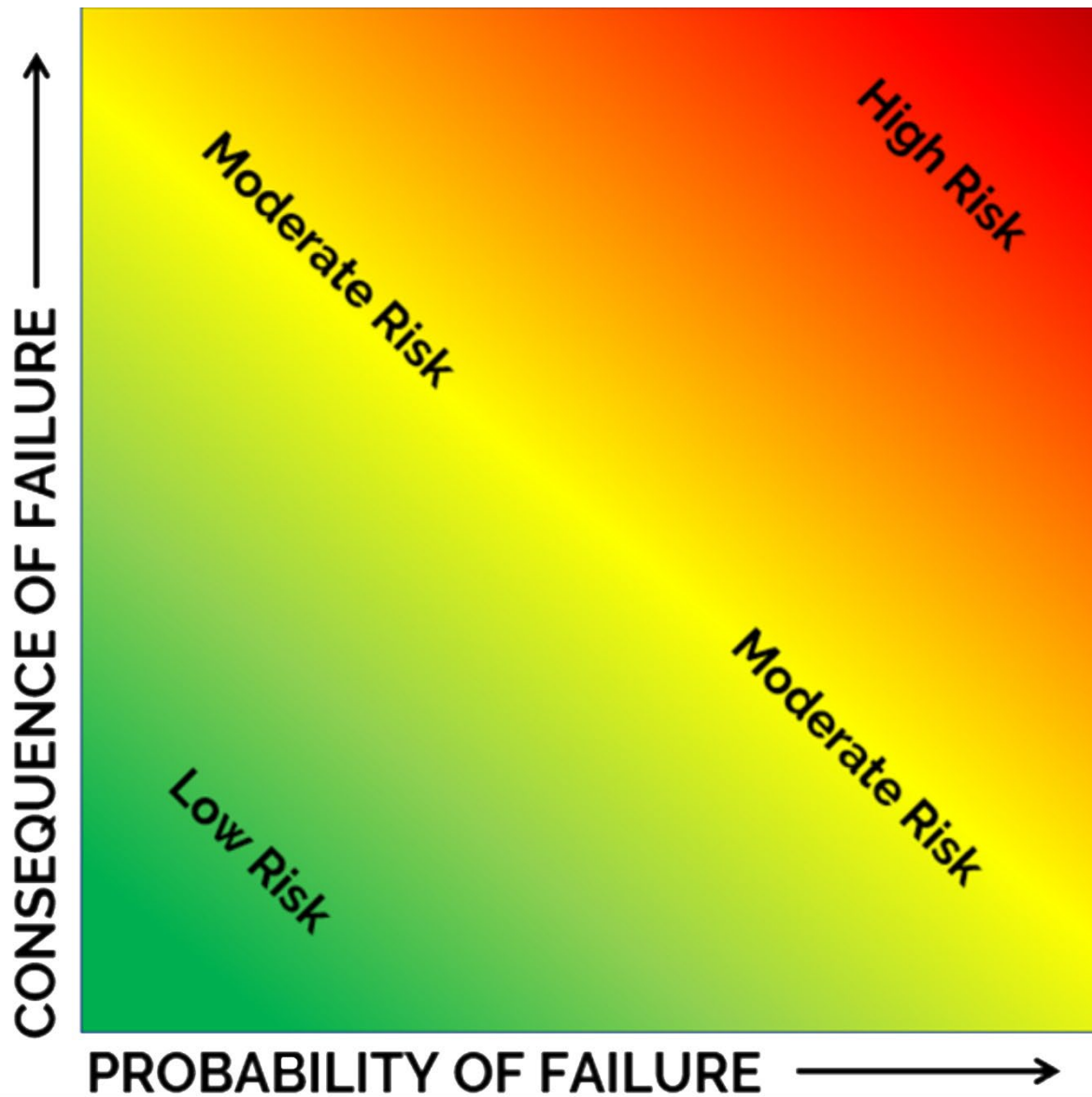
Stormwater Capital Concerns

- Stormwater Asset Management Plan Completed November 2022
 - MVP High Priority Item
 - Grant funded
 - Data-driven process to maintain stormwater utility
 - Proactive vs reactive
- Process included desktop review, limited/select field reconnaissance, asset management ranking and analysis
- Stormwater records were poor, now we have a good handle on what we have and how to deal with it

Stormwater Capital Concerns

- Several High Priority replacements (high criticality)
- Begin with design/permitting – seek outside funding opportunities (BIL)
- Prices are based on the Stormwater Asset Management Plan OPCC developed by consultant

Criticality



Criticality



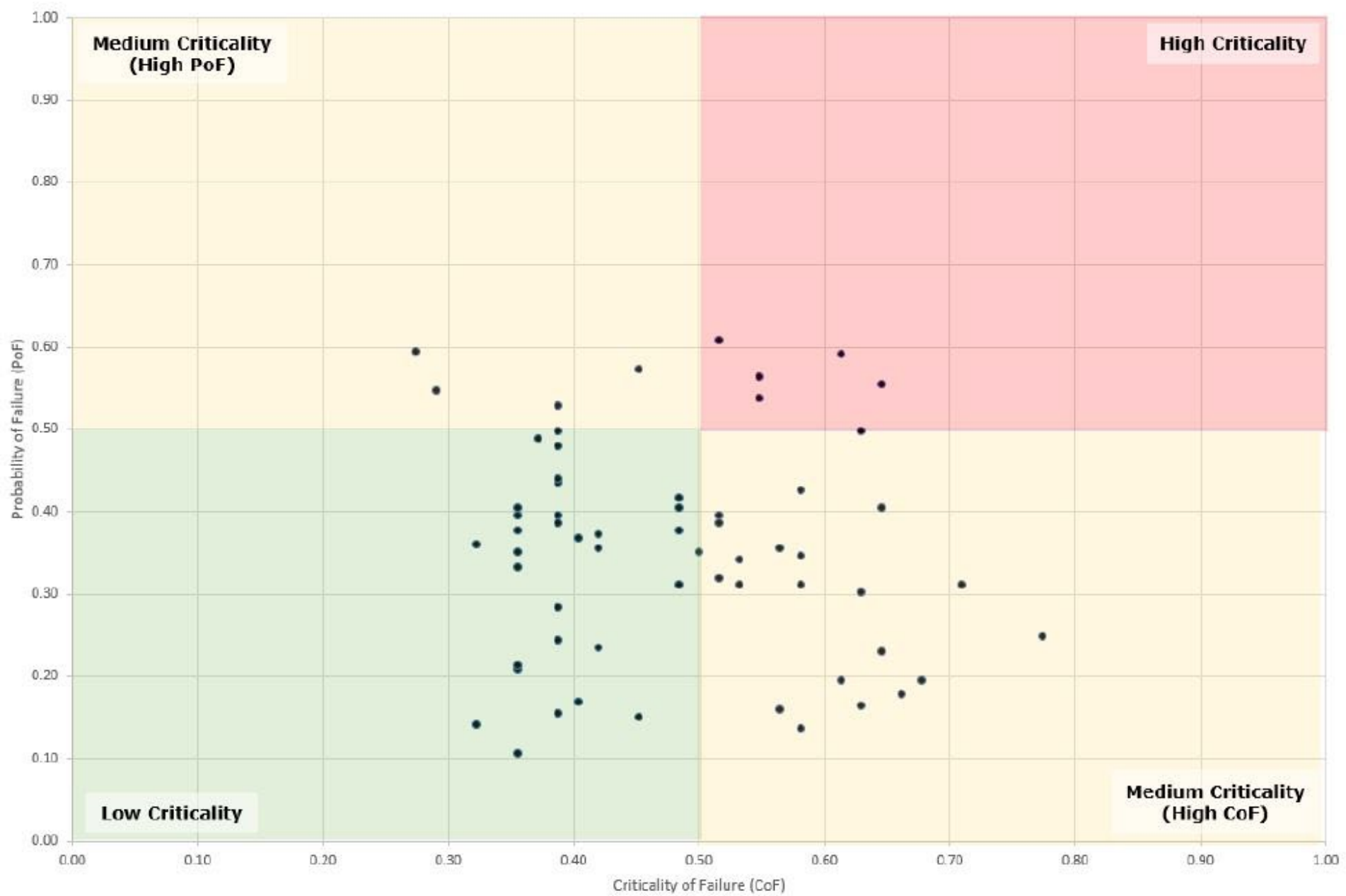


TABLE 8-1
Proposed Stormwater Action Plan

			Opinion of Probable Cost				
Asset ID and Address	Summary of Work	Criticality Score	FY24	FY25	FY26	FY27	FY28
Drainage System Improvement Projects¹							
P-1096-Willow Road	culvert replacement	High				\$ 120,000	\$ 853,000
P-1539- Willow Road	culvert replacement	High	\$ 130,000	\$ 1,170,000			
P-550- Oak Ridge Drive	culvert replacement	High	\$ 130,000		\$1,138,000		
Potential 11- Spectacle Road	culvert replacement	High		\$ 130,000		\$ 1,241,000	
P-711 - Madigan Lane	culvert replacement	High			\$ 120,000		\$ 764,000
P-New1 - Willow Road	culvert replacement	Medium				\$ 130,000	
Complete Maintenance and Repair²							
DS-1367 and DS-159	Catch basin and manhole cleaning and further investigation	High	In-house				
Various	Pipe Replacement	High/Medium	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Various	Pipe Cleaning/CCTV	Medium		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal			\$ 460,000	\$1,530,000	\$1,488,000	\$1,721,000	\$1,847,000
Further Investigation/Study							
Prices listed below assume only one mobilization is required to CCTV all pipes that year.							
P-590, P-151, P-972, P-224, P-150, P-147, P-1223, P-4, P-17, P-970, P-1226, P-335, P-334, P-1489, P-199	Mobilization, Cleaning and CCTV	High	\$ 30,000				
Programmatic Improvements							
Ongoing Maintenance			\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Inspection Program			\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000
GIS Data Maintenance			\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
Annual Updated PoF, Criticality, and Recommendations			\$ 10,000	\$ 10,000	\$ 10,000	\$ 5,000	\$ 5,000
Total			\$ 780,992	\$1,628,000	\$1,558,992	\$1,764,000	\$1,890,000

1. See attached OPCCs (Opinion of Probable Construction Cost) for each project.

2. See Project Summaries in Appendix F for OPCCs (Opinion of Probable Construction Cost) of PLA drainage pipes in need of replacement.

Color Key:

\$	= CCTV Cost
\$	= Design and Permitting
\$	= Construction Cost

DPW General Fund Capital Plan

Cemetery Capital Plan

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Resurface Access Road/Driveways	\$25,000				
2	Storage Building Rehabilitation		\$50,000			
3	Grave Repairs			\$75,000		
Yearly Totals		\$25,000	\$50,000	\$75,000	\$0	\$0

Cemetery Capital – Resurface Access Road/Driveways

- Driveways/Accessways are in poor condition with alligator cracking, missing pavement, settlement, and recurring pot holes
- Beginning portion of entranceways would be replaced, not the entire loops
- Price based on estimate developed by DPW from similar projects

Cemetery Capital – Resurface Access Road/Driveways



FY24 Through FY28
Capital Improvement Program

Water & Wastewater Requests

AYER DEPARTMENT OF PUBLIC WORKS

PRESENTED

DECEMBER 1, 2022



Proposed 5 Year CIP Water Division

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Annual Water Main Rehabilitation/Replacment	\$300,000	\$300,000	\$350,000	\$350,000	\$350,000
2	Washington Street Water Tank Painting	\$450,000				
3	Spec Pond Well 3 Pumping Station and Transmission Main	\$250,000	\$1,750,000			
4	Spec Pond GAC Upgrade for Well 3			\$585,000		
5	Grove Pond AIX Media Replacement	Army Grant	Army Grant	\$200,000	\$200,000	\$200,000
6	Spec Pond GAC Media Replacement		\$168,000		\$168,000	
7	Grove Pond Greensand Valve Replacement	\$50,000	\$50,000			
8	Grove Pond PFAS Upgrades	TBD				
Yearly Totals		\$1,050,000	\$2,268,000	\$1,135,000	\$718,000	\$550,000

Annual Water Main Replacements

Annual Capital request to replace aging water mains with poor rating

Budget for **\$300K** per year (approx. 2000 ft.)

FY24 projects include Third St, Cambridge St, and replacing 15 hydrants.

In-house engineering to maximize pipe replacement value

Continue to apply for grant funding and explore rehabilitation options



Washington St Water Tank Painting

1.5 Million Gallon Ground Storage Tank

Constructed in 1995

Coatings generally last 15-20 years

Inspection of tank in November 2022

- Structurally sound
- Generally, very good condition
- Good time for light corrosion rehabilitation and painting

Surface protection as part of routine tank maintenance



Spec Pond Well 3 Pumping Station and Transmission Main

Following the New Source Approval in land area owned by DPW

Next steps is design and construct a pumping station and Transmission main to Spectacle Pond Treatment Facility



Spec Pond GAC Upgrade for Well 3

Following the construction of the new source well at Spectacle Pond

GAC treatment will need to be expanded to accommodate increased capacity

New PFAS treatment facility was designed with this expansion in mind.



Grove Pond Greensand Valve Replacements

All operating and controlling valves are original to the plant, 1996

30 valves in total of various sizes; 3"-8"

Replacing in a stepped approach shall ensure proper maintenance and control of the Greensand Filter Vessels.



Grove Pond PFAS Upgrades

DPW has contracted with Woodard & Curran, an experienced Professional Engineering Firm to conduct an evaluation of the decreased production capacity at Grove Pond Treatment Facility since PFAS Treatment began.

While their evaluation continues, we do not have a cost estimate but want to be ready to act after a solution is identified and before summer consumption begins.



Proposed 5 Year CIP

Wastewater Division

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Inflow/ Infiltration Repairs	\$1,250,000	\$1,250,000	\$750,000	\$750,000	\$750,000
2	WWTP Upgrades		\$3,500,000		\$3,300,000	
3	Pump Impellar/Volute Replacement at Main and Central	\$33,000	\$33,000	\$33,000	\$33,000	
4	Replace WWTP Boilers	\$85,000				
5	Pickup Truck Replacement			\$40,000		
6	Bennetts Brook Pump Station Upgrades			\$150,000		
7	Garage/Storage Facility			\$350,000		
Yearly Totals		\$1,368,000	\$4,783,000	\$1,323,000	\$4,083,000	\$750,000

Inflow / Infiltration Repairs

2018 I/I investigation evaluated most of the pipes in the system

Problems included high inflow, roots, structural damage

I/I can add over 1 million gallons of flow to WWTP

Sandy Pond Road is the next phased section of sewer main to be replaced. The AC pipe showed significant internal corrosion due to hydrogen sulfide sewer gas

Pipe is immediately downstream of the Westford Road sewer main which required replacement

Flow is between 150,000 and 220,000 gallons per day

Pump Impeller/Volute Replacement at Main and Central

These are parts that wear with use and need replacement
Main Pump 2 was replaced as an emergency in FY 22

Worn, Replaced



New



Replace WWTP Boilers

Boilers are original to the building and have exceeded their useful life expectancy

Repairs have become costly over the years



Solid Waste Enterprise Fund – Capital Requests

	Item Requested	FY24	FY25	FY26	FY27	FY28
1	Paving Lower Access Driveway	\$25,000	\$0	\$0	\$0	\$0
2	3/4 Ton Pickup	\$0	\$0	\$45,000	\$0	\$0
Yearly Totals		\$25,000	\$0	\$45,000	\$0	\$0

Solid Waste Capital – Paving Lower Access Driveway

- Driveways/Accessways are in poor condition with alligator cracking, missing pavement, settlement, and stormwater ponding
- Select portions of the access driveway would be paved
- Price based on estimate developed by DPW from similar projects

Solid Waste Capital – Paving Lower Access Driveway



Thank You for Your Consideration of These Important Town Infrastructure Projects



DAN VAN SCHALKWYK, P.E.
DIRECTOR OF PUBLIC WORKS

KIMBERLY ABRAHAM
WATER AND SEWER SUPERINTENDENT