

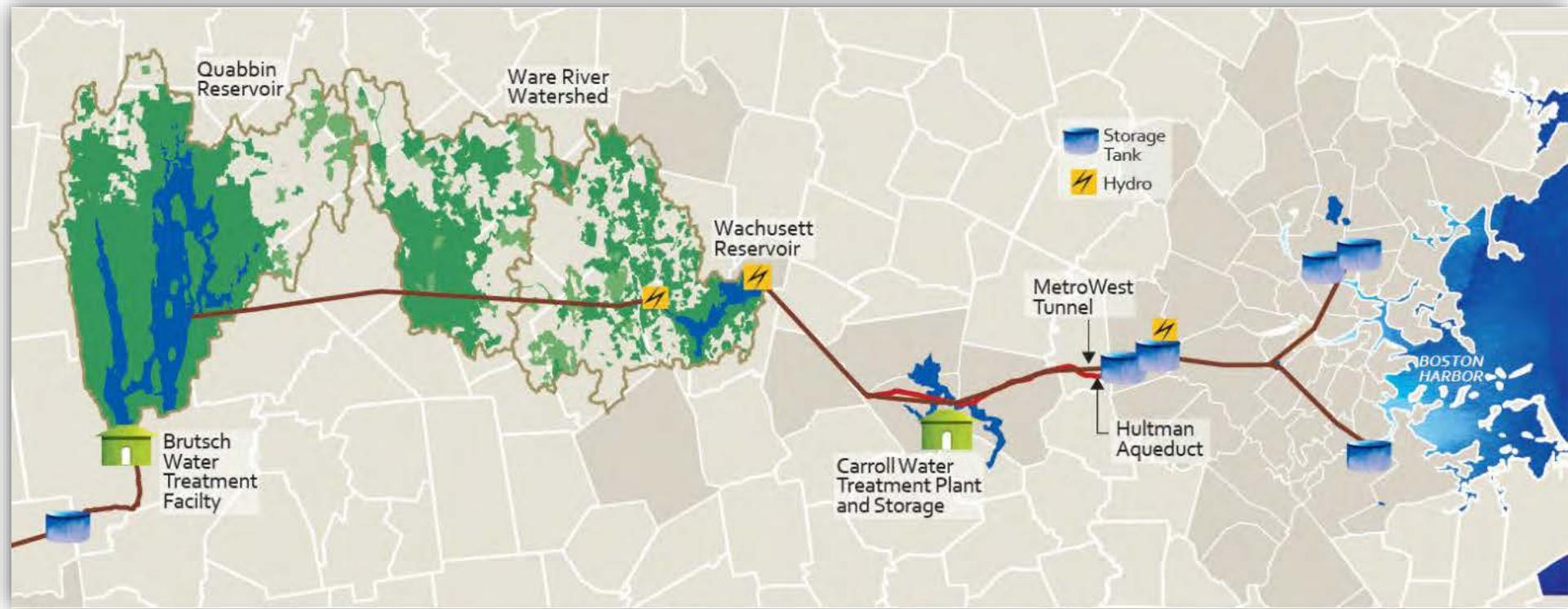


*Report on 2022 Water Use Trends
and Reservoir Status*

March 15, 2023



MWRA Source– Quabbin + Ware + Wachusett



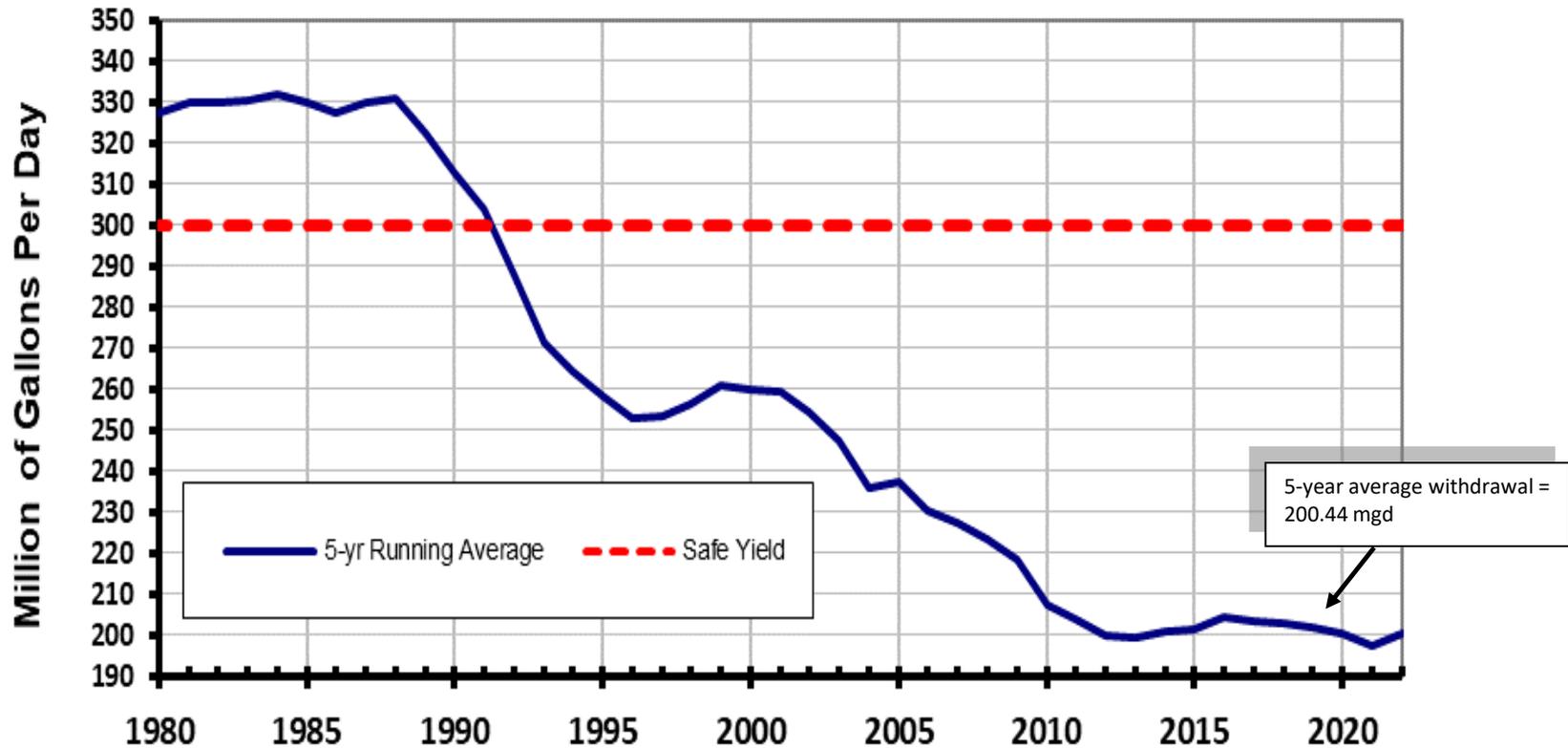


Safe Yield

- "Safe Yield" is the quantity of water that can be reliably supplied over a period that includes a critical drought
- For MWRA -- the multi-year drought of the 1960s
- The combined safe yield of all three sources = 300 mgd

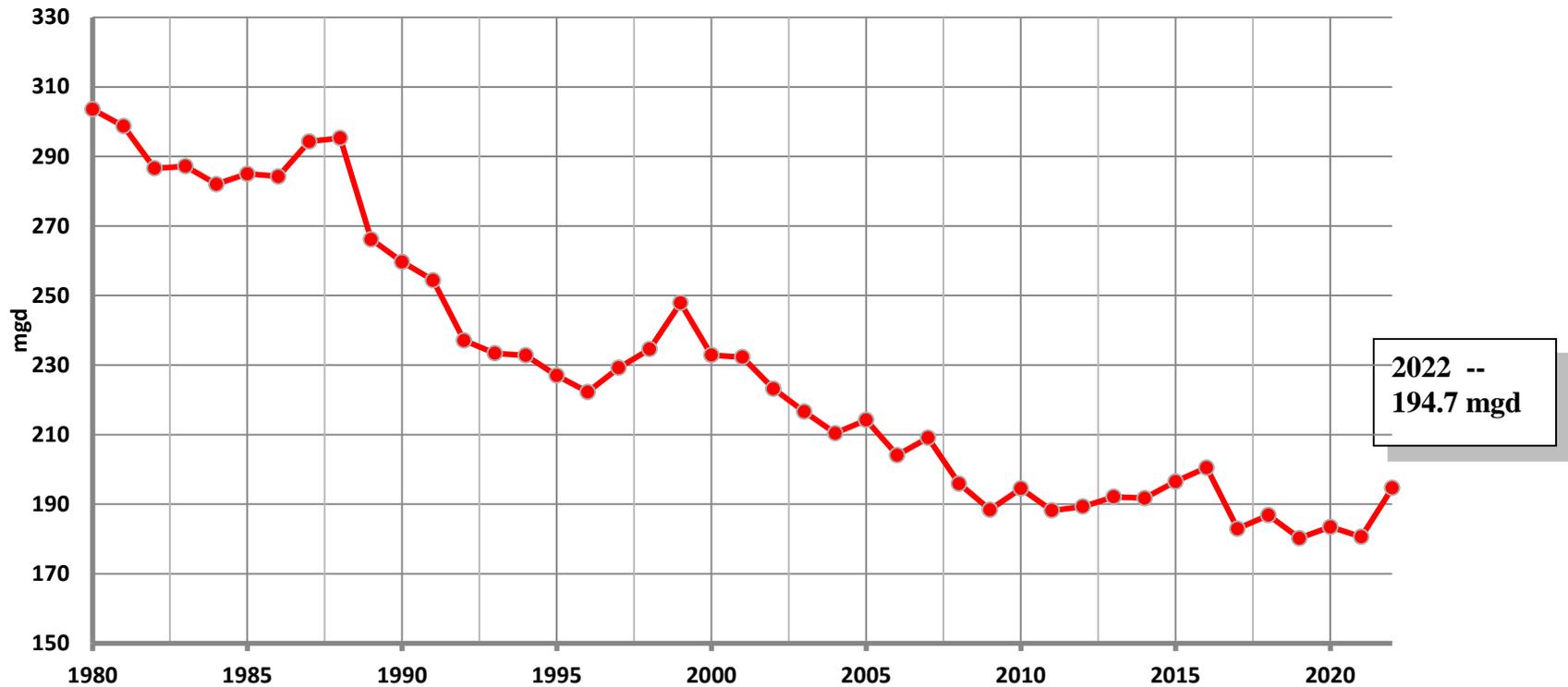


Reservoir Withdrawals Dropped Substantially Since 1980s



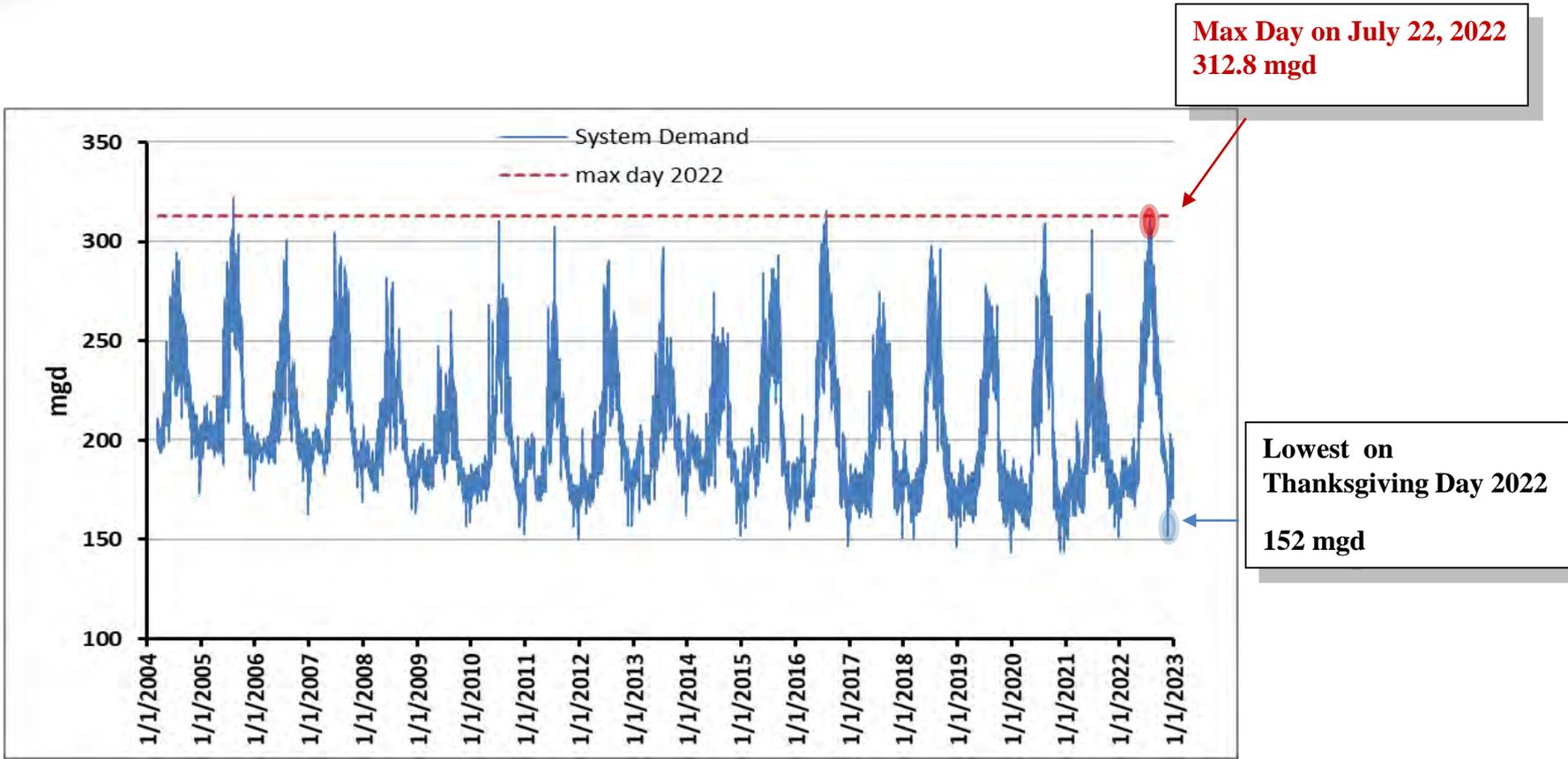


Total Consumption by MWRA Communities (1980 to 2022)



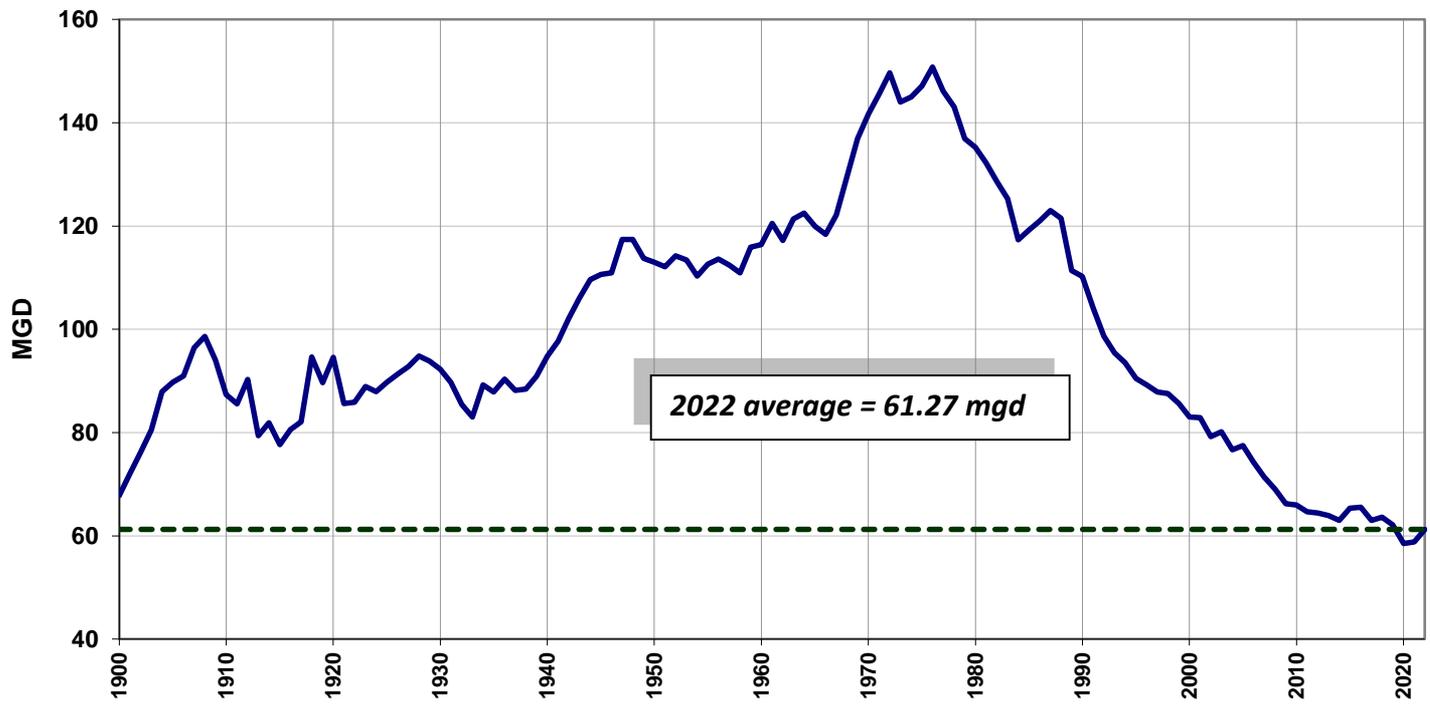


Daily System Demand



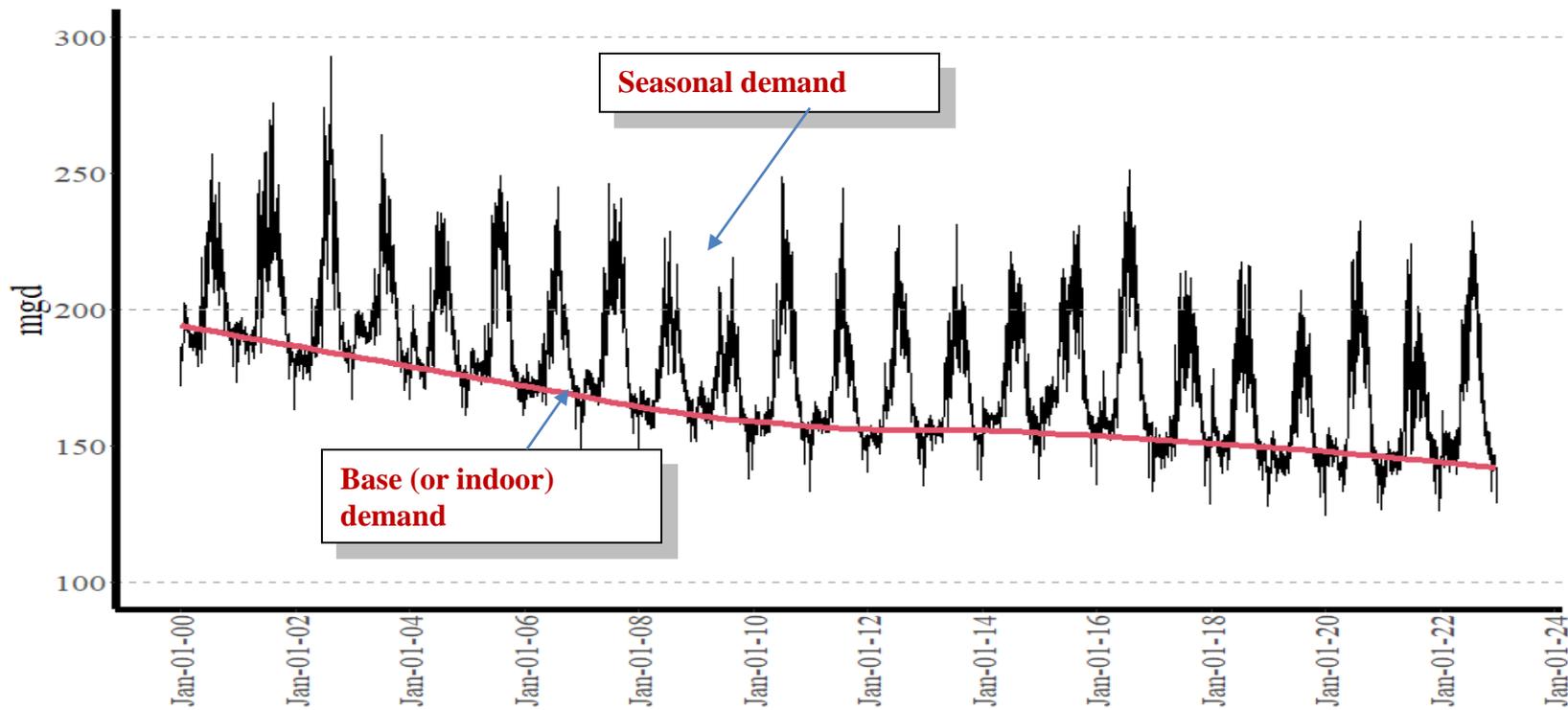


Boston Water Use (1900 to 2022)





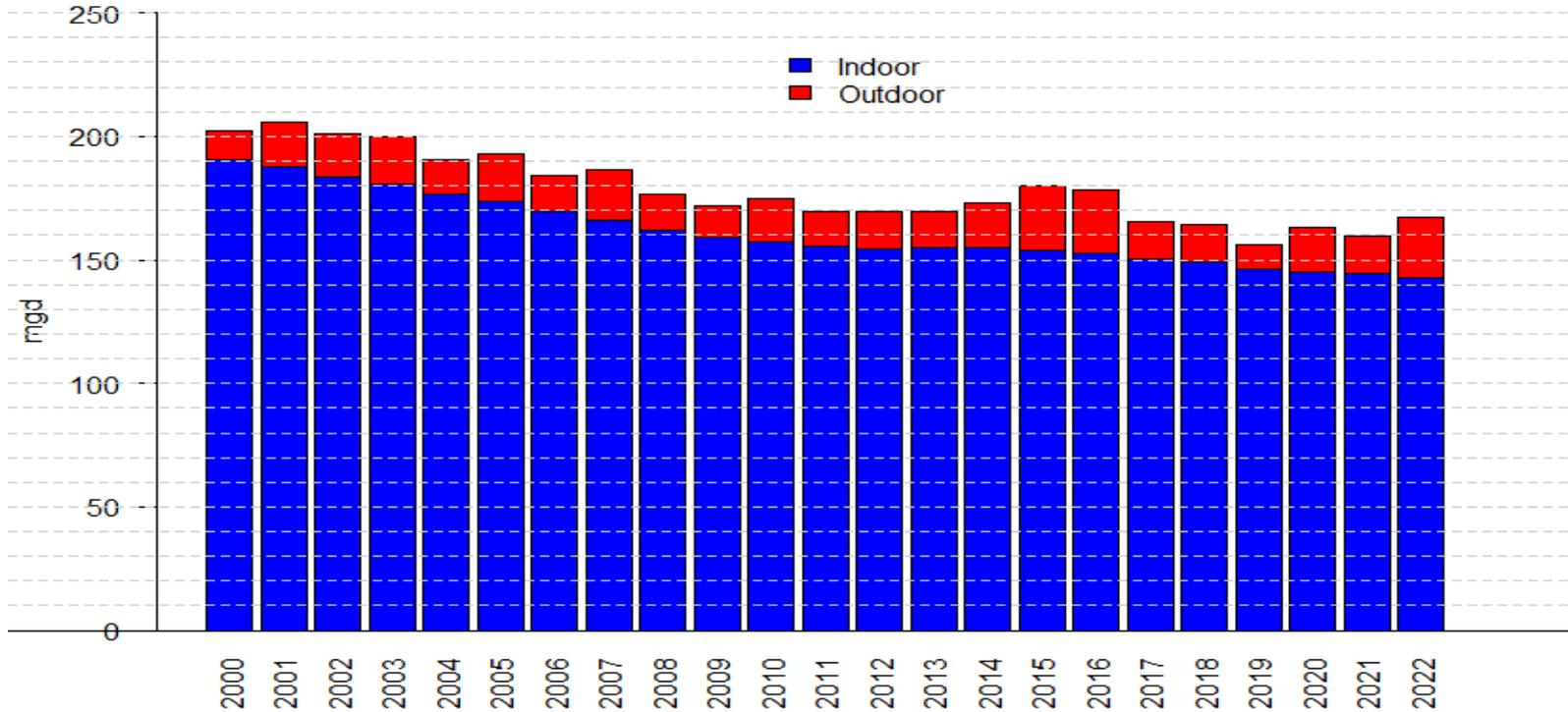
Base (Indoor) Demand vs. Seasonal Demand



Based on daily demand from fully supplied communities (2000 to 2022)

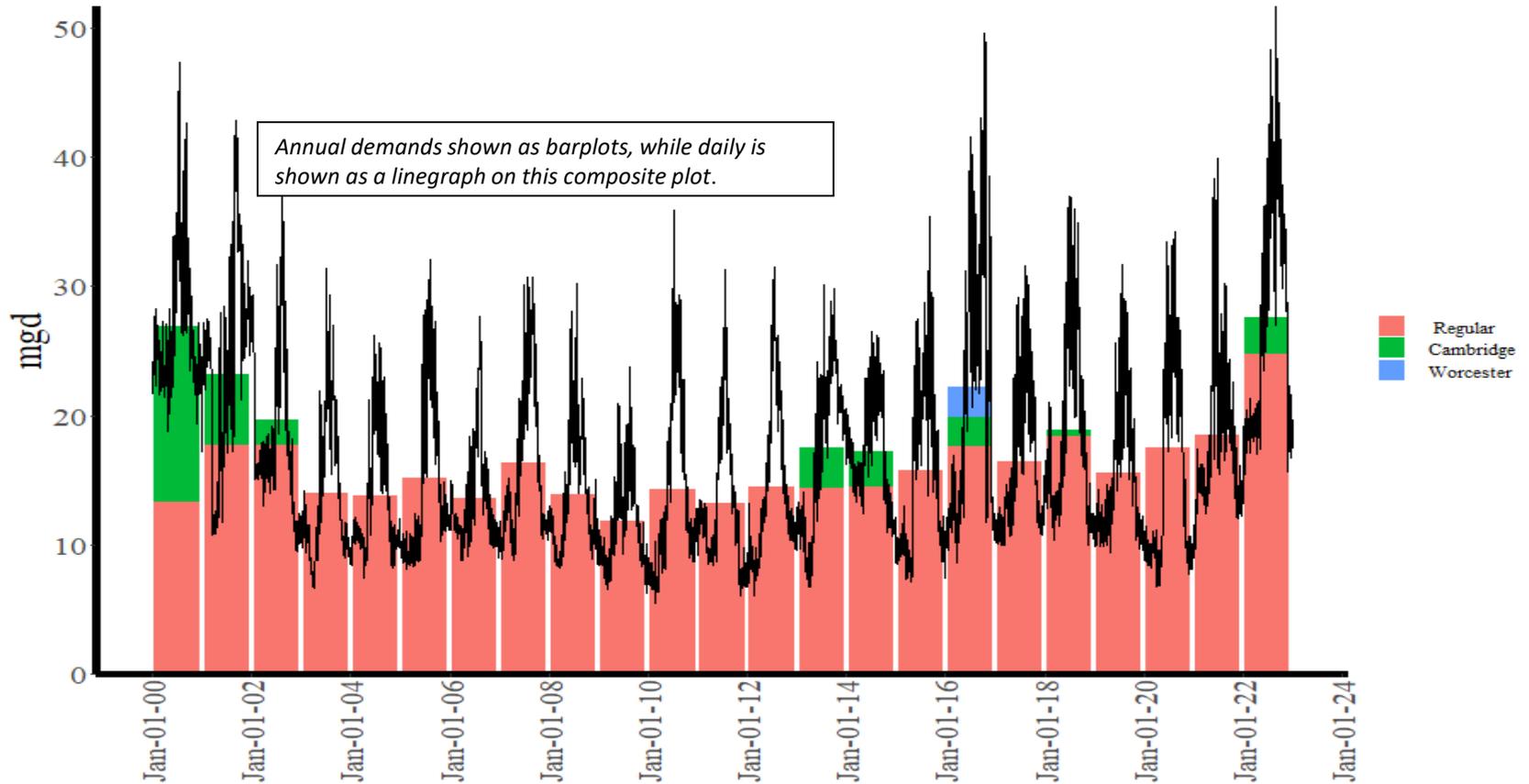


Fully Supplied Communities (Annual Base and Outdoor Use)



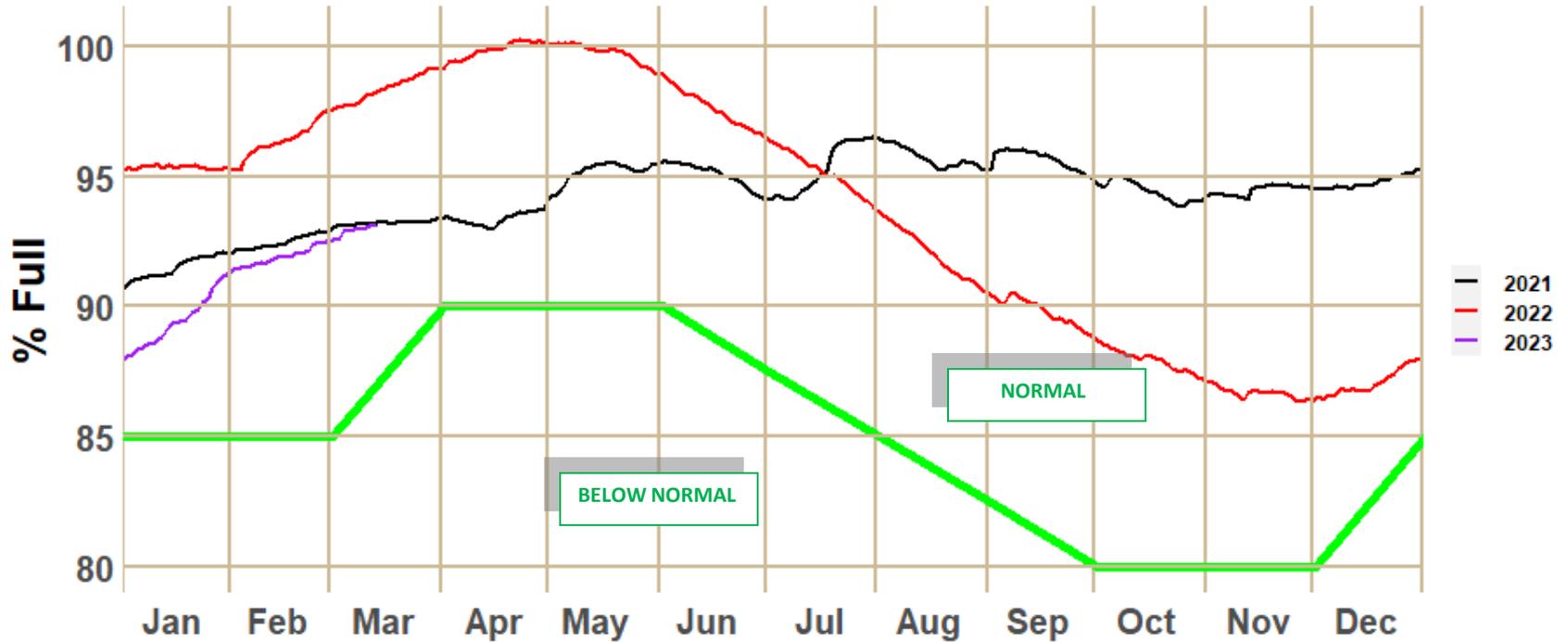


Partially Supplied Communities Have More Variable MWRA Demand



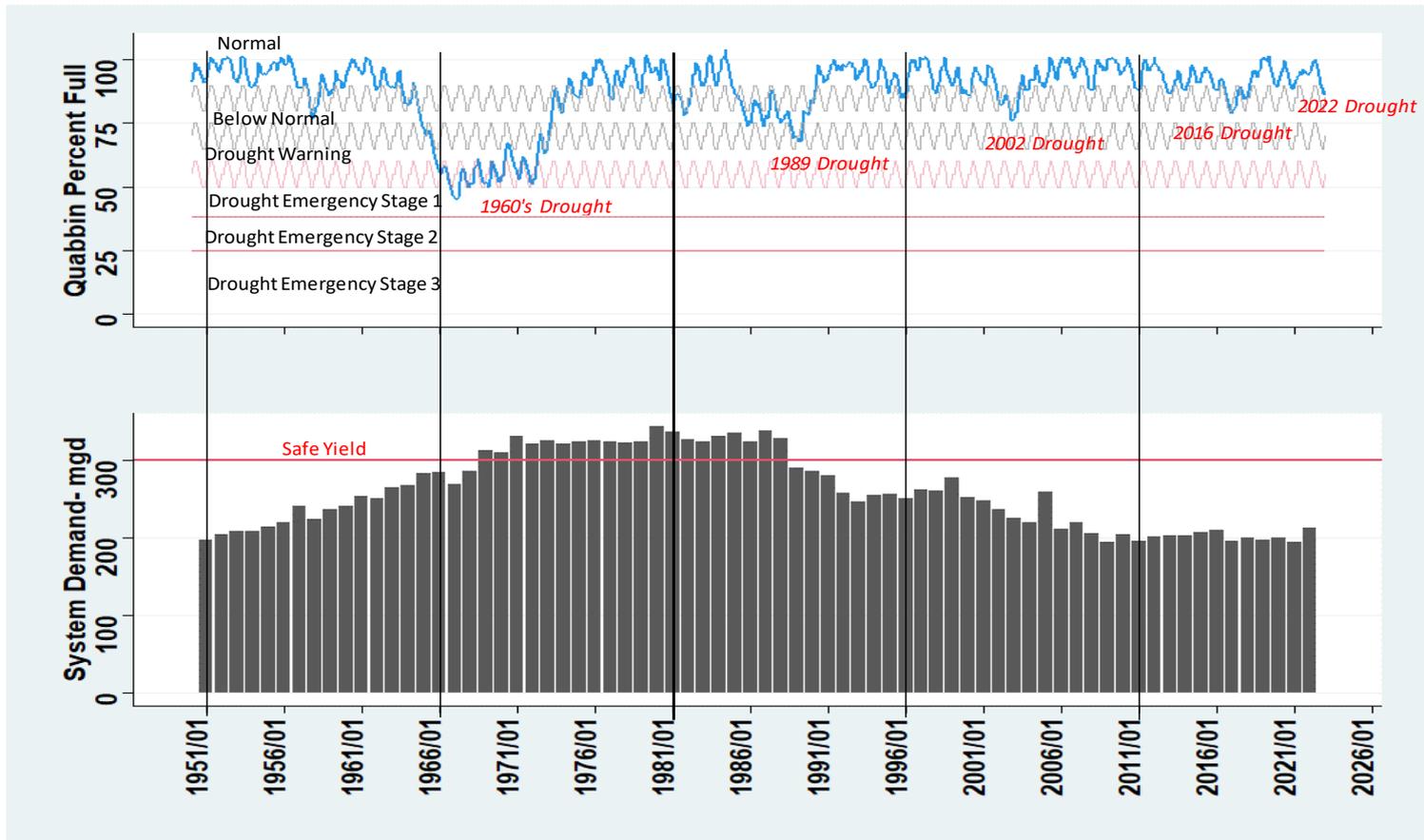


Quabbin stayed within Normal Operating Range during 2022 Drought





MWRA System Drought Performance - 1950 to 2022





Watershed Forestry Review

March 15, 2023



Watershed Forestry Program Goals

- Protection of water quality
- Creating and preserving a diverse, resilient forest
- Resistant to disease or natural disaster
- Multi-species, appropriate to site and soil
- Uneven-aged, from seedling to mature trees

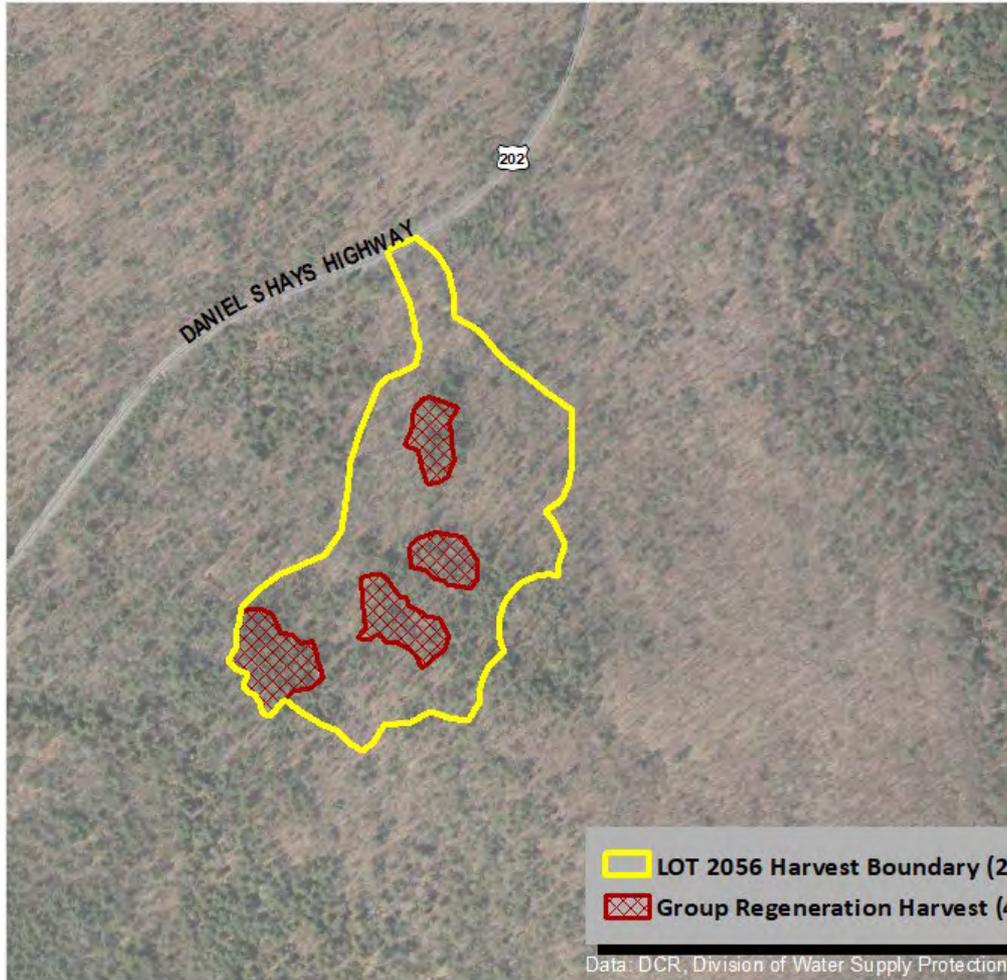


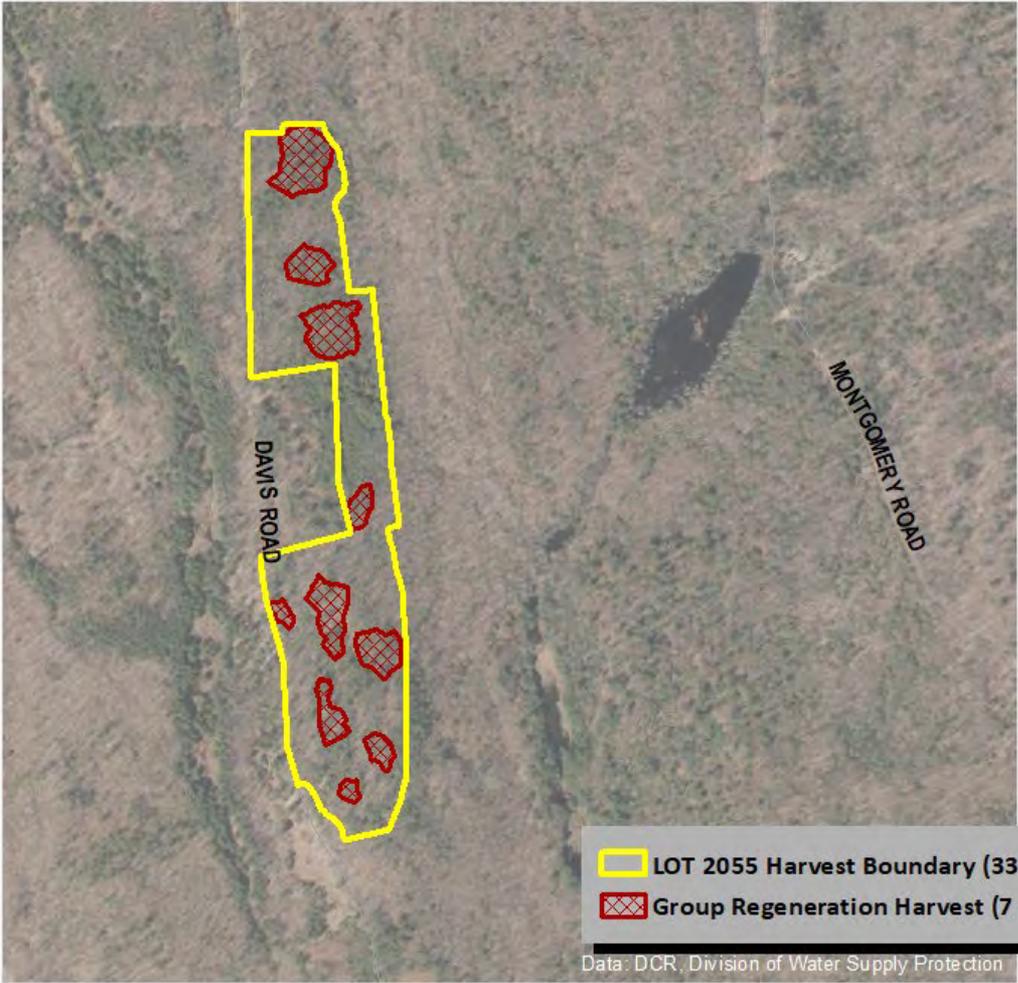
DCR's Watershed Forestry Program

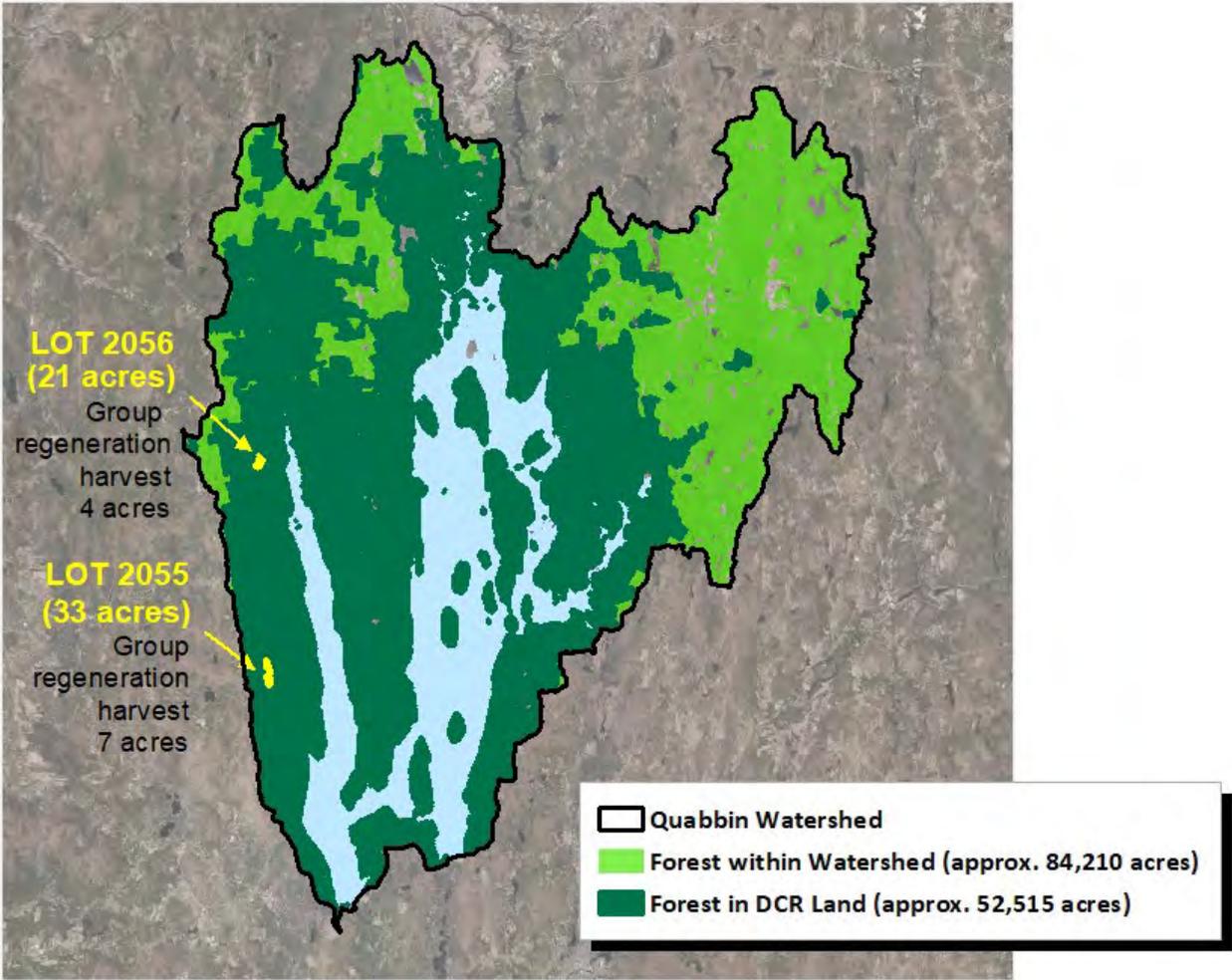
- Incremental progress toward long term goals
- Slow steady progress – over decades

- Manage original single-aged, single-species stands
- Deal with stands that are dying due to disease or infestation
- Carefully designed cutting to release regeneration

- Individually marked cuts, sound cutting practices
- Typical openings average one acre, with trees preserved for seed and habitat
- Less than 1 percent of the managed portion of the forest per year







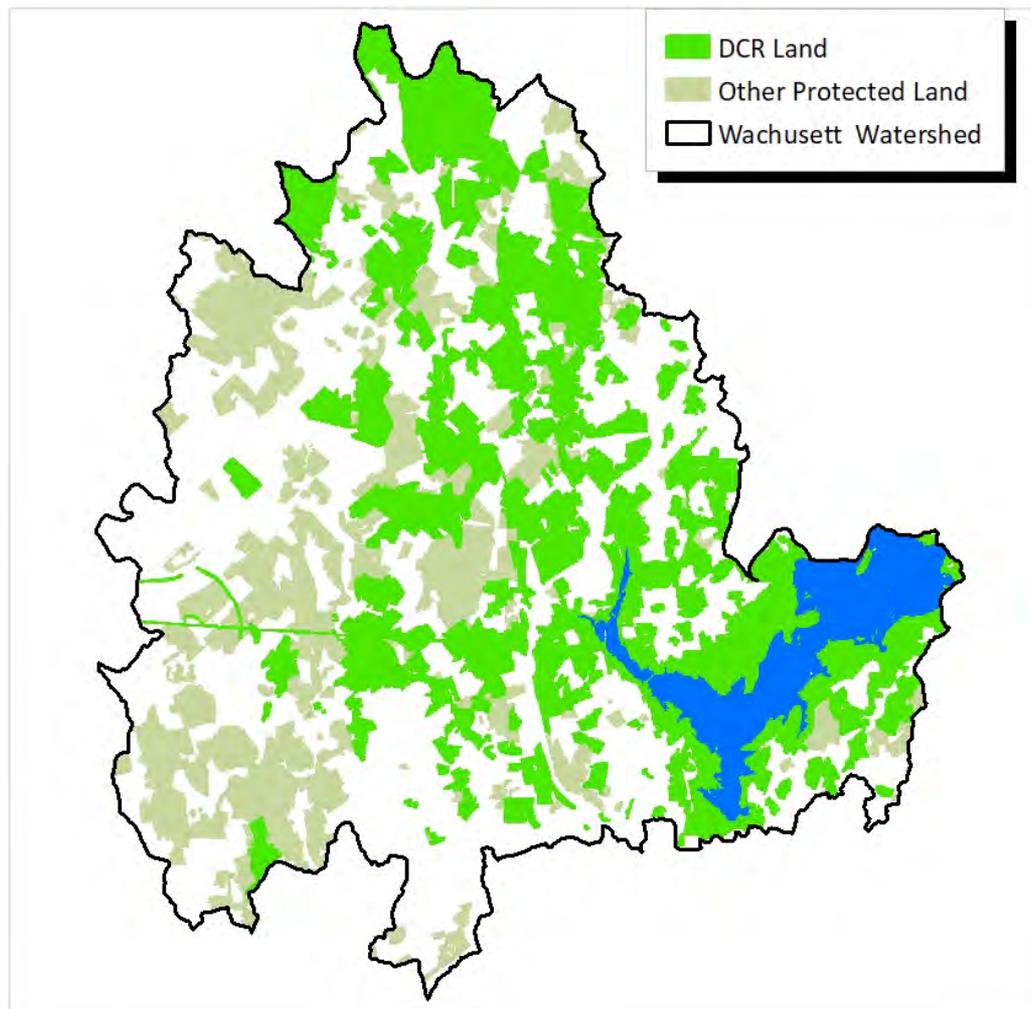


Forest Regeneration – Half Acre Cut, Naturally Regenerates





Land Acquisition for Watershed Protection Preserves Forests From Development





MWRA's Objectives

- Consistent high quality water
- Well protected forested lands, over the long term
- Maintenance of MWRA's Filtration Avoidance Determination
- DCR's watershed forestry programs meet those goals

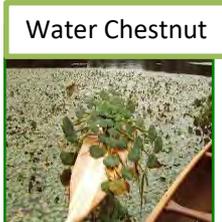
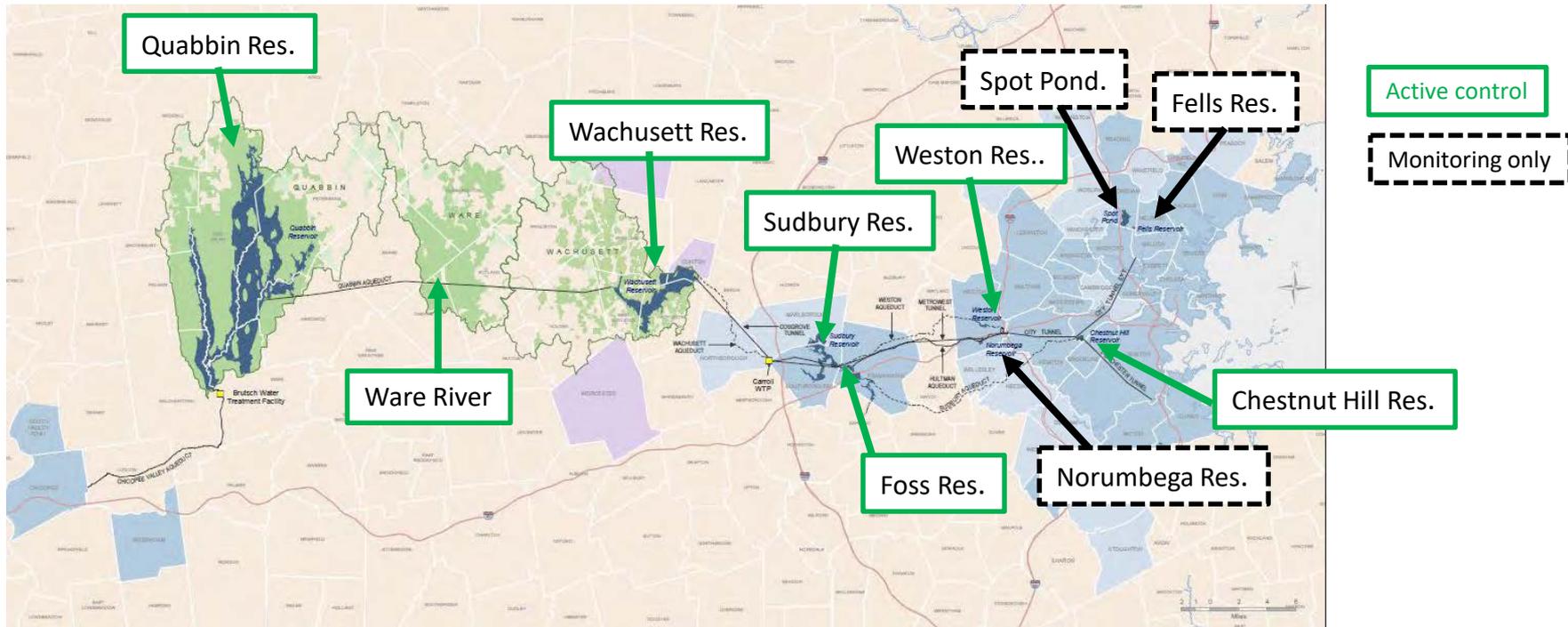


*Update on Aquatic Invasive Plants Control
at Reservoirs*

March 15, 2023

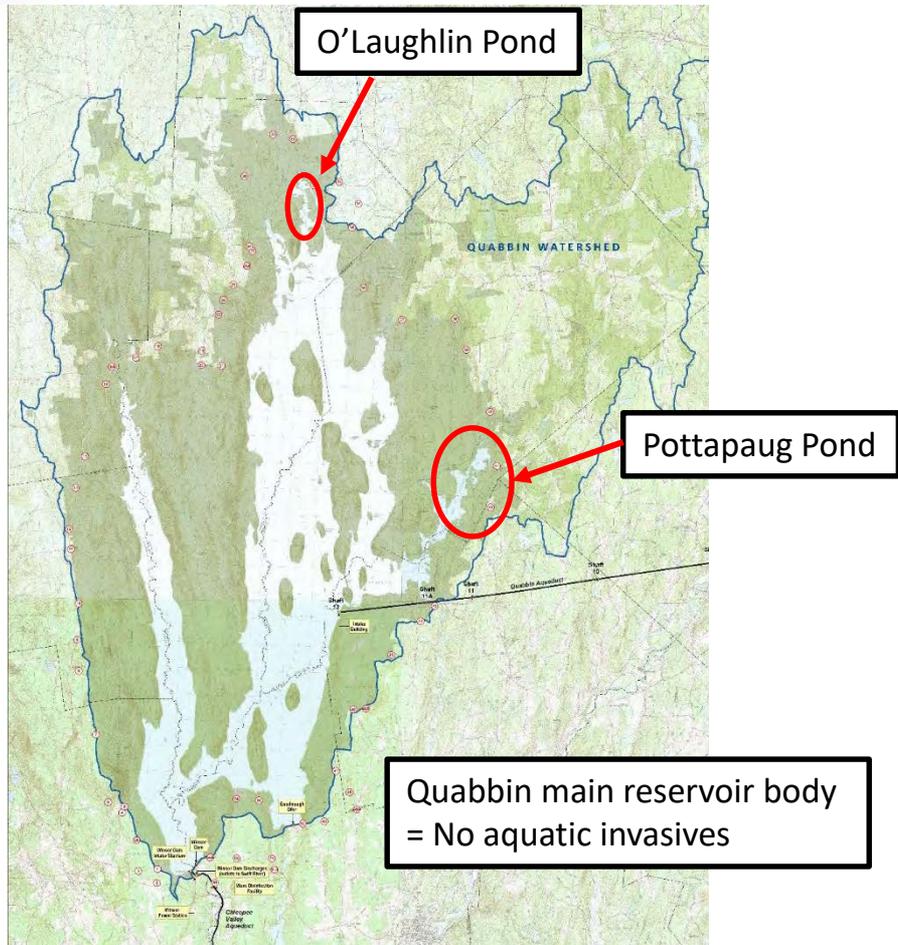


Aquatic Invasive Control at MWRA Reservoirs





Quabbin Reservoir



Upstream regulating ponds and aquatic invasive fragment barriers



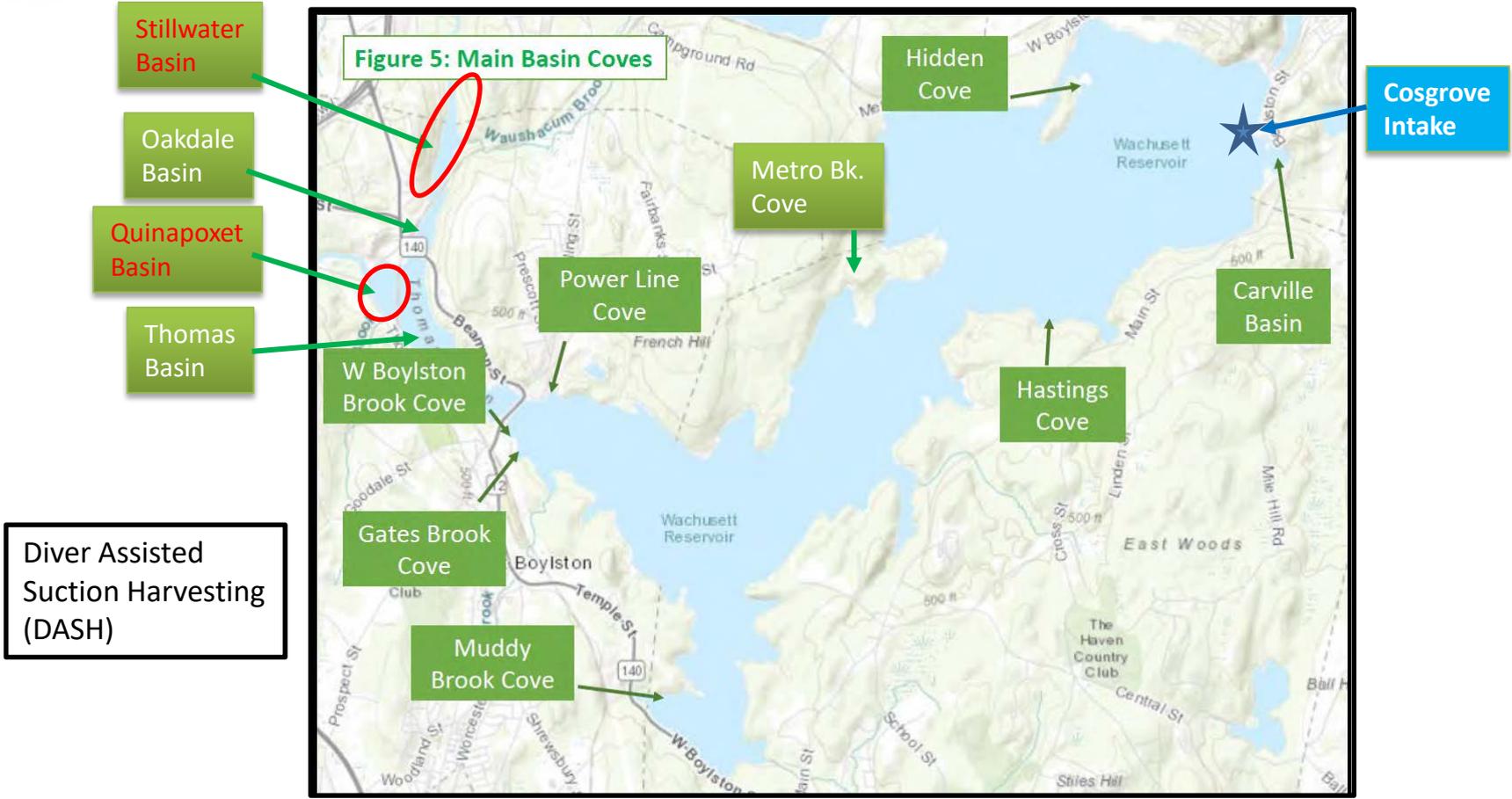


Quabbin Boat Decontamination and Seal Program





Wachusett Reservoir: Most Intensive Efforts To Date



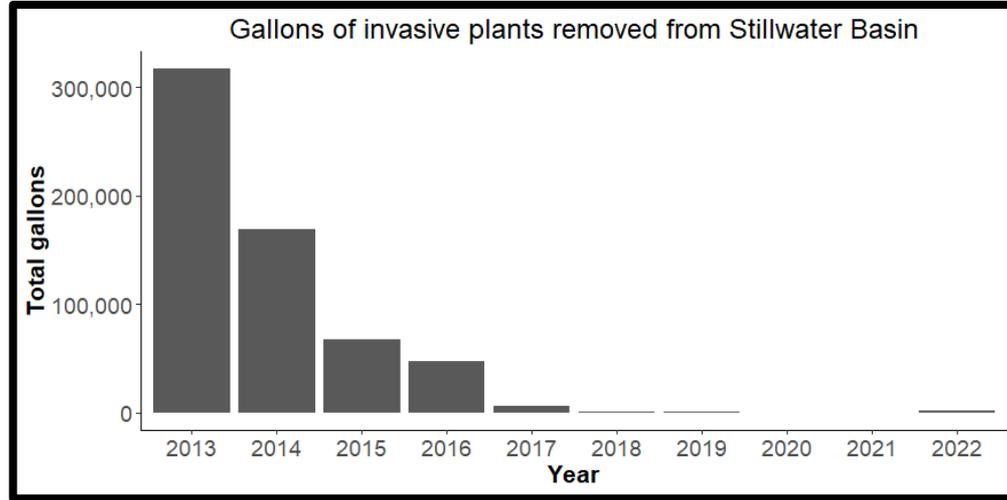


DASH Operation





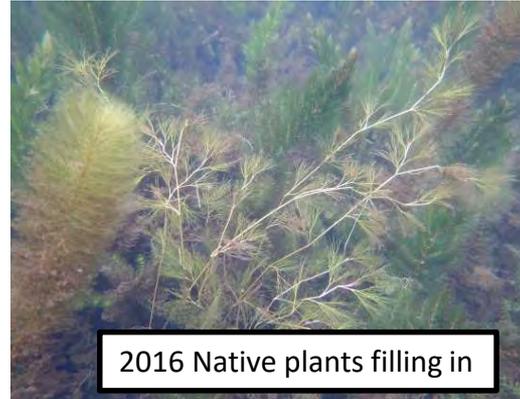
Wachusett Reservoir Stillwater DASH Progress and Return Of Native Plants



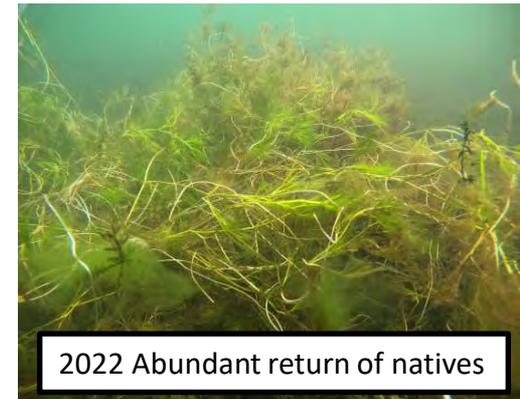
Before DASH – Heavy EWM



Post-DASH removal



2016 Native plants filling in



2022 Abundant return of natives



Emergency Reservoirs Aquatic Invasives Control Projects

Chestnut Hill Reservoir Mechanical Control and winter drawdown (**Eurasian milfoil**)



Foss Reservoir manual control and winter drawdown (**Eurasian Milfoil, Water Chestnut**)



Ware River /Shaft 8 Intake Pool Manual Control (**Variable milfoil**)



Sudbury Reservoir DASH and manual control (**Fanwort, Water Chestnut**)



Weston Reservoir DASH (**Eurasian Milfoil**)





*Local Water System Assistance Program
Annual Update*

March 15, 2023



MWRA Local Water System Assistance Program Funding Summary

MWRA LOCAL WATER SYSTEM ASSISTANCE PROGRAM ALLOCATION AND FUND UTILIZATION BY COMMUNITY THROUGH DECEMBER 2022

Community	Community Total Allocation Phases 2 and 3	Total Distributions Phases 2 and 3	Percent Distributed	Funds Remaining
Arlington	\$14,912,000	\$9,500,000	64%	\$5,412,000
Ashland*	\$519,400	\$0	0%	\$519,400
Bedford *	\$6,067,000	\$2,418,000	40%	\$3,649,000
Belmont	\$7,329,000	\$6,477,000	88%	\$852,000
Boston	\$91,541,000	\$59,634,364	65%	\$31,906,636
Brookline	\$8,011,000	\$660,000	8%	\$7,351,000
Burlington*	\$827,400	\$0	0%	\$827,400
Canton *	\$6,187,000	\$5,716,000	92%	\$471,000
Chesea	\$8,853,000	\$6,325,700	71%	\$2,527,300
Dedham/Westwood *	\$1,352,000	\$1,352,000	100%	\$0
Everett	\$10,970,000	\$7,191,200	66%	\$3,778,800
Framingham	\$16,360,000	\$10,057,900	61%	\$6,302,100
Lexington	\$6,801,000	\$4,915,015	72%	\$1,885,985
Lynnfield Water Dist.	\$3,074,000	\$2,926,800	95%	\$147,200
Malden	\$17,877,000	\$12,193,800	68%	\$5,683,200
Marblehead	\$9,349,000	\$5,259,400	56%	\$4,089,600
Marlborough *	\$5,429,000	\$1,283,800	24%	\$4,145,200
Medford	\$17,759,000	\$11,097,000	62%	\$6,662,000
Melrose	\$10,853,000	\$7,419,000	68%	\$3,434,000
Milton	\$10,090,000	\$4,764,000	47%	\$5,326,000
Nahant	\$3,325,000	\$1,460,100	44%	\$1,864,900
Needham *	\$2,688,000	\$1,131,265	42%	\$1,556,735
Newton	\$34,439,000	\$15,685,700	46%	\$18,753,300
Northborough *	\$2,498,000	\$986,053	39%	\$1,511,947
Norwood	\$10,691,000	\$8,172,600	76%	\$2,518,400
Peabody *	\$3,845,000	\$3,845,000	100%	\$0
Quincy	\$24,757,000	\$19,056,200	77%	\$5,700,800
Reading	\$9,219,000	\$5,646,000	61%	\$3,573,000
Revere	\$10,349,000	\$7,160,000	69%	\$3,189,000
Saugus	\$16,309,000	\$7,242,994	44%	\$9,066,006
Somerville	\$18,210,000	\$5,898,234	32%	\$12,311,766
Southborough	\$3,432,000	\$0	0%	\$3,432,000
Stonham	\$5,081,000	\$4,839,000	95%	\$242,000
Stoughton*	\$6,053,000	\$4,128,000	68%	\$1,925,000
Swampscott	\$9,031,000	\$5,049,468	56%	\$3,981,532
Wakefield *	\$5,681,000	\$3,325,000	59%	\$2,356,000
Waltham	\$25,197,000	\$5,520,201	22%	\$19,676,799
Watertown	\$6,723,000	\$5,661,000	84%	\$1,062,000
Wellesley *	\$5,618,000	\$1,813,569	32%	\$3,804,431
Weston	\$3,920,000	\$3,392,997	87%	\$527,003
Wilmington *	\$1,917,000	\$611,000	32%	\$1,306,000
Winchester *	\$2,276,000	\$775,000	34%	\$1,501,000
Winthrop	\$7,431,000	\$7,431,000	100%	\$0
Woburn *	\$6,496,000	\$5,091,000	78%	\$1,405,000
SUBTOTAL	\$479,346,800	\$283,112,360	59%	\$196,234,440
Chicopee	\$16,927,000	\$5,183,400	31%	\$11,743,600
South Hadley F.D. 1	\$3,564,000	\$2,038,000	57%	\$1,526,000
Wilbraham	\$3,509,000	\$0	0%	\$3,509,000
SUBTOTAL	\$24,000,000	\$7,221,400	30%	\$16,778,600
TOTAL	\$503,346,800	\$290,333,760	58%	\$213,013,040

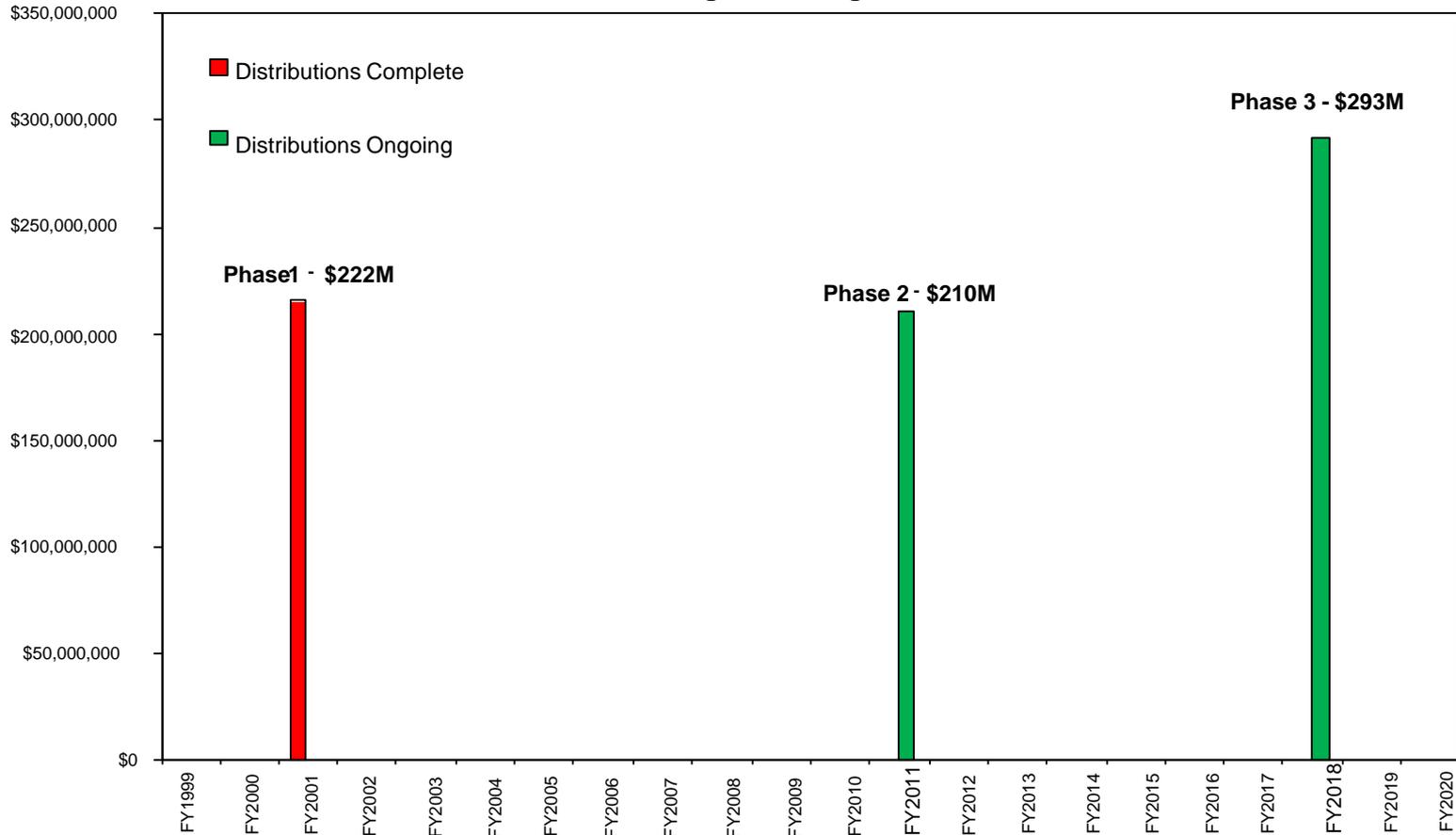
- \$725M approved in three (3) phases
- \$513M distributed (FY01 - December 2022)
- \$356M loans repaid to MWRA
- 43 communities participating
- Community allocation based on % share water charge and % share unlined pipe
- 510 local projects funded
- 440 projects complete / 70 ongoing
- \$29M distributed to 15 communities in CY22

* Partially Served Communities



MWRA's Long-Term Commitment to Fund Local Water System Rehabilitation

Local Water System Assistance Program Timing of Funding Phases





MWRA Funding for Local Water Projects



Water Main Replacement
Construction

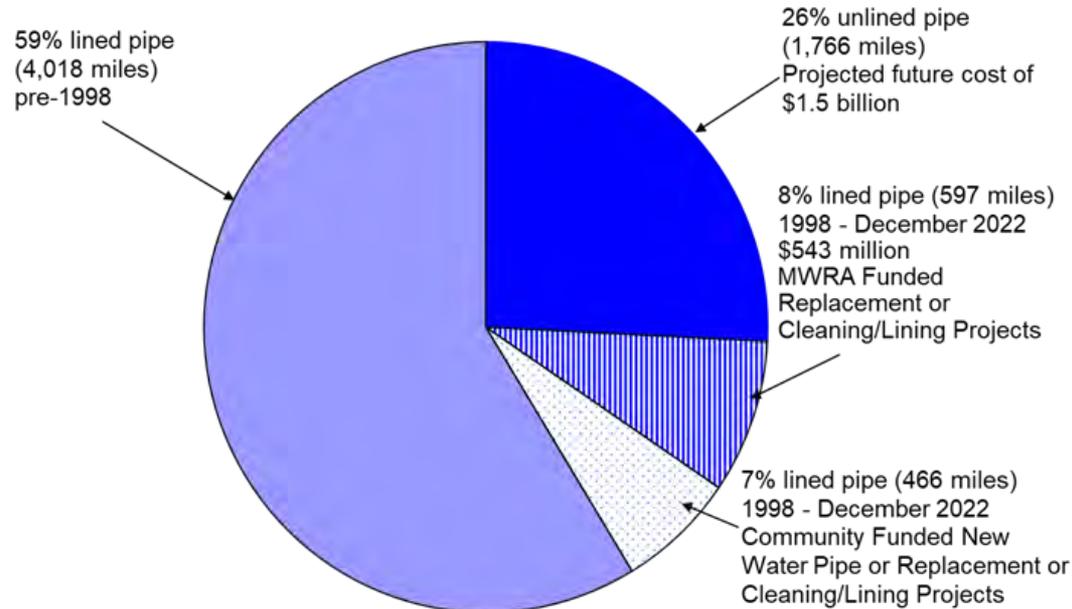


Water Storage Tank Rehabilitation



MWRA Funded an 8 Percent Reduction in Unlined Cast Iron Mains

**Regional Water System Lined and Unlined Pipe
6,847 Miles of Community Water Mains
Updated through December 2022**



Remaining Unlined Pipe Represents a \$1.5 billion Future Cost



Lead Service Line Replacement Loan Program

- \$100 million in 10-Year Interest-Free Loans to fully replace Lead Service Lines
- Distributed \$34 million to 14 Communities:
 - BWSC \$3.5 million
 - Chelsea \$1.0 million
 - Everett \$5.5 million
 - Marlborough \$5.0 million
 - Needham \$1.0 million
 - Newton \$4.0 million
 - Quincy \$1.5 million
 - Reading \$1.5 million
 - Revere \$1.5 million
 - Somerville \$2.5 million
 - Watertown \$900,000
 - Weston \$160,000
 - Winchester \$2.8 million
 - Winthrop \$2.96 million





*Infiltration/Inflow Local Financial
Assistance Program
Annual Update*

March 15, 2023



MWRA I/I Local Financial Assistance Program

Program initiated in May 1993

Goal: Rehabilitation of local sewer systems and long-term reduction of I/I



Infiltration
(Groundwater via physical defects)

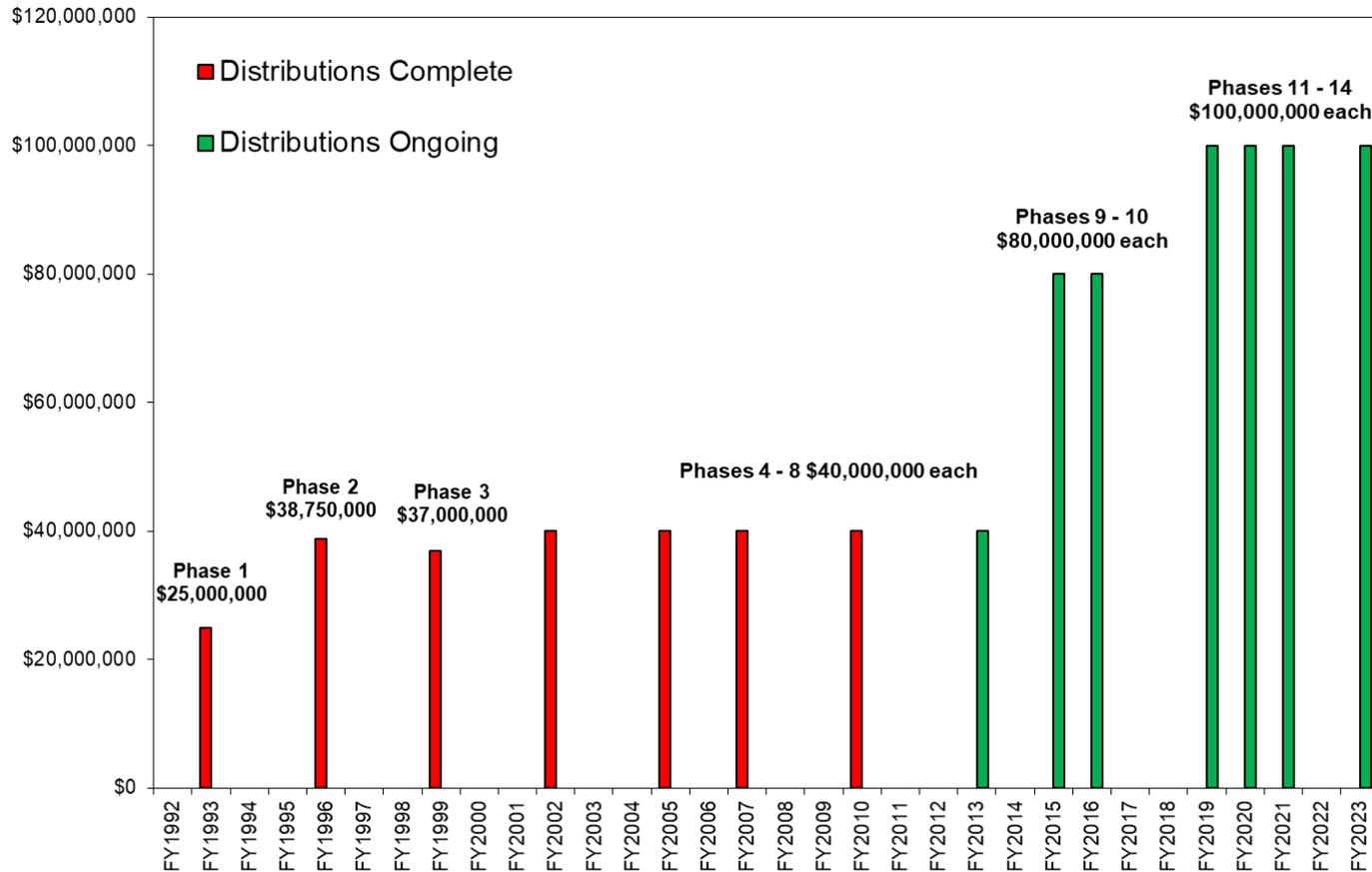


Inflow
(Stormwater via direct connections)



MWRA's Long-Term Commitment to Fund I/I Reduction

I/I Local Financial Assistance Program
Timing of Phases





MWRA I/I Local Financial Assistance Program Funding Summary

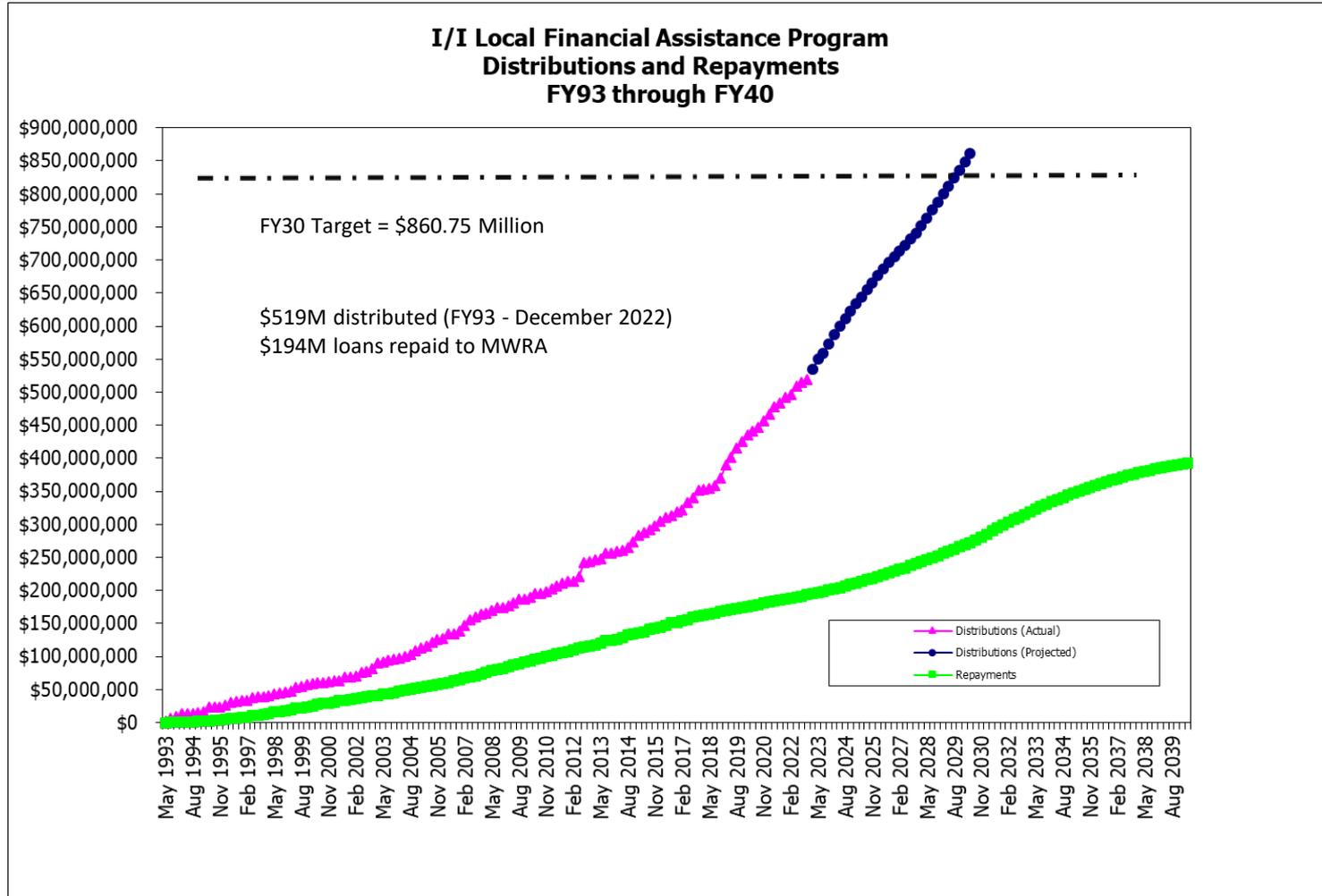
**ATTACHMENT 1
MWRA I/I LOCAL FINANCIAL ASSISTANCE PROGRAM
COMMUNITY FUNDING SUMMARY AS OF DECEMBER 2022**

Community	Total Allocations (Phases 1 - 14)	Total Distributions (Phases 1 - 14)	Percent Distributed	Funds Remaining
Arlington	\$15,473,000	\$11,455,900	74%	\$4,017,100
Ashland	\$4,348,500	\$2,020,060	46%	\$2,328,440
Bedford	\$6,354,600	\$3,109,158	49%	\$3,245,442
Belmont	\$9,325,100	\$5,135,100	55%	\$4,190,000
Boston	\$246,921,200	\$121,596,909	49%	\$125,324,291
Braintree	\$16,449,000	\$10,379,000	63%	\$6,070,000
Brookline	\$24,005,200	\$15,895,200	66%	\$8,110,000
Burlington	\$9,632,800	\$7,322,800	76%	\$2,310,000
Cambridge	\$44,640,100	\$28,830,100	65%	\$15,810,000
Canton	\$7,565,900	\$3,126,850	41%	\$4,439,050
Chelsea	\$13,510,100	\$11,760,100	87%	\$1,750,000
Dedham	\$10,400,000	\$8,060,000	78%	\$2,340,000
Everett	\$15,251,500	\$11,611,500	76%	\$3,640,000
Framingham	\$23,045,000	\$13,671,000	59%	\$9,374,000
Hingham	\$3,202,500	\$2,412,500	75%	\$790,000
Holbrook	\$3,149,600	\$1,349,600	43%	\$1,800,000
Lexington	\$13,715,300	\$10,565,300	77%	\$3,150,000
Malden	\$23,373,900	\$6,725,900	29%	\$16,648,000
Medford	\$22,077,600	\$7,961,600	36%	\$14,116,000
Melrose	\$11,456,300	\$8,657,300	76%	\$2,799,000
Milton	\$10,164,500	\$9,014,500	89%	\$1,150,000
Natick	\$10,522,600	\$6,832,600	65%	\$3,690,000
Needham	\$11,267,600	\$4,018,600	36%	\$7,249,000
Newton	\$39,277,400	\$34,937,400	89%	\$4,340,000
Norwood	\$13,239,400	\$6,879,400	52%	\$6,360,000
Quincy	\$36,950,000	\$31,325,000	85%	\$5,625,000
Randolph	\$11,400,800	\$4,971,058	44%	\$6,429,742
Reading	\$8,789,100	\$6,709,100	76%	\$2,080,000
Revere	\$19,090,900	\$6,302,900	33%	\$12,788,000
Somerville	\$29,265,800	\$12,116,900	41%	\$17,148,900
Stoneham	\$8,919,900	\$6,859,900	77%	\$2,060,000
Stoughton	\$8,962,900	\$6,842,900	76%	\$2,120,000
Wakefield	\$11,116,900	\$8,526,900	77%	\$2,590,000
Walpole	\$6,940,000	\$4,490,000	65%	\$2,450,000
Waltham	\$25,062,400	\$19,214,560	77%	\$5,847,840
Watertown	\$11,475,800	\$8,865,800	77%	\$2,610,000
Wellesley	\$10,429,700	\$4,739,700	45%	\$5,690,000
Westwood	\$4,932,300	\$2,591,300	53%	\$2,341,000
Weymouth	\$21,750,900	\$13,670,900	63%	\$8,080,000
Wilmington	\$4,822,000	\$2,462,000	51%	\$2,360,000
Winchester	\$7,673,000	\$5,923,000	77%	\$1,750,000
Winthrop	\$6,293,400	\$5,083,400	81%	\$1,210,000
Woburn	\$18,505,500	\$14,675,500	79%	\$3,830,000
Totals	\$860,750,000	\$518,699,195	60%	\$342,050,805

- \$860.75M approved (14 Phases)
- Community allocation based on percent share sewer charge
- All 43 communities participating
- 653 local projects funded
- 582 projects complete / 71 projects ongoing
- \$27M distributed to 12 communities in CY22



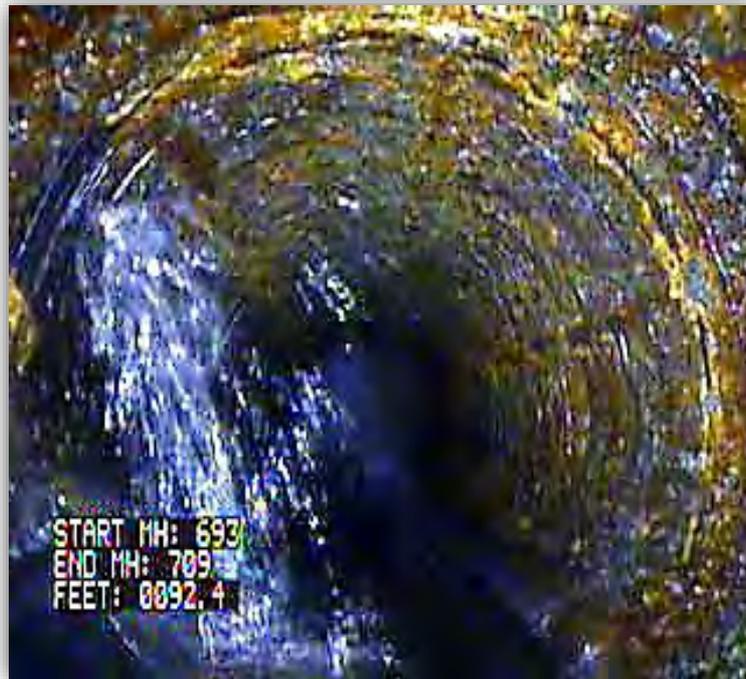
I/I Funding - Distributions and Repayments





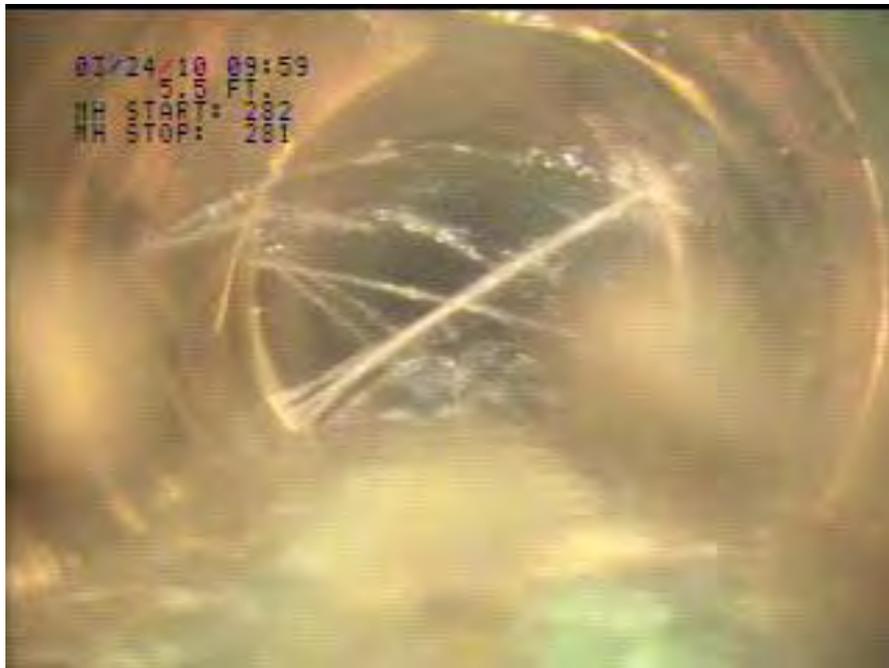
I/I Funding Results of Local Projects

CCTV Inspection of Sewers: 2,422 Miles





TV Inspection Location of Infiltration into Sewer Pipelines





I/I Funding for Rehabilitation of Local Sewers

323 miles of sewer Cured-In-Place Pipe (CIPP) Liner Installed and 3,233 sewer spot repairs performed





I/I Funding for Rehabilitation of Local Sewers

23,566 Manholes Rehabilitated / Sealed





I/I Funding for Rehabilitation of Local Sewers

- 1,439 Miles of Sewer Main Smoke Tested
- 1,208 Catch Basins Disconnected from Sewer System





MWRA Long-Term Regional Flow Data – Gradual Decrease in Flow

ATTACHMENT 3
MWRA Long-Term Regional Flow Data
NOAA Annual Rainfall at Logan Airport

