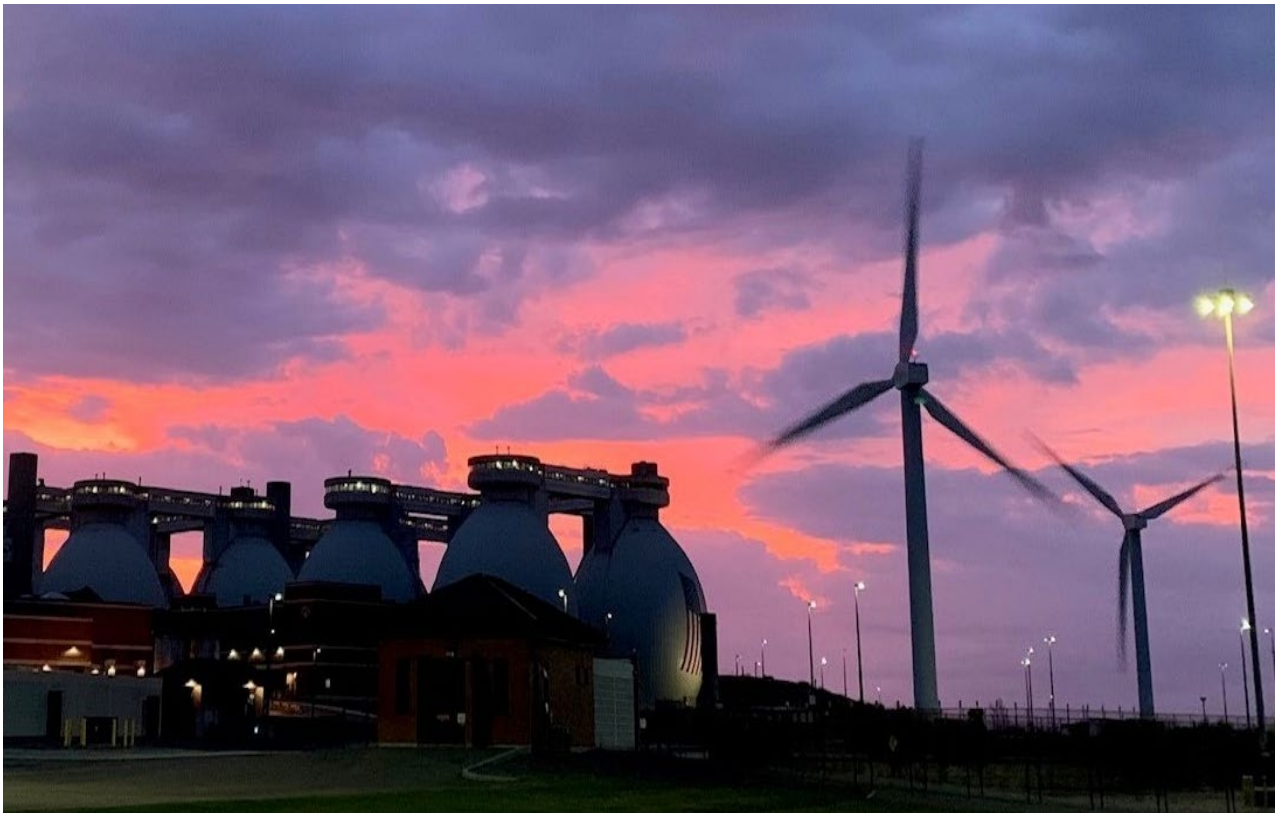


MASSACHUSETTS WATER RESOURCES AUTHORITY



Fiscal Year 2023 CURRENT EXPENSE BUDGET



GOVERNMENT FINANCE OFFICERS ASSOCIATION

*Distinguished
Budget Presentation
Award*

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**Massachusetts Water Resources Authority
Massachusetts**

For the Fiscal Year Beginning

July 01, 2021

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Prepared under the direction of

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MASSACHUSETTS WATER RESOURCES AUTHORITY

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Louis M. Taverna, Chairman
MWRA Advisory Board
100 First Avenue – 4th Floor
Boston, MA 02129

September 2022

Dear Chairman Taverna:

This letter transmits to the Advisory Board MWRA's Current Expense Budget (CEB) for Fiscal Year 2023. The CEB was approved by the MWRA's Board of Directors on June 22, 2022.

The Final FY2023 Budget resulted in a combined assessment increase of 2.85%, which is lower than the 3.5% increase projected for FY2023 last year. The FY2023 total expenses are \$840.2 million, of which 60.2% or \$506.0 million is for capital financing costs, \$273.7 million for direct expenses, and \$60.5 million for indirect expenses. The overall expenses increased by \$27.2 million or 3.3% over the FY2022 budget.

When establishing expense projections, the main emphasis was on the FY2023 budget, but with the goal of continuing to utilize MWRA's multi-year rate management strategy to provide sustainable and predictable assessment increases to our member communities for the long term. To achieve this goal again this year, MWRA has continued to employ conservative budgeting and fiscal discipline which includes controlled spending, capital project prioritization, and use of historical variable rate assumptions. The combination of these measures resulted in assessment increase projections under 3.5% for the next three years.

The FY2023 budget continues to address the smoothing of rate revenue changes at the water and sewer utility level.

Additional budget information and a copy of this document are available online at www.mwra.com. Questions or comments on this document should be directed to the MWRA Budget Department at (617) 788-2206. Thank you for your continued support.

Sincerely,

A handwritten signature in blue ink that reads "Fred a Laskey".

Frederick A. Laskey
Executive Director

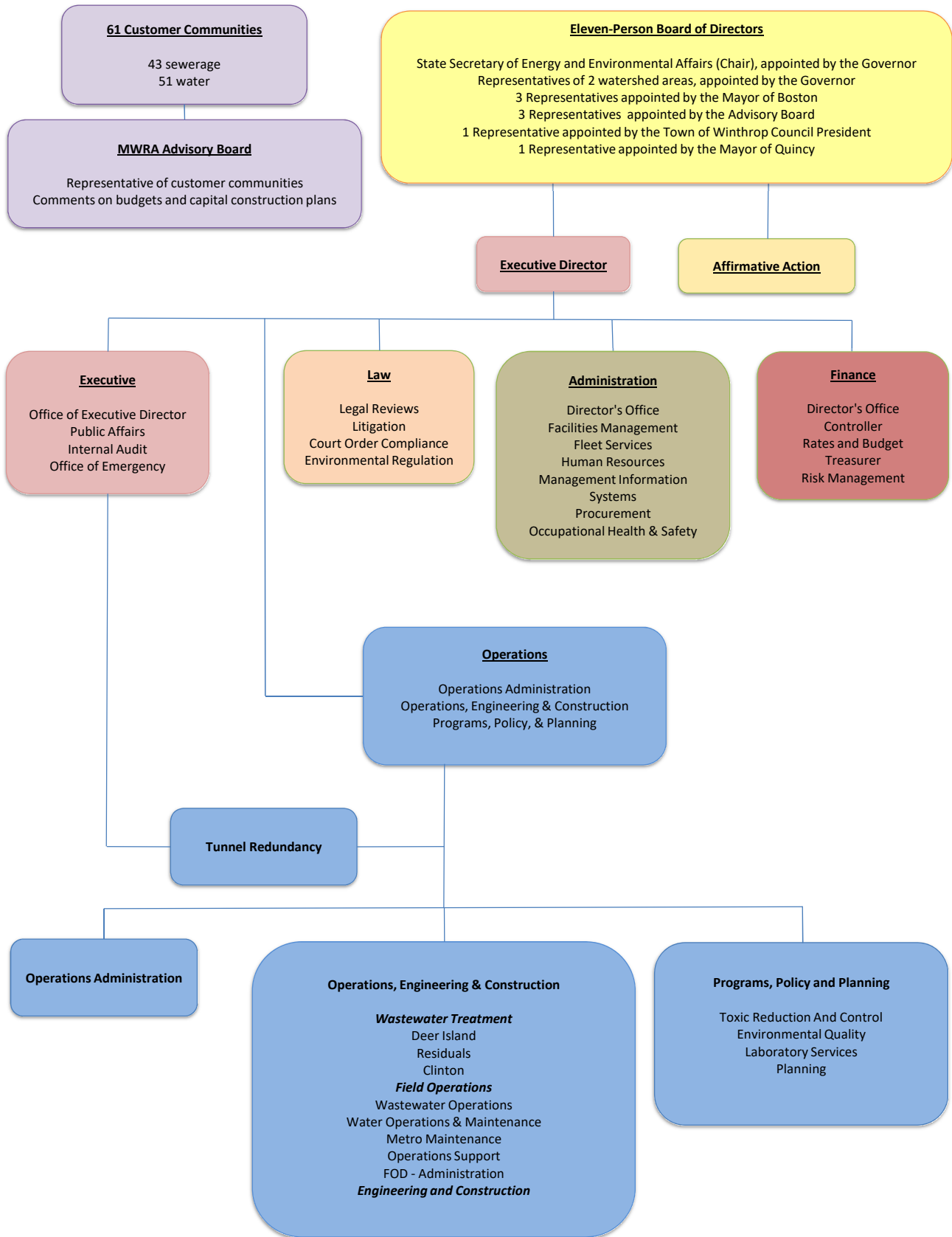


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MWRA AT A GLANCE

Purpose

Provide wholesale water and sewer services to customer communities, funded primarily through rates and charges

Legal Status

Massachusetts public authority established by an enabling act in 1984 – Chapter 372 of the Acts of 1984 as most recently amended November 2019

Management

- 11-member Board of Directors (3 Governor appointees, 3 Mayor of Boston appointees, 1 City of Quincy appointee, 1 Town of Winthrop appointee, and 3 Advisory Board appointees)
- 1 Executive Director (5 divisions: Office of the Executive Director, Operations, Finance, Administration, Law)

Advisory Board

Established by the enabling act to make recommendations to the MWRA on the MWRA budget and programs and to serve as liaison to the customer communities

Service Area

- 61 customer communities (43 sewerage, 54 water)
- 3.0 million people (44% of MA population)
- 5,500 businesses

FY23 Operating Budget (\$ in millions)

Direct Expenses	\$273.7
Indirect Expenses	\$60.5
<u>Capital Finance</u>	<u>\$506.0</u>
Total Operating Budget	\$840.2
Revenues*	\$840.2

*97.0% of Revenues raised from rate assessments

Bond Ratings - General Revenue Bonds (senior/subordinate)

Moody's -	Aa1/Aa2
S&P -	AA+/AA
Fitch -	AA+/AA

Capital Improvement Program

- Total CIP spending: \$9.0 billion since 1984
- Total Current Indebtedness: \$4.6 billion
- FY23 CIP Budget: \$278.5 million

Water System

- 2 protected reservoirs
 - Quabbin
 - Wachusett
- 2 water treatment facilities
 - John J. Carroll
 - William A. Brutsch
- 350 miles of distribution infrastructure including aqueducts, deep rock tunnels, and pipeline
- 14 active storage reservoirs and standpipes
- 11 active pumping stations
- Average Daily flow: 200 mgd
- Safe yield: 300 mgd
- Treatment Capacity: 405 mgd
- Percentage of capacity utilized: 67%*
*based on safe yield

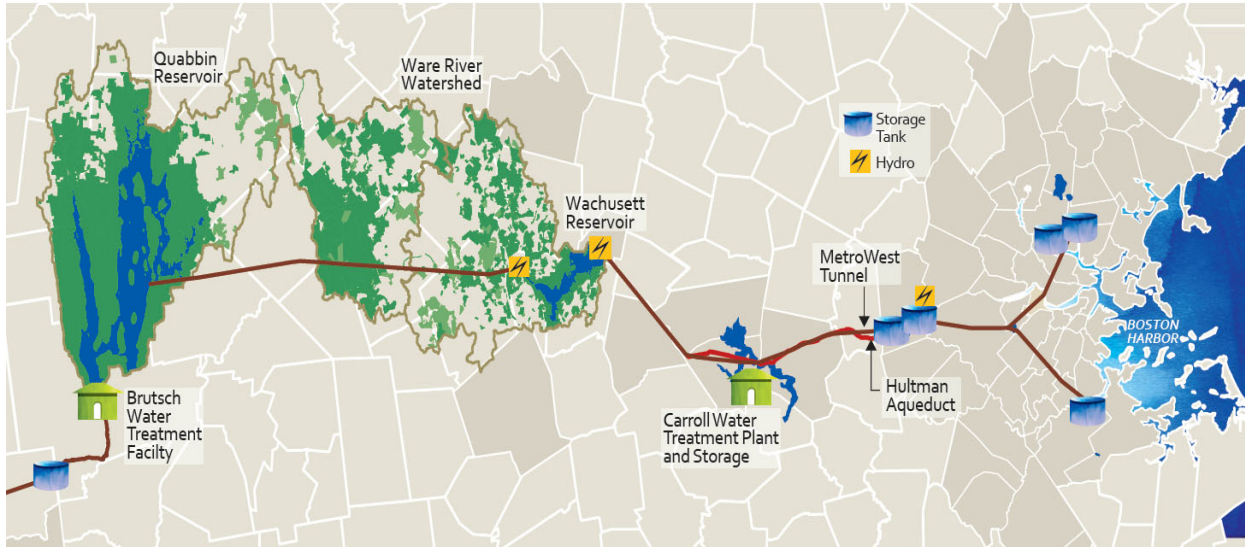
Wastewater System

- 240 miles of sewer pipelines and cross-harbor tunnels
- 13 pump stations
- 1 screening facility
- 1 gate house
- 6 CSO treatment/storage facilities
- 2 wastewater treatment plants
 - Deer Island Treatment Plant
 - Clinton Wastewater Treatment Plant
- 4 remote headworks
- 1 Pellet Plant for residuals processing
- Average daily flow: 307 mgd
- Peak wet weather capacity: 1,270 mgd

Renewable Energy

Approximately 30% of MWRA's energy requirement is self-generated from renewable sources (biomass, hydro, wind, & solar assets).

MWRA AT A GLANCE



MWRA's water comes from the Quabbin Reservoir, 65 miles west of Boston, and the Wachusett Reservoir, 35 miles west of Boston. The Quabbin alone holds a 4-year supply of water.

The reservoirs are filled naturally. Rain and snow fall onto watersheds (protected land around the reservoirs) and eventually turn into streams that flow into the reservoirs. This water comes into contact with soil, rock, plants and other material as it follows its path. This process helps to clean the water.

The Quabbin and Wachusett Reservoirs are protected. Over 85% of the watershed lands that surround the reservoirs are covered in forest and wetlands. About 75% of the total watershed land cannot be built on. The natural undeveloped watersheds help to keep MWRA water clean and clear. Because they are well-protected, the water in the Quabbin and Wachusett Reservoirs is of very high quality. The MWRA has won numerous awards for quality, taste, and sustainability.

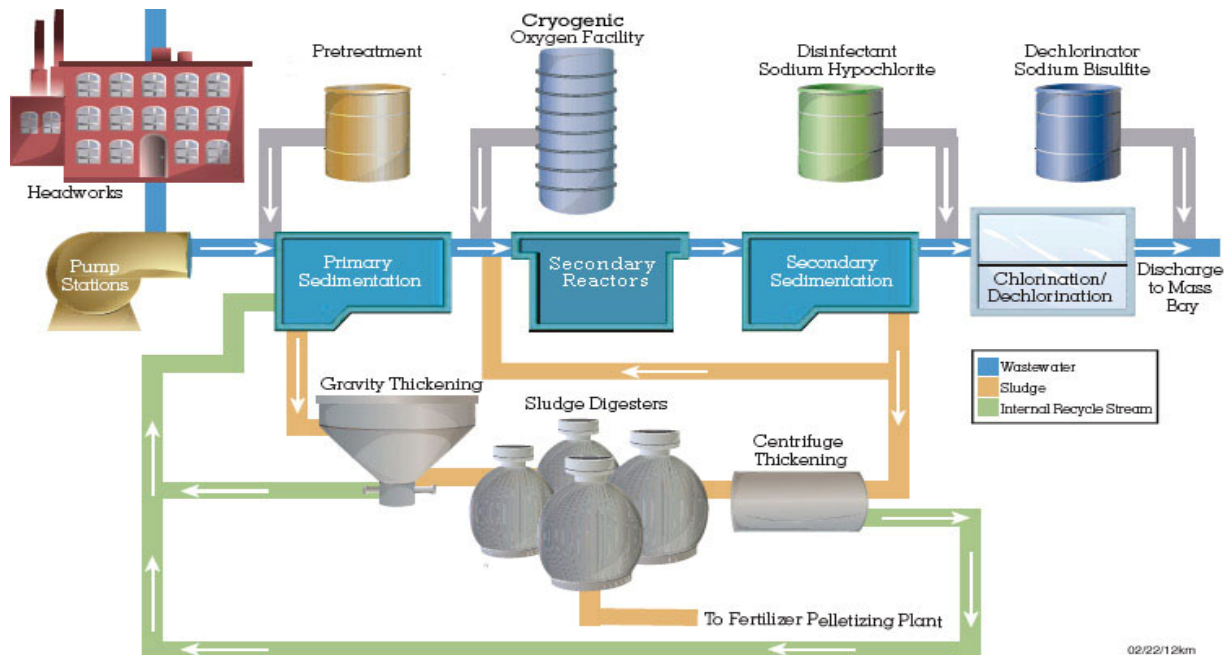
Water for most MWRA communities is treated at the Carroll Water Treatment Plant in Marlborough, Massachusetts. Water from the Quabbin and Wachusett Reservoirs enters the plant through the Cosgrove or Wachusett Aqueduct. The treated water leaves the plant through the MetroWest Water Supply Tunnel and the Hultman Aqueduct. Water from the Quabbin Reservoir for Chicopee, South Hadley Fire District #1 and Wilbraham is treated at the Brutsch Water Treatment Facility in Ware, Massachusetts, and leaves the plant through the Chicopee Valley Aqueduct.

For MetroWest and Metro Boston communities, treated water is sent through the MetroWest Water Supply Tunnel and the Hultman Aqueduct and is stored in covered tanks. From there it is drawn into distribution mains and many smaller community pipes. For Chicopee Valley Area Communities, treated water is sent through the Chicopee Valley Aqueduct to the local distribution mains and smaller community pipes. Water meters log the water entering each community.

Local pipes serve each street in the customer communities and eventually carry water into buildings. Meters installed by the local communities measure the amount of water delivered to each home or business.

To maintain and measure water quality, MWRA tests over 1,600 water samples per month, from the reservoirs all the way to household taps.

MWRA AT A GLANCE – Wastewater System



Water is flushed through a building's pipes into customer community sewers. These 5,100 miles of local sewers transport the wastewater into 227 miles of MWRA interceptor sewers. The interceptor sewers, ranging from 8 inches to 11 feet in diameter, carry the region's wastewater to two MWRA treatment plants. Most communities' wastewater flows to the Deer Island Treatment Plant with the Clinton Wastewater Treatment Plant serving the town of Clinton and the Lancaster Sewer District.

The following describes the Deer Island treatment process:

Collection and Pumping: Sewage is piped to headworks where bricks, logs and other large objects are screened out. Pumps draw the screened sewage through deep-rock tunnels under Boston Harbor to Deer Island.

Preliminary Treatment: Mud and sand settle in a tank called a grit chamber. This material, known as grit and screenings, is taken to a landfill for environmentally safe disposal.

Primary Treatment: The sewage then flows to primary settling tanks where up to 60% of the solids in the waste stream settle out as a mixture of sludge and water.

Secondary Treatment: Plant oxygen is added to the wastewater to speed up the growth of microorganisms. These microbes then consume the wastes and settle to the bottom of the secondary settling tanks. After secondary treatment, 80-90% of human waste and other solids have been removed.

The treated wastewater is disinfected before it is discharged to the Massachusetts Bay. The treated wastewater, known as effluent, travels through a 9.5-mile Outfall Tunnel bored through solid rock more than 250 feet below the ocean floor. The tunnel's last mile and a quarter include 55 separate release points known as "diffusers." With water depths up to 120 feet, this outfall provides a much higher rate of mixing and/or dilution than possible with discharges into the shallow waters of Boston Harbor.

Sludge from primary and secondary treatment is processed further in sludge digesters, where it is mixed and heated to reduce its volume and kill disease-causing bacteria. It is then transported through the Inter-Island Tunnel to the pelletizing plant in Quincy, Massachusetts where it is dewatered, heat-dried and converted to a pellet fertilizer for use in agriculture, forestry and land reclamation.



Executive Summary

Executive Summary

MISSION

The Massachusetts Water Resources Authority (MWRA) is an independent public authority of the Commonwealth of Massachusetts that provides wholesale water and sewer services to its member communities and funds its operations primarily through member community assessments and charges. MWRA's mission is to provide reliable, cost-effective, high-quality water and sewer services that protect public health, promote environmental stewardship, maintain customer confidence, and support a prosperous economy.

HISTORY

Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984), MWRA assumed possession and control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs that had formerly been the Sewerage and Waterworks Divisions of the Commonwealth of Massachusetts Metropolitan District Commission (MDC). The Commonwealth, under the management of the MDC Watershed Management Division (now the Department of Conservation and Recreation – Division of Watershed Management), retained ownership of real property, including the reservoirs and watersheds, the maintenance of which are included in MWRA's operating budget.

In 1985, responsibility for water distribution for 46 municipalities and sewage collection and treatment for 43 municipalities was transferred to the MWRA. In 1987, the legislature also transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA. New communities have the opportunity to join the MWRA water and sewer systems, and, over the years, the number of member communities has increased. Since 1985, the MWRA has invested over \$9.0 billion to modernize and improve the wastewater and waterworks systems serving its 61 member communities. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2022, the system served approximately 3.0 million people and more than 5,500 businesses.

The Enabling Act also established the MWRA Advisory Board to represent the cities and towns in the service area. The Advisory Board appoints three members of the MWRA Board of Directors, approves the extension of water and sewer services to additional communities, and reviews and makes recommendations on MWRA's annual Current Expense Budget and Capital Improvement Program.

MWRA ORGANIZATION

The MWRA has five separate divisions and the Affirmative Action and Compliance Unit Department (AACU). Each division provides operations or support services to carry out MWRA's activities under the direction of the Executive Office. MWRA's organizational structure is included in the document immediately preceding this page.

The **Executive Office** provides centralized MWRA management, direction, and policy development. The budget includes funds for the Office of the Executive Director, the Board of Directors, the Advisory Board, and other advisory committees. It includes the following departments: Office of Emergency Preparedness; Public Affairs; and Internal Audit.

The **Operations Division** operates the water and wastewater treatment systems; the water transmission and distribution system; the wastewater collection, transport, and combined sewer overflow (CSO) systems; and the residuals processing facility. It also provides laboratory and engineering and construction services; enforces sewer use regulations and seeks to limit the discharges of toxic materials; manages environmental studies of Boston Harbor and Massachusetts Bay; monitors water quality; and includes the Planning and Coordination Department.

The **Administration Division** is responsible for managing the support services functions of the Authority. The Administration is comprised of seven departments: Director's Office; Facilities; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Occupational Health and Safety (OHS). The Administration Division performs a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The **Finance Division** is responsible for managing the finance functions of the Authority. Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management. The Finance Division ensures that a variety of fiscal management systems are in place to monitor and control the Current Expense Budget (CEB) and Capital Improvement Program (CIP).

The **Law Division** provides legal counsel to all divisions on compliance with federal and state law, real estate matters, labor and employment law, litigation, and construction issues. Division attorneys provide or supervise through outside counsel the representation of MWRA in all litigation.

The **Affirmative Action and Compliance Unit (AACU) Department** develops, administers and monitors compliance of Affirmative Action Plan programs and policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority/Women Business Enterprises (MBE/WBE) in Authority procurement activities.

GOALS AND PERFORMANCE MEASURES

The MWRA Business Plan was first implemented in 1997 as a strategic road map to present specific steps for the organization to undertake to improve customer service, upgrade operations and maintenance and pursue aggressive rates management. In 2000, MWRA adopted a five-year Strategic Business Plan. Since then, some of the goals have been completed, and new ones have been added. MWRA's current five-year Strategic Business Plan FY2021-2025 was adopted in early 2021 and emphasized improvements in service and systems and included performance targets for operating the water and wastewater systems and maintaining new and existing facilities. The FY2021-2025 Business Plan can be found at <https://www.mwra.com/publications/businessplan/2021-2025mwrabp.pdf>. MWRA's Water System Master Plan and Wastewater System Master Plan present a long-term vision of the capital development needs of the water and wastewater systems and the actions planned to meet those needs. The Master Plan can be found at <http://www.mwra.com/02org/html/masterplan.htm>. Both the Master Plan and the

Business Plan are integral components to MWRA 's goal of carrying out its operating programs and capital projects while providing sustainable, predictable and reasonable assessments to its customer communities. To that end, the MWRA applies a multi-year rates management strategy to provide sustainable and predictable assessment increases to its member communities. The need to achieve and maintain a balance between these two goals is a critical issue in the development of both MWRA's operating and capital budgets.

During the year, MWRA measures actual performance on a monthly basis using various reporting tools. The monthly Financial Staff Summary reports on actual spending versus both the operating and capital budgets and provides summary explanations of the variances at the line item level. At least twice a year staff prepares projections for the fiscal year-end with a similar level of explanations. These reports are The performance indicator reports (published by MWRA as the Orange Notebook) captures a variety of parameters regarding performance of each major functional area of the Authority, on a quarterly basis. It can be found at <http://www.mwra.com/quarterly/orangenotebook/orangenotebook.htm>. Please see Appendix I.

BUDGET PROCESS OVERVIEW

Each year, MWRA prepares a Current Expense Budget (CEB) that reflects the best available information for anticipated expenditures and revenues. In parallel, MWRA prepares a Capital Improvement Program (CIP) Budget.

The MWRA operates on a fiscal year that runs from July 1 through June 30. The budget process for both budgets begins in the fall with formal kick-off meetings in September where MWRA staff are given guidelines and targets for their budget requests. After review by the Budget Department and MWRA senior staff, a Proposed CIP Budget is typically presented to the Board of Directors in December. The Capital Financing portion of the Current Expense Budget is determined based on existing debt service and projected borrowing needs. Typically in February, after further review with MWRA senior staff, the Budget Department presents the Proposed CEB to the Board of Directors, after which the Proposed CEB is then transmitted to the Advisory Board, with the projected assessment increase Authority-wide and for each customer community. The Advisory Board then has sixty days to review, comment, and provide recommendations on both budgets. MWRA also hosts a public hearing to solicit comments on the budgets and community assessments from citizens in its service area. Typically in May, the Advisory Board transmits its comments to the MWRA to which written responses are provided.

Typically at its May meeting, MWRA's Board of Directors holds hearings on the budget to review recommendations by the Advisory Board and new information available since the budget was developed. Staff incorporates Board decisions from the hearings and presents a final budget and final assessments for approval at the June Board of Directors meeting.

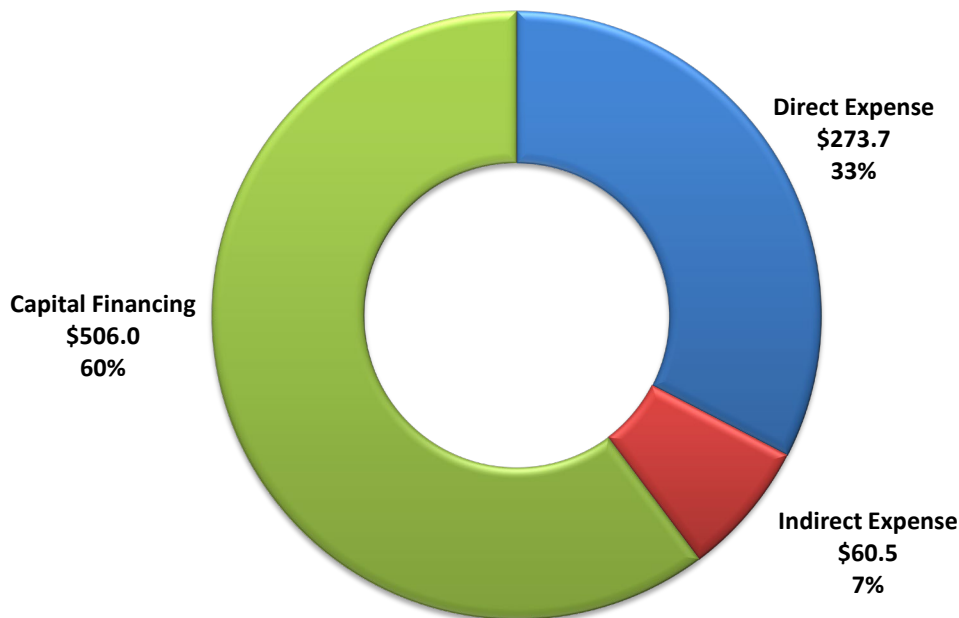
FY23 BUDGET SUMMARY

The Final FY23 Budget recommends a combined increase in rate revenue and charges of 2.85%. Total expenses are \$840.2 million, an increase of \$27.2 million or 3.3% over the FY22 Budget. Capital Financing costs remain the largest component of the CEB and account for 60.2% of total expenses. The Final FY23 Budget includes an offset of \$1.2 million for Debt Service Assistance (DSA) and \$1.0 million in Rate Stabilization Funds which are combined with other revenues, yield the Rate Revenue increase of 2.85%. The Final FY23 Rate Revenue Requirement is \$814.6 million, an increase of \$22.6 million over the FY22 Budget.

Total expenses of \$840.2 million include \$506.0 million for Capital Financing costs and \$334.2 million for operating expenses, of which \$273.7 million is for Direct Expenses and \$60.5 million is for Indirect Expenses. Total expenses increased \$27.2 million due to higher Direct Expenses of \$13.9 million, Indirect Expenses of \$3.8 million, and higher Capital Financing costs of \$9.4 million.

The FY23 Final Budget revenues, excluding rate revenue, total \$25.5 million, an increase of \$4.6 million or 22.1% over the FY22 Budget. The FY23 Final Budget non-rate revenue estimates include \$16.0 million in Other User Charges and Other Revenue, \$8.6 million for Investment Income, and \$1.0 million in Rate Stabilization.

FY23 Final Current Expense Budget



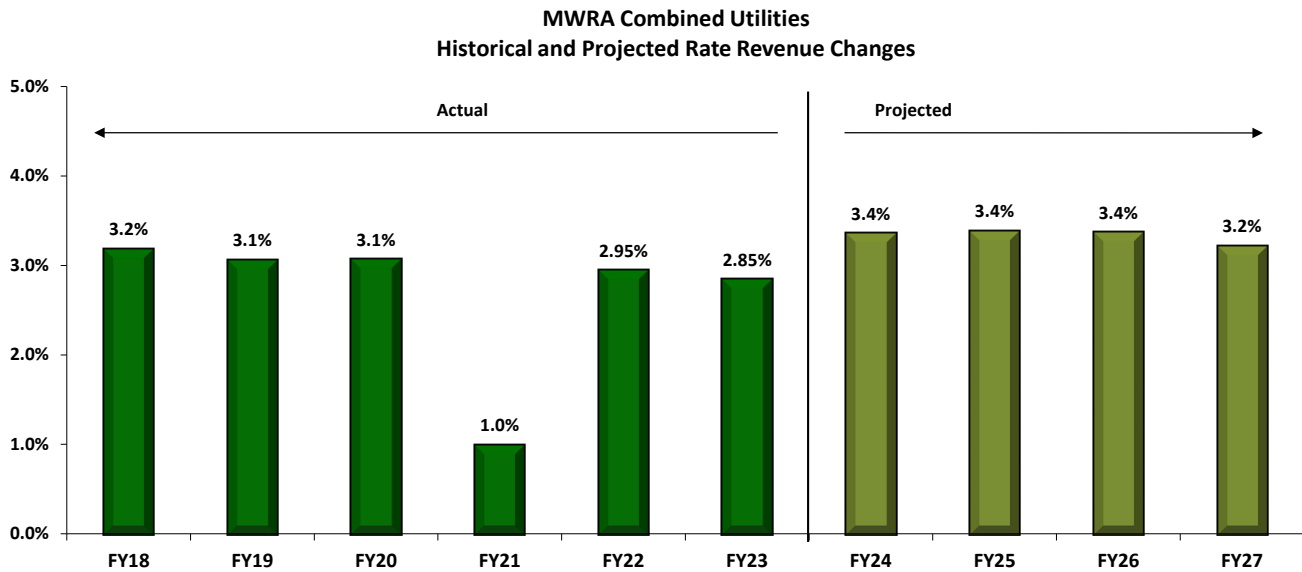
MWRA continues to pursue a rate management strategy which promotes sustainable and predictable assessments. The FY23 Final has a combined utilities assessment increase of 2.85% with Rate Revenues totaling \$814.6 million. Rate Revenues account for 97.0% of projected FY23 revenues.

The table below shows MWRA's FY23 Approved Budget for revenue and expenses compared with the FY22 Approved Budget. Changes from FY22 to FY23 are described in the Revenue and Expense section of the Executive Summary.

FY23 Approved Budget vs. FY23 Proposed Budget vs. FY22 Approved Budget

TOTAL MWRA	FY22 Approved Budget	FY23 Proposed Budget	FY23 Approved Budget	Change FY23 Approved Budget vs FY22 Approved Budget		Change FY23 Approved Budget vs FY23 Proposed Budget	
				\$	%	\$	%
EXPENSES							
WAGES AND SALARIES	\$ 116,680,341	\$ 119,281,491	\$ 118,980,689	\$ 2,300,348	2.0%	\$ (300,802)	-0.3%
OVERTIME	5,156,681	5,337,896	5,337,896	181,215	3.5%	-	0.0%
FRINGE BENEFITS	23,253,137	24,287,374	23,961,641	708,504	3.0%	(325,733)	-1.3%
WORKERS' COMPENSATION	2,614,159	2,519,751	2,519,751	(94,408)	-3.6%	-	0.0%
CHEMICALS	12,202,286	12,997,814	14,994,036	2,791,750	22.9%	1,996,222	15.4%
ENERGY AND UTILITIES	24,749,865	26,926,612	30,896,365	6,146,500	24.8%	3,969,753	14.7%
MAINTENANCE	32,442,381	32,730,687	33,241,022	798,641	2.5%	510,335	1.6%
TRAINING AND MEETINGS	473,994	492,197	492,197	18,204	3.8%	-	0.0%
PROFESSIONAL SERVICES	8,773,258	8,254,714	8,197,575	(575,683)	-6.6%	(57,139)	-0.7%
OTHER MATERIALS	8,334,774	6,702,897	6,728,862	(1,605,912)	-19.3%	25,965	0.4%
OTHER SERVICES	25,129,236	28,120,922	28,372,237	3,243,001	12.9%	251,315	0.9%
TOTAL DIRECT EXPENSES	\$ 259,810,111	\$ 267,652,357	\$ 273,722,272	\$ 13,912,160	5.4%	\$ 6,069,915	2.3%
INSURANCE	\$ 3,943,600	\$ 3,916,002	\$ 3,916,002	\$ (27,598)	-0.7%	\$ -	0.0%
WATERSHED/PILOT/DEBT	26,731,490	28,023,798	28,890,762	2,159,272	8.1%	866,964	3.1%
HEEC PAYMENT	6,991,953	6,225,566	6,225,566	(766,387)	-11.0%	-	0.0%
MITIGATION	1,693,360	1,735,694	1,735,694	42,334	2.5%	-	0.0%
ADDITIONS TO RESERVES	1,412,647	1,406,800	2,418,452	1,005,806	71.2%	1,011,652	71.9%
RETIREMENT FUND	11,205,000	12,555,203	12,555,203	1,350,203	12.1%	-	0.0%
POSTEMPLOYMENT BENEFITS	4,673,624	4,754,061	4,754,061	80,438	1.7%	-	0.0%
TOTAL INDIRECT EXPENSES	\$ 56,651,673	\$ 58,617,124	\$ 60,495,741	\$ 3,844,068	6.8%	\$ 1,878,616	3.2%
STATE REVOLVING FUND	\$ 95,673,399	\$ 99,402,956	\$ 96,342,495	\$ 669,096	0.7%	\$ (3,060,461)	-3.1%
SENIOR DEBT	244,957,128	305,911,389	302,169,940	57,212,812	23.4%	(3,741,449)	-1.2%
SUBORDINATE DEBT	125,046,217	75,491,975	75,491,975	(49,554,242)	-39.6%	-	0.0%
LOCAL WATER PIPELINE CP	6,120,127	6,243,882	6,233,882	113,755	1.9%	(10,000)	-0.2%
CURRENT REVENUE/CAPITAL	17,200,000	18,200,000	18,200,000	1,000,000	5.8%	-	0.0%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%	-	0.0%
DEBT PREPAYMENT	5,609,355	5,500,000	5,500,000	(109,355)	-1.9%	-	0.0%
DEBT SERVICE ASSISTANCE	(1,287,870)	-	(1,182,494)	105,376	-8.2%	(1,182,494)	0.0%
TOTAL DEBT SERVICE	\$ 496,535,417	\$ 513,967,263	\$ 505,972,858	\$ 9,437,441	1.9%	\$ (7,994,405)	-1.6%
TOTAL EXPENSES	\$ 812,997,202	\$ 840,236,744	\$ 840,190,871	\$ 27,193,669	3.3%	\$ (45,873)	0.0%
REVENUE & INCOME							
RATE REVENUE	\$ 792,084,000	\$ 819,138,000	\$ 814,648,000	\$ 22,564,000	2.85%	\$ (4,490,000)	-0.5%
OTHER USER CHARGES	9,222,884	9,870,899	9,836,508	613,624	6.7%	(34,391)	-0.3%
OTHER REVENUE	6,479,202	6,108,752	6,139,104	(340,098)	-5.2%	30,352	0.5%
RATE STABILIZATION	1,250,000	980,000	980,000	(270,000)	-21.6%	-	0.0%
INVESTMENT INCOME	3,961,116	4,139,091	8,587,259	4,626,143	116.8%	4,448,168	107.5%
TOTAL REVENUE & INCOME	\$ 812,997,202	\$ 840,236,744	\$ 840,190,871	\$ 27,193,670	3.3%	\$ (45,872)	0.0%

The graph below represents historical and projected assessment changes based on the FY22 Final Budget. The planning estimates project assessment increases at 2.85% in FY23, 3.4% in years FY24 through FY26, and then dropping to 3.2% in FY27.



FY23 GOALS AND MAJOR INITIATIVES

Ensuring a safe and reliable source of drinking water to MWRA customers, and wastewater discharges that meet all applicable regulations drives both capital and current expense budget costs. The MWRA has identified Authority-wide major initiatives to support the five strategic priorities integral to MWRA’s mission that were identified for action in MWRA’s Five-Year Strategic Business Plan FY2021-2025 accepted by the Board of Directors in early 2021. The Five-Year Strategic Business Plan FY2021-2025 can be found at <https://www.mwra.com/publications/businessplan/2021-2025mwrabp.pdf>. At the Division and Department-level, additional and more specific goals and initiatives are identified.

FY23 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Compliance with Regulatory Requirements and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.
- **Technical Assistance for Water Communities:** Assist member communities to improve local water distribution systems through ongoing financial, technical and operational support programs to maximize long-term water quality benefits.

II. Wastewater Quality and System Performance

- **Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.

- **Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality. Special initiatives include:
- **Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.
- **CSO Plan Compliance:** Complete all CSO milestones and demonstrate that the CSO Plan meets its performance objectives.
- **Technical Assistance for Wastewater Communities:** Assist member communities to improve their wastewater collection systems through ongoing technical, financial, and operational support programs.

III. Infrastructure Management and Resilience

- **System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
 - The FY23 Capital Improvement Program forecasts \$278.5 million in spending in FY23, of which \$109.8 million supports Wastewater System Improvements, \$133.1 million supports Waterworks System Improvements, and \$35.7 million supports Business and Operations Support.
 - For FY23, the FY23 Final CIP includes 200 active contracts of which 70 are for design of Wastewater and Waterworks Systems Improvements and 47 are for construction, with projected spending of \$51.7 million for design and \$155.8 million for construction. In addition, there are 83 active other contracts with total spending of \$71.0 million.
- **Emergency Preparedness:** Prepare for catastrophic events and malicious acts that could affect the water and wastewater systems.

IV. Environmental Sustainability

- **Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets.
- **Climate Change Adaptation:** Continue to monitor climate change research and move forward with plans to reduce impacts of projected sea level rise and storm surge events on MWRA infrastructure. Initiatives include:
- **Water System Expansion:** Advance reasonable water system expansion.

FY22 Year-End Accomplishments:

I. Drinking Water Quality and System Performance

- Met water quality and treatment standards in the drinking water system during FY22.

- Water Loan Program – Local Water System Assistance Program - Through June 2022, distributed \$32.1 million in Local Water System Assistance Program interest-free loans, plus an additional \$6.3 million under the Lead Service Line Replacement Loan Program. In total, MWRA has distributed \$498.7 million in loans to fund 585 local projects with participation from 43 of the 47 eligible water communities. Since 1998, MWRA has replaced or cleaned and lined 593 miles of local water main (about 8% of the regional system) via projects funded by MWRA’s financial assistance. In addition, MWRA has loaned \$31.3 million via 34 distributions to 14 communities for Lead Water Service Line Replacement projects.

II. Wastewater Quality and System Performance

- Deer Island anticipates receiving the Platinum Peak Performance Award for 2021 from the National Association of Clean Water Agencies (NACWA) for the 15th continuous year (anticipated late 2022). The award recognizes facilities for outstanding compliance of their NPDES permit limits. DITP has had no permit violations for over 15 years.
- Deer Island met secondary permit limits at all times, treating on average 98.9% of flows with full secondary treatment.
- Processed 95.9 average tons per day of sludge at the Pelletization Plant and disposed of 5,087 tons of grit and screenings through a contracted vendor.
- Met all NPDES reporting requirements including routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, Contingency Plan, DITP blending order. Missed no reporting deadlines, even with the impacts of COVID-19.
- Sewer Grant/Loan Program – Through June 2022, distributed \$31.3 million in grants and interest-free loans to member sewer communities for Infiltration/Inflow reduction and sewer system rehabilitation projects in FY22. In total, MWRA has distributed \$509.8 million in grants and loans to fund 646 local projects with participation from all 43-member sewer communities.

III. Infrastructure Management and Résilience

Maintenance

- For FY22, the Operations Division spent \$23.8 million on maintenance of which \$9.8 million was for materials and \$14.0 million was for services.
- In water system through June 2022, exercised 1,168 and replaced 21 mainline valves; exercised 745 and replaced ten blow-off valves.
- In the wastewater system through June 2022, inspected 31 miles and cleaned 38 miles of MWRA pipeline. Inspected 814 structures and rehabilitated 84 manholes. Also inspected 35 and cleaned 47 inverted siphon barrels.

Capital Improvements

- Capital spending for FY22 totaled \$138.5 million broken out by category as follows: \$70.4 million for Wastewater System projects, \$62.8 million for Water System projects, and \$5.3 million for Business and Operations Support projects.

IV. Finance and Management

- Maintained MWRA’s strong credit ratings, Aa1, AA+, AA+ from Moody’s, Standard & Poor’s and Fitch respectively. MWRA’s credit ratings from all three major agencies are only one ratings

step below the highest rating of AAA. The credit report from Moody's noted that for the rates management and Compliance and Capital Planning key ratings indicators, MWRA was assigned the highest Aaa rating. These high credit ratings enable MWRA to borrow at very advantageous interest rates minimizing debt service expense.

- Developed the FY23 Budget consistent with the FY22 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Completed a \$748.0 million refunding and new money Green Bond transaction on December 22, 2021. The overall transaction carried an All-in True Interest Cost of 2.56% with an average life of 12.2 years.
- Executed an \$11.4 million and a \$30.7 million defeasance of outstanding senior principal in September 2021 and June 2022 respectively. These defeasances reduced the debt service requirement between FY23 and FY26 by a total of \$48.8 million reducing the rate of increase to the Rate Revenue Requirement in those years. The transactions also resulted in \$1.3 million in interest savings by paying bonds on their call dates.
- Prepared submission of MWRA's Comprehensive Annual Financial Report (CAFR) to the Government Finance Officers Association
- Implemented pandemic planning protocols to ensure that employees and vendors are paid timely and accurately, without interruption, while teleworking.
- Held Budget Briefings with the MWRA Advisory Board to communicate FY23 departmental budgets and initiatives and how they relate to the MWRA's Master Plan.
- Prepared submission of MWRA's Comprehensive Annual Financial Report (CAFR) to the Government Finance Officers Association

VI. Environmental Sustainability

- Received a total of \$1.4 million in revenue for energy generated at numerous facilities including hydroelectric from Oakdale Station, Cosgrove Station, and Loring Road; wind from Charlestown Wind Pump Station; and solar from Carroll Water Treatment Plant.
- Continue to leverage MWRA's self-generation assets and participation in the competitive energy market to offset operating costs. The combined impact of participation in the Independent System Operators of New England (ISO-NE) load response program, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$2.3 million in revenue year to date in FY22. MWRA also avoided more than \$1.4 million in capacity charges through operation of self-generation assets during peak load events as called by the regional transmission organization (ISO New England).
- Deer Island self-generated 27.3% of the plant's total required power FY22.
- Energy Conservation - Approved to participate in Eversource's EV Make Ready program. Under this program, Eversource will provide all of the electrical infrastructure for 20 new EV charging stations at the Chelsea Facility. Purchased five additional electric vehicles. Installed facility-wide energy efficient LED lighting at the Carroll Water Treatment Plant, Clinton WWTP, as well as at various locations on Deer Island and Nut Island Headworks. Installed energy efficient Variable Frequency Drives on three pumps at Deer Island

SOURCES AND USES OF FUNDS

Funds supporting the Current Expense Budget are not subject to appropriation (with the exception of State debt service assistance). The table to the right shows MWRA's sources and uses of funds for the FY23 Final Budget.

Revenue

MWRA is required by its enabling act to balance its budget each year by establishing user assessments for water and sewer services that provide funds sufficient to, among other things, recover the cost of operations (excluding depreciation), maintenance and improvements, and debt service, as well as meeting required reserve levels.

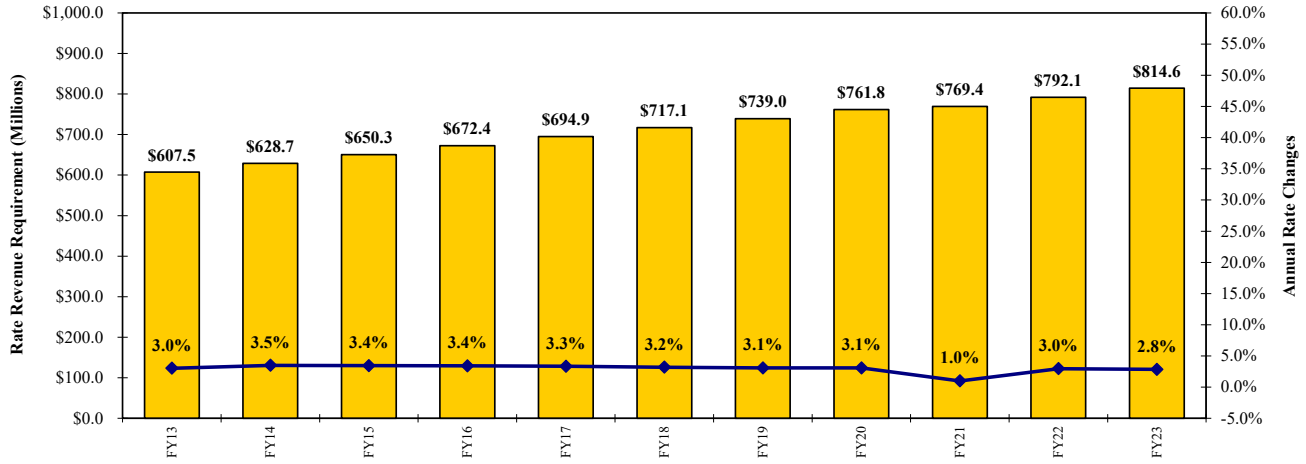
In the FY23 Final Budget, 97.0% of revenue is raised from rate revenue that is assessed to the member communities. The remaining 3.0% of revenue will come from interest on investments, Rate Stabilization Reserve Funds, charges to other water and sewer customers (including Chicopee Valley Aqueduct (CVA) communities), non-recurring revenue, annual charges to sewer system users with permits issued by MWRA's Toxic Reduction and Control Department (TRAC), penalties assessed to holders of sewer use permits, and other miscellaneous sources.

Rate Revenue

Under the FY23 Final Budget, the MWRA will raise \$814.6 million of its total revenue requirements from water and sewer assessments to member communities. Of the \$814.6 million, \$526.3 million will fund the sewerage system, an increase of 2.3% as compared to FY22; and \$288.3 million will fund the water system, an increase of 3.9% as compared to FY22. The following charts illustrate the historical rate revenue requirements at the combined utility level for the past eleven years.

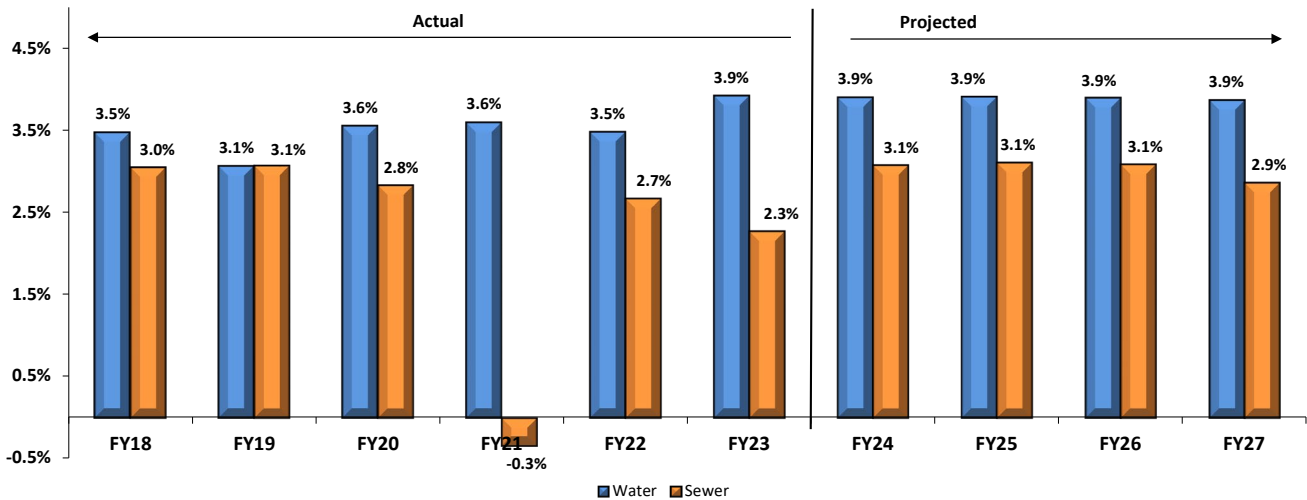
SOURCES & USES OF FUNDS*		
\$s in Millions		
<i>Sources of Funds</i>		
Other User Charges	\$9.8	1.2%
Other Revenue	6.1	0.7%
Investment Income	8.6	1.0%
Rate Revenue	814.6	97.0%
Rate Stabilization	1.0	0.1%
TOTAL REVENUE	\$840.2	100.0%
<i>Uses of Funds</i>		
Total Expenses before Debt		
Service Offsets	\$507.2	
Less:		
Debt Service Assistance	(1.2)	
Bond Redemption	-	
Sub-Total Net Expenses	\$506.0	
Capital Financing	\$506.0	60.1%
Direct Expenses	273.7	32.5%
Indirect Expenses	60.5	7.2%
TOTAL EXPENSES	\$841.4	100.0%
TOTAL EXPENSES Less Offsets	\$840.2	
<i>*may not add up due to rounding</i>		

MWRA: Combined Water & Sewer Assessments



Beginning in FY17, the MWRA successfully implemented a rate smoothing methodology that allows the rate revenue requirement to be smoothed at the utility level, eliminating annual volatility mostly driven by debt service payments for capital projects. The charts below show the historical percent increase for the last six years and the projected increases for the next four years.

MWRA Water & Sewer Utilities
Historical and Projected Rate Revenue Changes



Non-Rate Revenue

FY23 non-rate revenue totals \$25.5 million, which is an increase of \$4.6 million or 22.1% versus the FY22 Budget. The FY23 non-rate revenue budget includes the following:

Other User Charges

Other User Charges include revenues derived from the provision of water and sewer services to communities and other entities under special agreements. Other User Charges in the FY23 Final Budget total \$9.8 million, including \$5.5 million for the Chicopee Valley Aqueduct (CVA) communities, \$2.2 million for Deer Island water usage, \$208,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial reimbursement for Clinton Wastewater Treatment Plant expenses. Other User Charges are \$614,000 or 6.7% higher than the FY22 Budget.

Other Revenue

Other Revenue is budgeted at \$6.1 million, a decrease of \$340,000 from the FY22 Budget. Other Revenue includes \$2.2 million from the sale of the Authority's Renewable Portfolio Credits, revenue from participating in load response programs, and the sale of generated power to the grid. Energy related revenue decreased by \$106,000 reflecting decreased power sales revenue and reduced pricing for Renewable Portfolio Credits. The balance of Other Revenue includes \$2.5 million in permit fees and penalties, a decrease of \$208,000 from the FY22 Budget.

Investment Income

MWRA earns interest income by investing funds in both long and short-term investments vehicles governed by Sections 522 and 523 of the General Bond Resolution. The FY23 Budget includes \$8.6 million in Investment Income, \$8.6 million in Investment Income, an increase of \$4.6 million or 116.8% over the FY22 Budget. The budget reflects the impacts of increasing interest rates as a result of current market conditions.

Non-Recurring Revenue

Non-Recurring Revenue is one-time revenue used in a given fiscal year to reduce assessments to member communities. In any fiscal year when annual revenues exceed expenses, MWRA may transfer the unexpended amount to the Rate Stabilization Reserve Fund. Within certain limits, MWRA may use this money to reduce the Rate Revenue Requirement in any subsequent year. Consistent with the requirements of its enabling act and its General Bond Resolution, MWRA treats transfers from the Rate Stabilization Reserve as revenue in that fiscal year. For the FY23 Final, \$1.0 million in Rate Stabilization Reserve usage is included as it relates to funds set aside in FY18 to be utilized when the HEEC cable came on line.

The Rate Revenue Requirement for FY23 is \$814.6 million, an increase \$22.6 million or 2.85% over the FY22 Budget. The Rate Revenue Requirement is the difference between total expenses of \$840.2 million, less non-rate revenue of \$25.5 million.

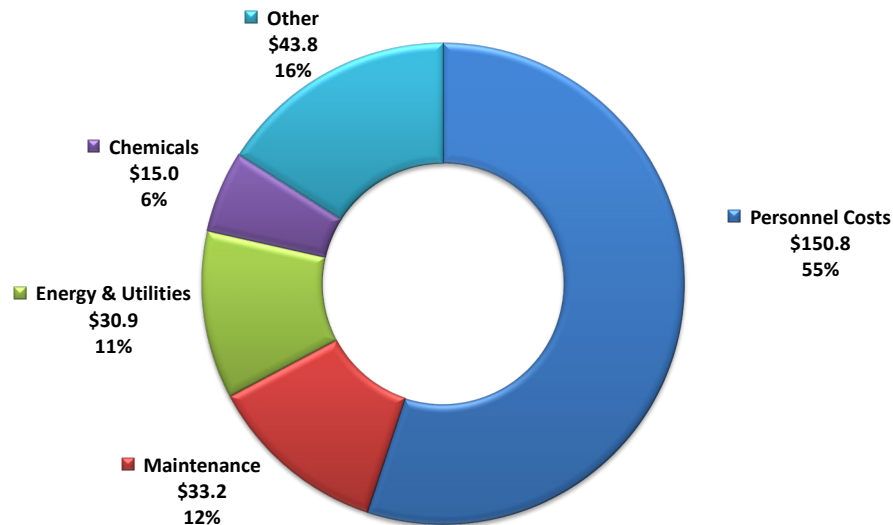
DIRECT EXPENSES

FY23 Direct Expenses total \$273.7 million, an increase of \$13.9 million, or 5.4% over the FY22 Budget. The primary drivers of the Direct Expenses increases are Energy and Utilities, Other Services, Chemicals, and Wages and Salaries.

The chart below combines related direct expense line items into general cost categories. Personnel costs (wages and salaries, overtime, fringe benefits, and workers' compensation) are the largest component of the direct expense budget at 55%, followed by other expenses (training and meetings, professional services, other materials, and other services) at 16%, maintenance at 12%, energy & utilities at 11%, and chemicals at 6%.

Direct Expenses by Category

(\$s in millions)

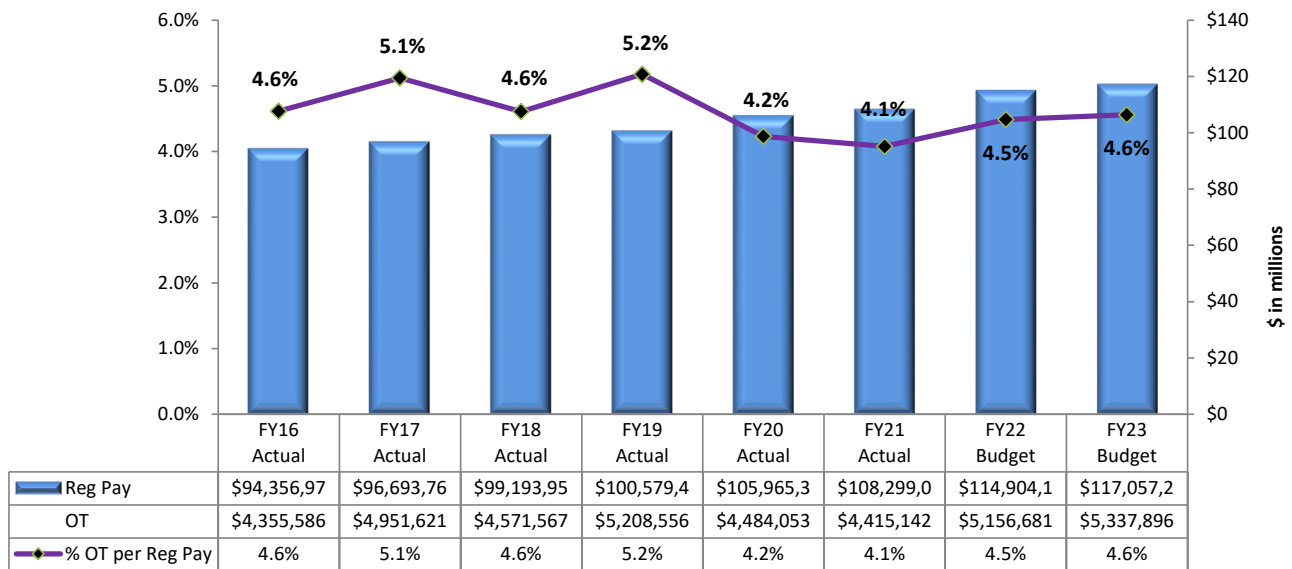


FY23 Final Current Expense Budget MWRA Direct Expenses by Line Item						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 107,776,261	\$ 109,857,067	\$ 116,680,342	\$ 118,980,689	\$ 2,300,347	2.0%
OVERTIME	4,484,055	4,415,142	5,156,681	5,337,896	181,215	3.5%
FRINGE BENEFITS	20,846,345	21,694,636	23,253,137	23,961,641	708,504	3.0%
WORKERS' COMPENSATION	1,862,942	1,842,853	2,614,159	2,519,751	(94,408)	-3.6%
CHEMICALS	10,998,339	11,652,053	12,202,286	14,994,036	2,791,750	22.9%
UTILITIES	23,151,712	21,887,023	24,749,865	30,896,365	6,146,500	24.8%
MAINTENANCE	29,737,299	30,660,795	32,442,381	33,241,022	798,641	2.5%
TRAINING & MEETINGS	288,045	150,787	473,993	492,197	18,204	3.8%
PROFESSIONAL SERVICES	6,588,621	7,377,648	8,773,258	8,197,575	(575,683)	-6.6%
OTHER MATERIALS	5,697,624	6,272,620	8,334,774	6,728,862	(1,605,912)	-19.3%
OTHER SERVICES	24,306,370	23,656,946	25,129,236	28,372,238	3,243,002	12.9%
TOTAL	\$ 235,737,613	\$ 239,467,570	\$ 259,810,112	\$ 273,722,272	\$ 13,912,160	5.4%

Wages and Salaries – The budget includes \$119.0 million for Wages and Salaries versus \$116.7 million in the FY22 Budget, an increase of \$2.3 million or 2.0%. Regular Pay makes up \$117.1 million or 98.4% of the total Wages and Salaries. The FY23 Budget includes 1,167.4 FTEs, 0.4 more than the FY22 Budget. As always, new hires and backfilling of vacant positions are managed at the agency level and addressed on a case-by-case basis by senior management.

Division	FY19	FY20	FY21	FY22	FY23
Executive	5.0	5.0	5.0	5.0	5.0
Emergency Preparedness	8.0	7.0	4.0	4.0	4.0
Affirmative Action	6.0	7.0	7.0	7.0	7.0
Internal Audit	6.7	6.7	6.7	6.7	6.7
Public Affairs	12.9	11.9	11.9	11.9	11.9
Tunnel Redundancy	5.0	8.0	13.0	16.0	16.0
Operations	920.3	916.0	918.0	918.0	903.0
Law	13.5	13.6	13.6	11.6	12.0
Administration	140.6	145.7	146.7	149.7	149.7
Finance	37.0	37.0	37.0	37.0	52.0
Authority Total	1,155.0	1,158.0	1,163.0	1,167.0	1,167.4

MWRA: % Overtime vs. Regular



Overtime – The budget includes \$5.3 million for Overtime, an increase of \$181,000 or 3.5% as compared to the FY22 Budget mainly due to wage increases and recent trends in planned overtime for off-hours maintenance, emergency, and planned projects that include construction.

Fringe Benefits – The budget includes \$24.0 million for Fringe Benefits, an increase of \$709,000 or 3.0% over the FY22 Budget. Health Insurance premiums total \$20.5 million, an increase of \$738,000 or 3.7% over the FY22 Budget largely due to an increase in the health plans rates and utilization.

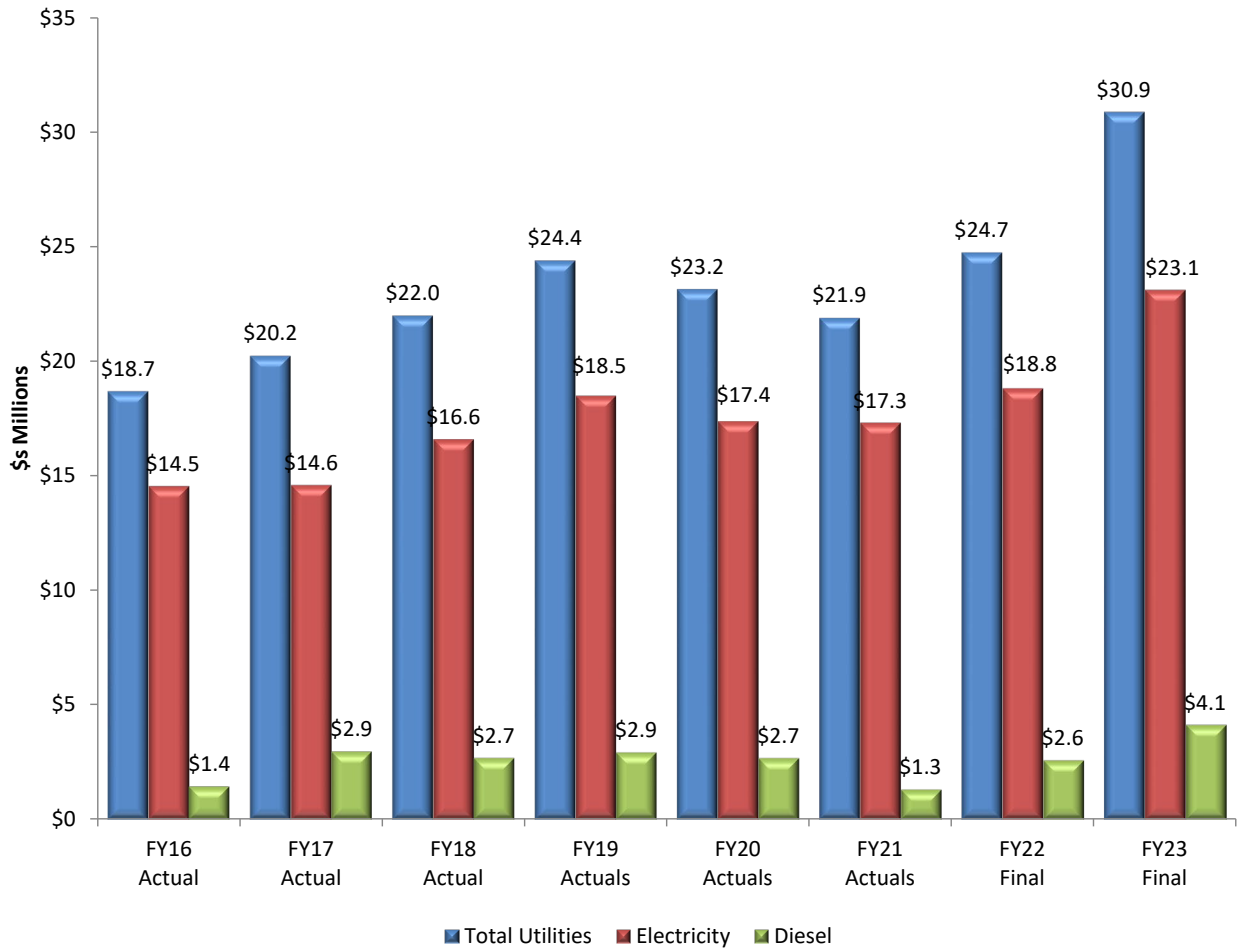
Fringe Benefits				
Line Item	FY21 Actuals	FY22 Budget	FY23 Budget	Difference
Health Insurance	\$ 18,398,183	\$ 19,746,494	\$ 20,484,396	\$ 737,902
Dental Insurance	1,153,001	1,164,150	1,115,162	(48,988)
Unemployment Insurance	134,988	130,000	140,000	10,000
PFML	404,159	448,962	458,403	9,441
Medicare	1,472,760	1,589,110	1,589,640	530
Overtime Meals	100,170	119,421	119,040	(381)
Tuition Reimbursement	31,376	55,000	55,000	-
Total Fringe Benefits	\$ 21,694,637	\$ 23,253,138	\$23,961,641	\$ 708,503

Workers' Compensation – The budget includes \$2.5 million for Workers' Compensation. This is \$94,000 or 3.6% less than the prior year's level and is based on a three-year historical average.

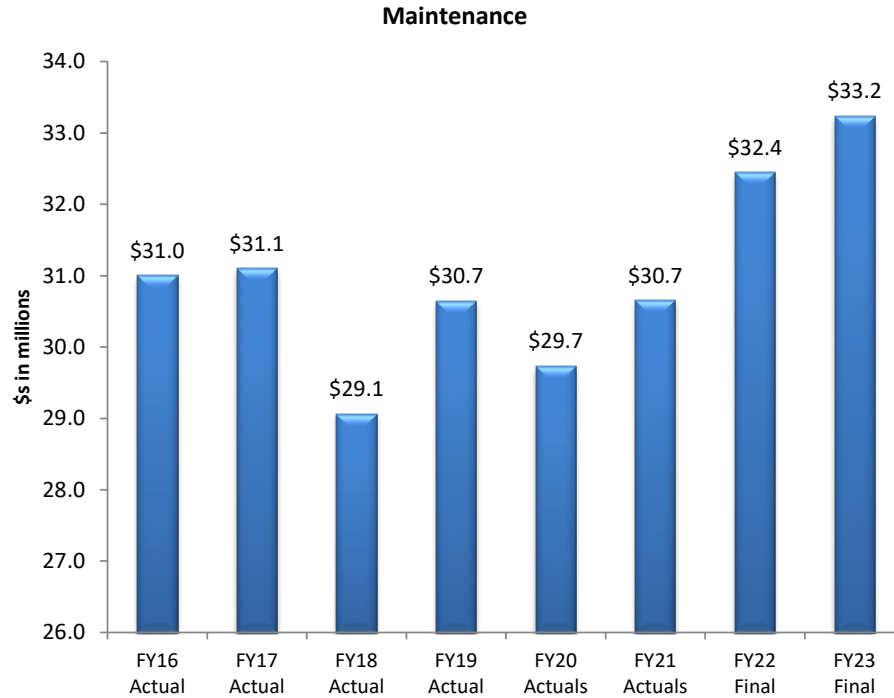
Chemicals – The budget includes \$15.0 million for Chemicals, an increase of \$2.8 million or 22.9% over the FY22 Budget. Inflation is driving higher pricing, partially offset by lower volumes for some chemicals. Several chemicals increased including Sodium Hypochlorite by \$1.9 million or 58.5%, Ferric Chloride by \$476,000 or 25.2%, Polymer by \$179,000 or 35.5%, Aqua Ammonia by \$125,000 or 75.6%, Sodium Bisulfite by \$122,000 or 38.1%, and \$101,000 or 30.2%. For chemical contracts that will be procured during FY23, a 15% inflation factor has been applied across the board. The FY23 Budget does not include any funding for the new Deer Island National Pollutant Discharge Elimination System (NPDES) permit, which is projected to have more stringent requirements for enterococcus treatment compliance.

Utilities – The budget includes \$30.9 million for Utilities, which is an increase of \$6.1 million or 24.8% over the FY22 Budget. The budget funds \$23.1 million for Electricity, an increase of \$4.3 million or 22.8% over the FY22 budget primarily due to higher pricing. The Diesel Fuel budget of \$4.1 million is \$1.5 million or 59.6% higher than the FY22 budget primarily due to increased price and volume at DITP.

Utilities



Maintenance – The budget includes \$33.2 million for Maintenance projects, an increase of \$799,000 or 2.5% over the FY22 Budget. The increase is driven by Building & Grounds Services of \$604,000 primarily for the Griffin Way traffic signal and floating dock rehab work at Deer Island, Computer Software Licenses of \$439,000 primarily due to new Sequel Server Enterprise Software Assurance license and Crowdstrike software maintenance, Electrical Materials of \$238,000 driven by DITP for new equipment including PLC’s for flares and breakers for the South System Pump Station and Winthrop Terminal Facility, Computer Services of \$208,000 primarily for SCADA software maintenance and updated cost for Microsoft Premier Services. These increases are partially offset by lower Plant & Machinery Materials of \$735,000 for materials that were purchased in FY22 including DITP strainers and other reductions to as-needed items.



Training and Meetings – The budget includes \$492,000 for Training and Meetings, an increase of \$18,000 or 3.8% over the FY22 Budget. The increase is mainly due to Rapid Excavation and Tunneling Conference for Tunnel Redundancy for \$15,000.

Professional Services – The budget includes \$8.2 million for Professional Services, a decrease of \$576,000 or 6.6% from the FY22 Budget. The decrease is driven by MIS for a reduction in scope for Managed Security Service Provider (MSSP) of \$474,000, internet and intranet upgrades of \$275,000, and Oracle Professional Services of \$100,000 that are planned in FY22. This decrease was partially offset by increase in Security costs of \$368,000 based on updated contract rates.

Other Materials – The budget includes \$6.7 million for Other Materials, a decrease of \$1.6 million or 19.3% from the FY22 Budget. The decrease reflects \$2.1 million in Other Materials due to office space modifications costs for staff moving from the Charlestown Navy Yard to Chelsea and Deer Island, that are now funded in the CIP. This is partially offset by Vehicle Expense of \$411,000 driven by the purchase and installation of fifteen electric vehicle chargers and five Direct Current (DC) fast electric vehicle chargers for the Chelsea Facility.

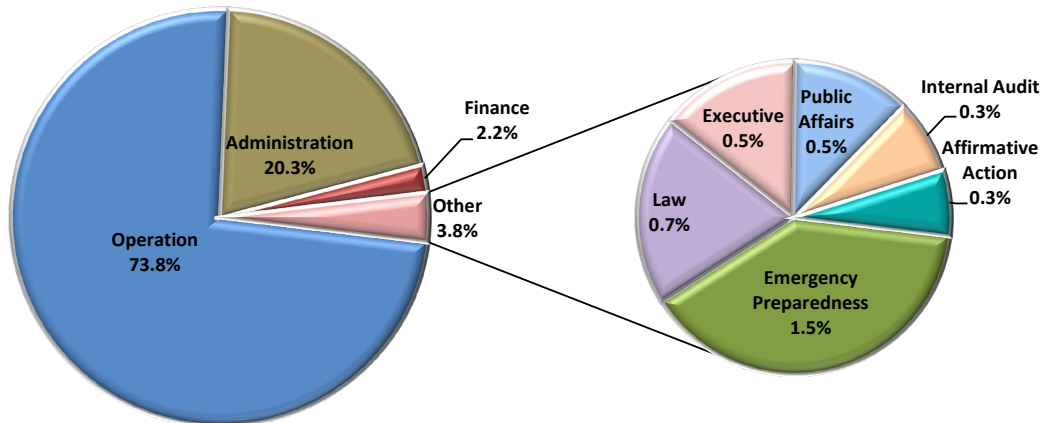
Other Services – The budget includes \$28.4 million for Other Services, an increase of \$3.2 million or 12.9% over the FY22 Budget. The increase reflects \$2.4 million for Sludge Pelletization due mainly to the projected cost increase of the NEFCo contract extension primarily due to inflation, partially offset by reduced sludge quantities based on historical trends. Also, Telecommunications of \$350,000 primarily based on updated network costs, Space/Lease Rentals increased by \$332,000 primarily due to the Rock Core Shed lease and shelving for the Water Redundancy Program Management, and Printing/Duplicating of \$123,000 primarily due to Records Center scanning for workplace consolidation.

Functional Area Budget Summary

The chart below shows the breakdown of the MWRA’s direct expense budget by division.

FY223Final Current Expense Budget MWRA Direct Expenses by Division						
DIVISION	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
EXECUTIVE	\$ 6,208,693	\$ 6,916,380	\$ 7,332,673	\$ 8,281,166	\$ 948,493	12.9%
ADMINISTRATION	47,424,302	49,969,000	57,563,995	55,445,633	(2,118,362)	-3.7%
FINANCE	3,975,039	4,340,471	4,635,289	6,044,983	1,409,694	30.4%
LAW	1,706,828	1,664,788	1,927,006	2,027,649	100,643	5.2%
OPERATIONS/PLANNING	176,422,751	176,576,931	188,351,149	201,922,841	13,571,692	7.2%
TOTAL	\$ 235,737,613	\$ 239,467,580	\$ 259,810,112	\$ 273,722,272	\$ 13,912,160	5.4%

MWRA Direct Expense Budget by Division



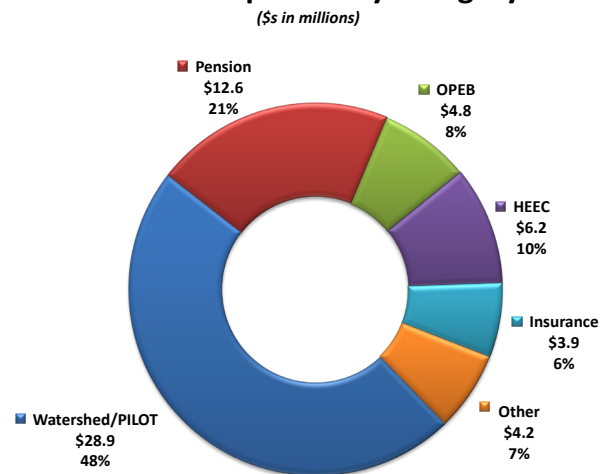
Detailed summaries for each Division budget are provided following the Executive Summary.

INDIRECT EXPENSES

Indirect Expenses for FY23 total \$60.5 million, an increase of \$3.8 million or 6.8% over the FY22 Budget.

The following graph combines related indirect expense line items into the general cost categories and shows that Watershed/PILOT expenses are the largest component of the indirect expense budget at 48%, followed by the Pension Fund at 21%, HEEC at 10%, OPEB at 8%, Insurance at 6%, and Other (for items such as Mitigation and Additions to Reserves) at 7%.

Indirect Expenses by Category



Insurance

MWRA purchases property and casualty insurance from external insurance carriers with a self-insured retention of \$2.5 million dollars and Worker's Compensation Excess insurance with a self-insured retention of \$500,000 per claim. The budget includes \$3.9 million for Insurance, a decrease of \$28,000 or 0.7% from the FY22 Budget. This reflects an anticipated 10% property premium credit. The budget consists of two components, self-insured claim costs and insurance premiums. Self-insured claim cost are estimated based on actual average spending over the past 5 years (FY17-21). Premium costs are estimated based on current costs adjusted for inflation and potential increases due to insurance market conditions. MWRA mitigates the budgetary risk of self-insurance by maintaining an Insurance Reserve. The reserve, which was established as part of the General Bond Resolution, requires that an independent insurance consultant review the funding level every three years and provide recommendations as to its adequacy.

Watershed Reimbursement/PILOT

The Enabling Act directs MWRA to pay the Commonwealth of Massachusetts for several statutory obligations: Payment in Lieu of Taxes (PILOT) for Commonwealth-owned land in the watersheds and operating expenses of the Division of Water Supply Protection. The budget includes \$28.9 million for the Watershed Management budget, an increase of \$2.2 million or 8.1% over the FY22 Budget. The budget includes \$20.0 million for reimbursement of operating expenses net of revenues, and \$8.9 million for Payment in Lieu of Taxes (PILOT). The budget increase is driven by contractual wage increases and healthcare costs. A vacancy adjustment of -\$328,000 has been applied to reflect the actual timing of hiring. The PILOT payments increased by \$98,000 or 1.1% over FY22.

	FY22 Budget	FY23 Budget	FY23 vs. FY22	
			\$	%
Operating Expense	17,513,490	19,610,471	2,096,981	12.0%
Major Projects	1,433,000	1,397,000	(36,000)	-2.5%
Revenue	(1,020,000)	(1,020,000)	-	0.0%
Net	17,926,490	19,987,471	2,060,981	11.5%
PILOT	8,805,000	8,903,291	98,291	1.1%
Total	26,731,490	28,890,762	2,159,272	8.1%

Harbor Electric Energy Company (HEEC)

The budget includes \$6.2 million for the Harbor Energy Electric Company (HEEC), a decrease of \$766,000 or 11.0% from the FY22 Budget. The budget reflects the latest cost estimates, but the final costs will be determined by the Massachusetts Department of Public Utilities (DPU) once it has completed its review of the project. In FY18, \$6.5 million was set aside to mitigate the impact of the HEEC cost associated with construction of a new power cable to Deer Island Treatment Plant, and is projected to be used between FY22-25. In FY23, \$1.0 million of Rate Stabilization/HEEC Reserve will be used.

Mitigation

MWRA disburses mitigation funds to communities affected by MWRA projects or facilities pursuant to MWRA's Statement of Mitigation Principles and/or specific agreements with communities. MWRA mitigation may include relieving the direct impacts of construction, meeting environmental and regulatory requirements, long-term operating agreements, or community compensation for impacts over and above those addressed by other mitigation. In rare situations, where the extent and duration of the impact of a project or facility on a community is such that restoring the area to its pre-project state is insufficient to relieve the stress of MWRA's presence during the project, MWRA funds or contributes to improvements to affected areas. Mitigation expenses are funded in the capital budget and in the current expense budget. The budget includes \$1.7 million for Mitigation payments to the City of Quincy and Town of Winthrop in accordance with mitigation agreements, which expire in FY25.

Operating Reserves

Funding for the Operating Reserve for FY23 is \$2.4 million. The Operating Reserve balance is in compliance with MWRA General Bond Resolution which requires a balance of one-sixth of annual operating expenses. Based on the FY23 Final Budget, the required balance is \$49.7 million versus the \$47.3 million required in FY22.

Retirement System Contribution

The budget includes \$12.6 million for the Retirement Fund which is level to planning estimates, but an increase of \$1.4 million or 12.1% over the FY22 budget. The contribution is determined by the January 2021 actuarial valuation. MWRA's pension fund is at the 88.2% funding level and projected to be fully funded by June 30, 2030.

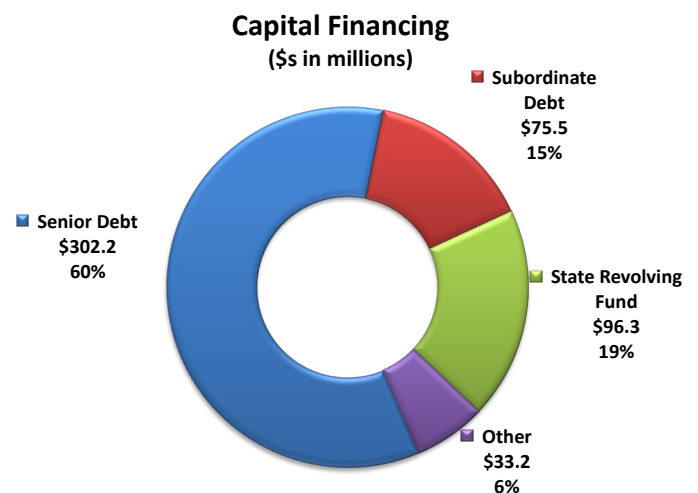
GASB 45 – Accounting and Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)

In the FY23 Final Budget the Authority funds its OPEB liability at \$4.8 million, continuing the Authority's long-term commitment to address its liabilities. The Authority has complied with the GASB 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)*, by disclosing this liability in the year-end Financial Statements. As part of the multi-year strategy to address its unfunded liabilities for OPEB and pension holistically, the Board approved a plan to pay down the pension liability and upon reaching full funding, move to address the OPEB obligation. To maximize the benefits in terms of returns and accounting treatment, an irrevocable OPEB Trust was established with Board approval and funding started on April 23, 2015. The OPEB Trust balance was \$66.3 million as of December 31, 2021. Starting in FY18, GASB 75 is the governing regulation for employee OPEB contributions. The \$4.8 million budget is based on 50% of the contribution determined in the January 1, 2020 actuarial report. MWRA recently received an updated actuarial valuation as of January 1, 2022 which reduced the FY23 actuarial contribution to \$2.9 million. Staff recommended keeping the OPEB funding at current levels to mitigate against actuarial losses as a result of volatile market conditions.

CAPITAL FINANCING

The FY23 Final Budget capital financing costs total \$506.0 million and remains the largest portion of the MWRA's budget at 60.2% of the Operating Budget. Capital financing costs increased by \$9.4 million or 1.9% compared to the FY22 Budget. This increase in the MWRA's debt service is the result of projected FY23 borrowings and the structure of the existing debt, partially offset by the impact of the projected defeasance.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by MWRA to lower borrowing costs and manage rates include current and advanced refunding of outstanding debt, maximizing the use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, swap agreements, and the use of surplus revenues to defease debt. MWRA also uses tax exempt commercial paper to minimize the financing cost of construction in process



The FY23 Final Budget assumes a 3.50% interest rate for variable rate debt which is the same as the FY22 rate. The Authority’s variable rate debt assumption is comprised of three separate elements: the interest rate for the weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees. While MWRA continues to experience low interest rates, they are not reflective of historical averages. MWRA has observed increases to variable interest rates as the Federal Reserve tightens monetary policy.

The FY23 capital financing budget includes:

- \$302.2 million in principal and interest payments on MWRA’s senior fixed rate bonds. This amount includes \$12.7 million to support new money issuances of \$125.0 million in October 2022 and \$100.0 million in June 2023;
- \$75.5 million in principal and interest payments on subordinate bonds;
- \$96.3 million in principal and interest payments on SRF loans. This amount includes \$8.8 million to support an issuances of \$105.0 million in the spring of 2023;
- \$18.2 million to fund ongoing capital projects with current revenue and to meet coverage requirements;
- \$5.5 million in debt prepayment;
- \$6.2 million to fund the interest expense related to the Local Water Pipeline Assistance Program;
- \$3.2 million for the Chelsea Lease; and
- \$1.2 million offset to Debt Service for the Debt Service Assistance received in FY22.

Outstanding Debt and Debt Management

The \$9.0 billion spent on MWRA’s modernization efforts since the Authority was established in 1985, has relied heavily on debt financing. Total debt as of June 30, 2022 was \$4.6 billion consisting of senior and subordinated debt, Tax-Exempt Commercial Paper, and a Revolving Loan. The total debt was \$205.2 million lower than the MWRA’s total debt as of June 30, 2021. The MWRA enjoys strong unenhanced senior debt ratings of Aa1, AA+, and AA+ from Moody’s, Standard & Poor, and Fitch, respectively.

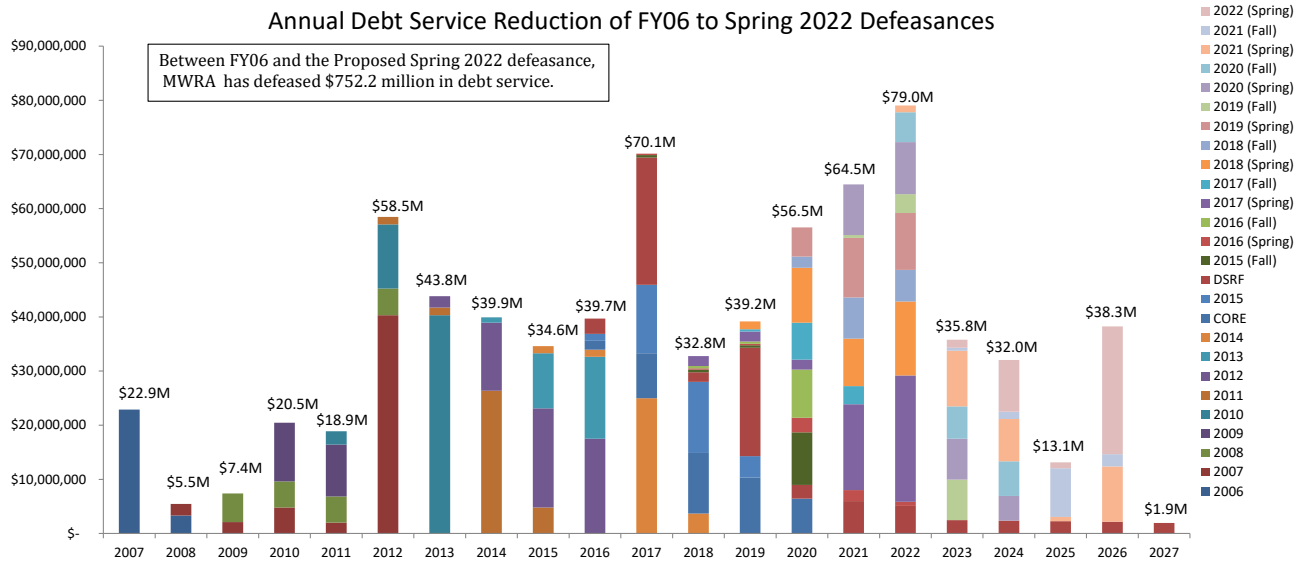
Type	Principal Outstanding June 30, 2022	% of Total
Senior General Revenue Bonds	\$ 3,139,845,000	68.3%
Massachusetts Clean Water Trust	\$ 822,006,189	17.9%
Subordinate General Revenue Bonds	\$ 532,755,000	11.6%
Tax Exempt Commercial Paper	\$ 100,000,000	2.2%
Total	\$ 4,594,606,189	100.0%

86.2% of MWRA's Debt is Fixed Rate

As a result of the Authority’s Capital Improvement Program, capital financing as a percent of total expenses (before offsets) has increased from 36% in 1990 to 60.2% in the FY23 Current Expense Budget. Much of this debt service is for completed projects, primarily the Boston Harbor Project and the Integrated Water Supply Improvement Program. The MWRA’s capital spending, from its inception, had been dominated by projects mandated by court ordered or regulatory requirements, which in total have accounted for ~72% of capital spending to date. Going forward, and as the Combined Sewer Overflow (CSO) projects reached substantial completion in December 2015, the majority of spending will be focused on asset protection and water redundancy initiatives. Overall, MWRA anticipates its outstanding debt to continue to decline.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by the MWRA to lower borrowing costs and manage rates include current and advanced refunding of outstanding debt, maximizing the use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, swap agreements, and the use of surplus revenues to defease debt. The MWRA also uses tax exempt commercial paper to minimize the financing cost of construction in process.

Since 2006, MWRA has defeased \$752.2 million in debt service to reduce future year rate revenue requirements. The following chart details the multi-year impact of those defeasances.



The FY23 Final Budget includes the benefit of a defeasance of \$34.9 million in June 2022 which will reduce debt by approximately \$1.5 million in FY23, \$9.6 million in FY24, \$1.1 million in FY25, and \$23.6 million in FY26.

Grant Revenues

In the past, MWRA has been able to finance approximately 20 percent of its capital spending with grant receipts, totaling approximately \$1.1 billion through FY03. However, since FY03, the MWRA has only received \$4.9 million in capital grants. In addition to participating in federal and state grant programs, the MWRA benefitted from the American Recovery and Reinvestment Act of 2009 which forgave

approximately \$33.0 million in State Revolving Fund loan principal. The Authority continues to pursue grant funding and take advantage of any possible program available to maximize grant funding opportunities.

MWRA expects to borrow the majority of funds necessary for future capital spending. Borrowing will include the issuance of fixed and variable rate revenue bonds; borrowing from the Massachusetts Clean Water Trust (also known as the State Revolving Loan Fund or SRF), and a Tax-Exempt Commercial Paper program. The table below details the FY23 budget capital financing line item. It also shows how upgrading the sewerage system has dominated the capital program to date. Current and future borrowings increasingly support improvements to the water system. A complete list of the Authority's indebtedness by series is presented in Appendix E.

	Amount Outstanding	Total Capital Finance Costs	Sewer	Water
Total SRF ¹ Debt	\$822.0	\$96.3	\$73.6	\$22.8
Total Senior Debt	\$3,106.3	302.2	196.8	105.4
Total Subordinate Debt	\$532.8	75.5	41.9	33.6
Total SRF and Debt Service²	\$4,461.1	\$474.0	\$312.3	\$161.8
Water Pipeline Commercial Paper	100.0	6.2	0.0	6.2
Current Revenue/Capital ³		18.2	17.8	0.4
Capital Lease		3.2	1.9	1.3
Debt Prepayment ⁴		5.5	5.4	0.1
	100.0	\$33.2	\$25.1	\$8.0
Total Capital Financing (before Debt Service Offsets)	4,561.1	\$507.2	\$337.4	\$169.8
Debt Service Offsets:				
Debt Service Assistance		(1.2)	(1.1)	(0.1)
Bond Redemption		0.0	0.0	0.0
Total Capital Financing	4,561.1	\$506.0	\$336.3	\$169.7

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.

CIP Impact on Current Expense Budget

In addition to the annual financing costs included in the Current Expense Budget, the Capital Improvement Program affects the annual operating budget when capital facilities come on-line and require adjustments to operating budgets. In prior years, completion of the Deer Island Treatment Plant, the Carroll Water Treatment Plant, and the residuals processing facility in Quincy resulted in significant increases in

operating expenses.

The following table summarizes the projected CIP impact on the operating budget by project over the next ten years.

Fiscal Year	CEB Impacts (000)										Total
	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	
DI Treatment Plant Asset Protection (not including Co-Digestion or Combined Heat and Power Plant)	(\$10)	(\$32)	(\$22)	\$0	\$0	\$0	(\$49)	(\$63)	(\$65)	\$0	(\$242)
DI Treatment Plant Asset Protection - Hydroturbine Replacements	0	0	(55)	0	0	0	61	0	0	0	7
Unsustained Budget Impacts - Moving Expenses	(876)	0	0	0	0	0	0	0	0	0	(876)
South Boston CSO Tunnel Inspection/Cleaning and Outfalls Inspection	0	0	0	563	(580)	0	0	0	0	0	(17)
Total Wastewater (inflated)	(\$887)	(\$32)	(\$76)	\$563	(\$580)	\$0	\$12	(\$63)	(\$65)	\$0	(\$1,128)
Metro Tunnel Redundancy	\$720	\$265	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$985
Watershed Div CIP - Quabbin Admin Building Renovations	0	106	0	0	(116)	0	0	0	0	0	(10)
Wachusett Algae Treatment Facility	0	0	0	0	0	0	0	127	0	0	127
Unsustained Budget Impacts - Moving Expenses	(609)	0	0	0	0	0	0	0	0	0	(609)
Total Business and Operations Support (inflated)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL MWRA	(\$776)	\$340	(\$76)	\$563	(\$696)	\$0	\$12	\$63	(\$65)	\$0	(\$635)

Operating costs are projected to increase by \$985,000 for additional Metropolitan Tunnel Redundancy staff in FY24 and FY25. This will be partially offset by Deer Island Treatment Plant Asset Protection initiatives that will reduce operating costs by \$235,000 through FY32.

Following the planned consolidation of MWRA facilities in FY22 and FY23, operating costs will decrease by \$1.5 million in FY24. In total, the impact of capital projects and initiatives are projected to decrease operational costs by \$635,000 over the next ten years.

RATE ASSESSMENT AND METHODOLOGY

Community Profile and Assessments

MWRA is authorized to provide wholesale water and sewer services to 61 communities or local bodies. Fifty-four local bodies purchase water supply services, and 43 local bodies purchase wastewater transport and treatment services. Thirty-seven local bodies purchase both. Approximately 3.0 million people, or 44% of the population of Massachusetts, live and work in the communities that purchase water and/or wastewater services from MWRA.

MWRA's largest single customer is the Boston Water and Sewer Commission (BWSC), which provides retail services in the City of Boston. In the FY23, rate revenue from BWSC will account for 31% of MWRA's total rate revenue.

Each year MWRA determines preliminary wholesale water and sewer assessments in February and final assessments in June before the beginning of the new fiscal year. These assessments must satisfy the statutory requirement that MWRA fully recover its budgeted water and sewer costs by apportioning net costs among its wholesale water and sewer customers.

The following table presents the calculation of MWRA's FY23 Rate Revenue Requirement. The table shows that most of MWRA's current expenses are directly attributable to either water or sewer service costs, or to investment in the water or sewer systems. Expenses that support both systems are allocated to water or sewer assessments based on generally accepted cost allocation principles. Investment Income

and Other Revenues offset water and sewer expenses. The resulting net cost of water and sewer services is the amount MWRA recovers through water and sewer assessments.

**Calculation of the Final FY23 Rate Revenue Requirement
(000's)**

	Sewer	Water	Total
Allocated Direct Expenses	\$176,549	\$97,173	\$273,722
Allocated Indirect Expenses	\$22,384	\$38,112	\$60,496
PLUS			
Capital Expenses:			
Debt Service	\$312,250	\$161,754	\$474,004
Debt Service Assistance	-\$1,077	-\$105	-\$1,182
Current Revenue for Capital	\$17,838	\$362	\$18,200
Other Capital Expenses	\$7,279	\$7,672	\$14,951
PLUS			
Non-Rate Revenue:			
Investment Income	-\$5,052	-\$3,536	-\$8,587
Fees and Other Revenue	-\$2,848	-\$13,127	-\$15,976
Rate Stabilization	-\$980	\$0	-\$980
EQUALS			
Rate Revenue Requirement	\$526,343	\$288,305	\$814,648

Wholesale Assessment Methodology

MWRA calculates separate user assessments for water and sewer services. Budgeted water operating and capital costs are allocated based on each community's share of total water use for the most recent calendar year. The sewer assessment methodology allocates budgeted operating and maintenance costs based on share of wastewater flow and strength parameters, and capital costs based on proportion of maximum flow, strength, and population. MWRA uses three-year averaging of wastewater flows to calculate the flow-related components of wholesale sewer assessments. Flow averaging moderates the short-term impact of year-to-year changes in community flow, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.

MWRA Fully Served Water and Sewer Customers	Final FY22 Water Assessment	Final FY23 Water Assessment	Percent Change from FY22	Final FY22 Sewer Assessment	Final FY23 Sewer Assessment	Percent Change from FY22	Final FY22 Combined Assessment	Final FY23 Combined Assessment	Dollar Change from FY22	Percent Change from FY22
ARLINGTON	\$5,958,052	\$5,648,095	-5.2%	\$9,124,432	\$9,392,520	2.9%	\$15,082,484	\$15,040,615	(\$41,869)	-0.3%
BELMONT	3,321,668	3,134,847	-5.6%	5,482,714	5,677,771	3.6%	8,804,382	8,812,618	8,236	0.1%
BOSTON (BWSC)	93,962,296	99,390,501	5.8%	148,872,321	149,691,865	0.6%	242,834,617	249,082,366	6,247,749	2.6%
BROOKLINE	8,011,141	8,018,472	0.1%	13,660,245	14,277,393	4.5%	21,671,386	22,295,865	624,479	2.9%
CHELSEA	5,460,223	5,460,876	0.0%	8,986,504	9,362,781	4.2%	14,446,727	14,823,657	376,930	2.6%
EVERETT	6,272,641	6,422,774	2.4%	9,618,364	10,050,691	4.5%	15,891,005	16,473,465	582,460	3.7%
FRAMINGHAM	9,287,668	9,531,024	2.6%	13,764,605	13,631,754	-1.0%	23,052,273	23,162,778	110,505	0.5%
LEXINGTON	8,743,912	8,493,467	-2.9%	8,177,213	8,432,789	3.1%	16,921,125	16,926,256	5,131	0.0%
MALDEN	8,378,155	8,758,033	4.5%	13,820,322	14,707,651	6.4%	22,198,477	23,465,684	1,267,207	5.7%
MEDFORD	7,360,071	7,666,268	4.2%	12,538,844	13,036,799	4.0%	19,898,915	20,703,067	804,152	4.0%
MELROSE	3,511,330	3,499,715	-0.3%	6,842,727	7,179,811	4.9%	10,354,057	10,679,526	325,469	3.1%
MILTON	3,884,900	4,022,582	3.5%	5,910,238	6,075,110	2.8%	9,795,138	10,097,692	302,554	3.1%
NEWTON	13,717,608	14,157,661	3.2%	22,344,621	22,803,614	2.1%	36,062,229	36,961,275	899,046	2.5%
NORWOOD	4,409,127	4,502,690	2.1%	8,482,434	8,789,271	3.6%	12,891,561	13,291,961	400,400	3.1%
QUINCY	13,440,835	13,856,502	3.1%	21,473,437	22,536,756	5.0%	34,914,272	36,393,258	1,478,986	4.2%
READING	2,831,288	2,807,828	-0.8%	5,376,119	5,378,343	0.0%	8,207,407	8,186,171	(21,236)	-0.3%
REVERE	5,756,009	6,348,919	10.3%	11,066,469	12,301,606	11.2%	16,822,478	18,650,525	1,828,047	10.9%
SOMERVILLE	8,973,256	9,471,778	5.6%	17,020,189	17,021,568	0.0%	25,993,445	26,493,346	499,901	1.9%
STONEHAM	3,561,396	3,289,382	-7.6%	5,585,497	5,652,234	1.2%	9,146,893	8,941,616	(205,277)	-2.2%
WALTHAM	10,338,346	11,044,210	6.8%	14,299,920	14,787,236	3.4%	24,638,266	25,831,446	1,193,180	4.8%
WATERTOWN	4,166,126	4,147,401	-0.4%	6,806,903	6,800,255	-0.1%	10,973,029	10,947,656	(25,373)	-0.2%
WINTHROP	2,074,166	1,918,276	-7.5%	3,831,735	3,970,824	3.6%	5,905,901	5,889,100	(16,801)	-0.3%
TOTAL	\$233,420,214	\$241,591,301	3.5%	\$373,085,853	\$381,558,642	2.3%	\$606,506,067	\$623,149,943	\$16,643,876	2.7%

MWRA Sewer and Partial Water Customers	Final FY22 Water Assessment	Final FY23 Water Assessment	Percent Change from FY22	Final FY22 Sewer Assessment	Final FY23 Sewer Assessment	Percent Change from FY22	Final FY22 Combined Assessment	Final FY23 Combined Assessment	Dollar Change from FY22	Percent Change from FY22
ASHLAND	\$0	\$0	-	\$2,752,284	\$2,886,179	4.9%	\$2,752,284	\$2,886,179	\$133,895	4.9%
BURLINGTON	0	1,253,355	-	6,168,357	6,021,745	-2.4%	6,168,357	7,275,100	1,106,743	17.9%
CANTON	1,507,385	2,022,211	34.2%	4,765,395	4,862,293	2.0%	6,272,780	6,884,504	611,724	9.8%
NEEDHAM	1,670,433	1,464,186	-12.3%	6,614,690	6,760,857	2.2%	8,285,123	8,225,043	(60,080)	-0.7%
STOUGHTON	167,480	118,822	-29.1%	5,434,313	5,471,765	0.7%	5,601,793	5,590,587	(11,206)	-0.2%
WAKEFIELD	2,825,130	2,617,209	-7.4%	6,748,184	6,848,039	1.5%	9,573,314	9,465,248	(108,066)	-1.1%
WELLESLEY	2,301,709	3,325,451	44.5%	6,082,193	6,273,591	3.1%	8,383,902	9,599,042	1,215,140	14.5%
WILMINGTON	1,098,672	716,510	-34.8%	3,013,693	3,230,781	7.2%	4,112,365	3,947,291	(165,074)	-4.0%
WINCHESTER	2,093,282	1,943,817	-7.1%	4,535,279	4,592,965	1.3%	6,628,561	6,536,782	(91,779)	-1.4%
WOBURN	4,936,119	5,385,782	9.1%	9,490,135	9,810,353	3.4%	14,426,254	15,196,135	769,881	5.3%
TOTAL	\$16,600,210	\$18,847,343	13.5%	\$5,604,523	\$6,758,568	2.1%	\$72,204,733	\$75,605,911	\$3,401,178	4.7%

MWRA Sewer-only Customers	Final FY22 Water Assessment	Final FY23 Water Assessment	Percent Change from FY22	Final FY22 Sewer Assessment	Final FY23 Sewer Assessment	Percent Change from FY22	Final FY22 Combined Assessment	Final FY23 Combined Assessment	Dollar Change from FY22	Percent Change from FY22
BEDFORD				\$3,616,974	\$3,696,476	2.2%	\$3,616,974	\$3,696,476	\$79,502	2.2%
BRAINTREE				10,463,134	10,873,607	3.9%	10,463,134	10,873,607	410,473	3.9%
CAMBRIDGE				27,759,220	28,578,466	3.0%	27,759,220	28,578,466	819,246	3.0%
DEDHAM				6,076,744	6,153,063	1.3%	6,076,744	6,153,063	76,319	1.3%
HINGHAM SEWER DISTRICT				2,061,694	2,132,148	3.4%	2,061,694	2,132,148	70,454	3.4%
HOLBROOK				1,883,097	1,936,897	2.9%	1,883,097	1,936,897	53,800	2.9%
NATICK				6,126,567	6,287,053	2.6%	6,126,567	6,287,053	160,486	2.6%
RANDOLPH				6,830,622	6,940,976	1.6%	6,830,622	6,940,976	110,354	1.6%
WALPOLE				4,280,744	4,449,490	3.9%	4,280,744	4,449,490	168,746	3.9%
WESTWOOD				3,247,430	3,274,618	0.8%	3,247,430	3,274,618	27,188	0.8%
WEYMOUTH				13,632,330	13,703,131	0.5%	13,632,330	13,703,131	70,801	0.5%
TOTAL				\$85,978,556	\$88,025,925	2.4%	\$85,978,556	\$88,025,925	\$2,047,369	2.4%

MWRA Water-only Customers	Final FY22 Water Assessment	Final FY23 Water Assessment	Percent Change from FY22	Final FY22 Sewer Assessment	Final FY23 Sewer Assessment	Percent Change from FY22	Final FY22 Combined Assessment	Final FY23 Combined Assessment	Dollar Change from FY22	Percent Change from FY22
LYNNFIELD WATER DISTRICT	\$861,938	\$865,543	0.4%				\$861,938	\$865,543	\$3,605	0.4%
MARBLEHEAD	3,092,888	2,941,372	-4.9%				3,092,888	2,941,372	(151,516)	-4.9%
NAHANT	533,340	578,355	8.4%				533,340	578,355	45,015	8.4%
SAUGUS	4,860,987	5,020,868	3.3%				4,860,987	5,020,868	159,881	3.3%
SOUTHBOROUGH	1,232,930	984,014	-20.2%				1,232,930	984,014	(248,916)	-20.2%
SWAMPSCOTT	2,581,317	2,552,649	-1.1%				2,581,317	2,552,649	(28,668)	-1.1%
WESTON	2,837,540	2,456,156	-13.4%				2,837,540	2,456,156	(381,384)	-13.4%
TOTAL	\$16,000,940	\$15,398,957	-3.8%				\$16,000,940	\$15,398,957	(\$601,983)	-3.8%

MWRA Partial Water-only Customers	Final FY22 Water Assessment	Final FY23 Water Assessment	Percent Change from FY22	Final FY22 Sewer Assessment	Final FY23 Sewer Assessment	Percent Change from FY22	Final FY22 Combined Assessment	Final FY23 Combined Assessment	Dollar Change from FY22	Percent Change from FY22
DEDHAM-WESTWOOD WATER DISTRICT	\$620,024	\$256,078	-58.7%				\$620,024	\$256,078	(\$363,946)	-58.7%
LYNN (LWSC)	125,688	187,732	49.4%				125,688	187,732	62,044	49.4%
MARLBOROUGH	6,589,994	6,733,069	2.2%				6,589,994	6,733,069	143,075	2.2%
NORTHBOROUGH	1,760,228	1,508,715	-14.3%				1,760,228	1,508,715	(251,513)	-14.3%
PEABODY	2,297,770	3,781,670	64.6%				2,297,770	3,781,670	1,483,900	64.6%
TOTAL	\$11,393,704	\$12,467,264	9.4%				\$11,393,704	\$12,467,264	\$1,073,560	9.4%
SYSTEMS TOTAL	\$277,415,068	\$288,304,865	3.93%	\$514,668,932	\$526,343,135	2.27%	\$792,084,000	\$814,648,000	\$22,564,000	2.85%

Retail Charges

As noted above, MWRA provides water and sewer services to communities on a wholesale basis. Each community then re-sells services on a retail basis. As a result, household water and sewer charges include each household's share of the community's MWRA water and sewer assessments, plus the community's own charges for the provision of local water and sewer services.

Each community independently establishes retail rates. When establishing local rates, community officials consider issues related to the pricing of services, level of cost recovery, and the local rate structure or methodology. Several factors contribute to a broad range of local rate structures in the MWRA service area:

- Differences in the extent to which water and sewer costs are supported through property taxes and other sources of revenue;
- Differences in the means by which communities finance investments in their own water and sewer systems; and
- Differences in communities' retail rate methodologies.

Some communities have flat unit rates, while others have inclining block rates. Local rates may also provide for differentials among classes of users, such as higher rates for commercial or industrial users, abatements to low-income or elderly residents, and adjusted sewer rates for customers with second meters used for lawn irrigation.

Additional information on rate structure within the member communities is available on the MWRA Advisory Board website as part of its annual retail rate survey.

Revenue and Expenditure Trends

Because MWRA is required by its enabling act to balance its budget and to establish annual assessments to cover all expenses, revenue must change as expenses are changing each year. The Rate Revenue Requirement in any year is the difference between MWRA expenses and other revenue sources, most notably non-rate revenue, investment income, and debt service assistance from the Commonwealth (which directly reduces debt service expense). For FY23, community assessments are projected to represent 97.0% of total revenue.

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. MWRA uses the planning estimates to model and project what future rates and assessments might be based upon these assumptions, as well as to test the impact of changes to assumptions on future rates and assessments. The planning estimates are not predictions of what rates and assessments will be but rather they provide the context and framework for guiding MWRA financial policy and management decision making that ultimately determine the level of actual rate change on an annual basis. Conservative projections of future rates and assessments benefit the MWRA by providing assurance to the rating agencies that MWRA anticipates to raise revenues sufficient to pay for its operations and outstanding debt obligations now and over the long-term. Additionally, conservative forecasts of rates and assessments enable member communities to adequately plan and budget for future payments to MWRA.

MWRA also updates its estimates of anticipated revenues and expenses over a multi-year planning horizon. These estimates provide a context for budget discussions and allow MWRA to consider multiple-year rates management implications and strategies as it evaluates alternative capital and operating budget options, the ultimate goal being sustainable and predictable rate changes.

The table below and Appendix D (in more detail) present the combined estimated future rate revenue requirements through FY27.

Rates & Budget Projections						
Final FY23 CEB	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
Total Rate Revenue (\$000)	\$ 792,084	\$ 814,648	\$ 842,064	\$ 870,610	\$ 899,989	\$ 928,994
Rate Revenue Change from Prior Year (\$000)	\$ 22,699	\$ 22,564	\$ 27,416	\$ 28,546	\$ 29,379	\$ 29,005
Rate Revenue Increase	3.0%	2.8%	3.4%	3.4%	3.4%	3.2%
Use of Reserves (\$000)	\$ 1,250	\$ 980	\$ 1,105	\$ 917	\$ 809	\$ 780

Estimated Household Bill

Based on annual water usage of 61,000 gallons	\$1,275	\$1,328	\$1,386	\$1,447	\$1,510	\$1,576
Based on annual water usage of 90,000 gallons	\$1,881	\$1,959	\$2,045	\$2,135	\$2,228	\$2,325

Increasing debt service to pay down and finance the capital improvement program is the most important factor driving estimates of future budget increases. Over the past several years MWRA’s Tax-Exempt Commercial Paper program, debt refinancing, federal grants, SRF loans, and Commonwealth debt service assistance have mitigated the impact on ratepayers of new capital spending. However, new water system improvements, for which there are fewer non-ratepayer sources of funding, and the impact of new financing will increase MWRA capital financing costs over the next several years.

MWRA employs rates management tools where available (e.g. refunding for savings, extended maturities on future borrowings, variable rate debt, and increased use of Tax-Exempt Commercial Paper) to help cushion and smooth the growth in capital financing expenses. Despite these initiatives, the size of the capital program will unavoidably continue to drive increases in community assessments.

The second largest budget factor is the projected growth of base operating costs. The estimated \$34.0 million increase in direct expenses from FY23 to FY27 is primarily the result of an assumed annual inflation rate.

MWRA’s planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. These assumptions include:

- Direct expense inflation rate of 2.7% for salaries and 3.0% for other direct expenses starting in FY23;
- CIP inflation rate of 2.5%;
- Capital spending based on the latest CIP expenditure forecast.
- Long-term fixed rate debt issues with a 25-year term and 5.0% interest rates in FY23, and 30 year terms and 6.0% rates from FY24 and beyond;
- Variable rate interest projected at 3.5% in FY23, and 4.0% starting in FY24.

The planning estimates generally use conservative assumptions to help communities plan for future payments to MWRA.

There are several areas where differences from planning estimate assumptions may alter projected increases:

- Changes in anticipated borrowing rates or expected investment income rates;
- The planning estimates do not factor in any positive year-end variances which may be used to defease debt or reserved to offset Rate Revenue Requirements in future years;
- Fewer opportunities for SRF borrowing than expected due to Federal Budget cuts; a dollar borrowed through the SRF at 2% replaces the need to borrow a dollar long-term at an assumed 5% rate;
- Overall inflationary pressures;
- Debt refinancing opportunities;
- Capital spending; and
- Growth in direct expenses, greater than current assumptions.

MWRA Rates Management

Planning estimates for 2023 through 2027 forecast rate revenue requirement increases of 2.85% in FY23, 3.4% in FY24, FY25 and FY26, and 3.2% in FY27.

The FY23 Budget:

- Continues to refine planning estimates assumptions to provide greater predictability of future assessments;
- Judiciously uses reserves to lower rate increases, but maintain adequate balances;
- Continues the Authority's multi-year rates management strategy of providing sustainable and predictable assessment increases to our member communities; and
- Continues the smoothing strategy to even out the rate revenue requirement and rate changes caused by fluctuations in debt service at the utility level.

Net Position

The statement of net position (or net assets) provides the information on the assets and liabilities of the Authority, with net position being the difference between total assets and total liabilities. The Authority's net position for FY22 is \$1.4 billion based on the FY22 draft financials. The most recent five fiscal years can be seen in the following table:

\$s in 000

	<u>2022 Draft</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>
Current Assets	\$ 903,849	\$1,015,387	\$ 109,747	\$ 100,271	\$ 95,963
Capital Assets (Net)	5,569,082	5,658,876	5,755,377	5,840,416	5,948,350
Other Assets	403,157	470,823	1,413,757	1,614,475	1,529,221
Total Assets	\$6,876,088	\$7,145,086	\$ 7,278,881	\$ 7,555,162	\$ 7,573,534
Current Liabilities	503,712	482,637	473,853	362,949	350,382
Non-Current Liabilities	4,927,347	5,176,425	5,279,049	5,626,126	5,617,753
Total Liabilities	\$5,431,059	\$5,659,062	\$ 5,752,902	\$ 5,989,075	\$ 5,968,135
Net Position					
Net Investment in Capital Assets	1,057,622	957,356	894,437	827,050	759,757
Restricted	450,765	461,566	420,009	368,532	357,767
Unrestricted	(63,358)	67,102	211,533	370,505	487,875
Total Net Position	\$1,445,029	\$1,486,024	\$ 1,525,979	\$ 1,566,087	\$ 1,605,399

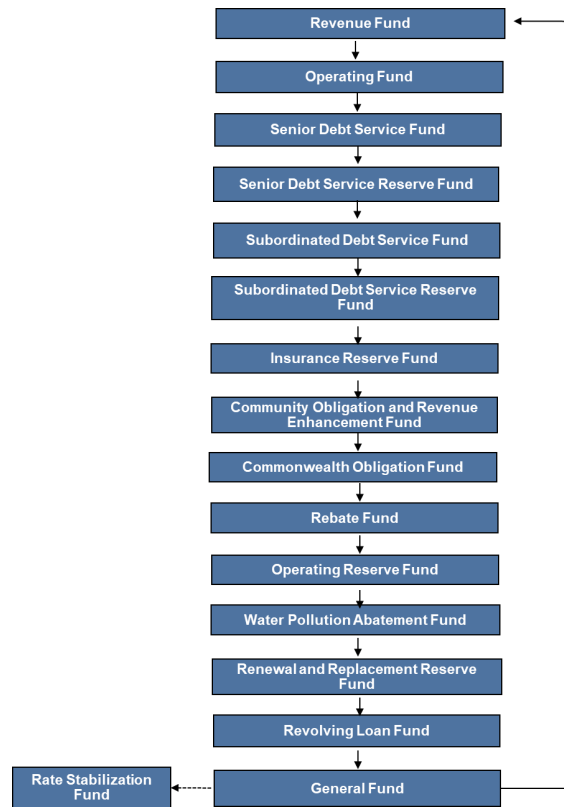
When both restricted and unrestricted funds are available for use, it is the Authority's policy to use restricted funds first, then unrestricted funds as needed. Restricted funds include construction, debt service, and operating revenue.

General Bond Resolution Funds

The Authority's General Bond Resolution requires that it maintain certain funds related to its operations and as security for its bondholders. The General Bond Resolution establishes the required balances and allocation of all moneys controlled by the Authority. A copy of the General Bond Resolution can be found at <http://www.mwra.com/finance/documents/general-revenue-bond-resolution/amended-restated-general-resolution-MWRA-04-23-2015.pdf>.

The following flow of funds diagram details the Authority's funding hierarchy. Direct and Indirect Expenses with the exception of Watershed Reimbursements and Additions to Reserves are funded out of the Operating Fund. Watershed Reimbursements are funded out of the Commonwealth Obligation Fund and Additions to Reserves go directly from the Revenue Fund to the applicable reserve fund. Senior Debt Service is paid from the Debt Service Fund, Subordinate Debt Service is paid from the Subordinate Debt Service Fund, and State Revolving Fund (SRF) Debt Service is funded from the Water Pollution Abatement Fund.

General Bond Resolution Flow of Funds



Fund Balances

Revenue Fund – MWRA shall deposit all income, revenue, receipts, and other moneys derived by the Authority from its operation of the Systems and engaging in other activities authorized by the enabling act into the Revenue Fund. The Revenue Fund is the top in the flow of funds under the General Revenue Bond Resolution. Moneys in the Revenue Fund are transferred on a monthly basis for operating, debt service and other costs of the Authority as required by the General Bond Resolution. As of June 30, 2022, the Revenue Fund had \$50.0 million available.

Operating Fund – All of the Operating Expenses of the Authority as defined in the General Revenue Bond Resolution are paid out of the Operating Fund. The Authority is required to maintain the Operating Fund at a balance equal to the next three months of Operating Expenses. On a monthly basis moneys are moved from the Revenue Fund to the Operating Fund to maintain the required balance. As of June 30, 2022, the Operating Fund had a balance of \$83.0 million.

Debt Service Fund – The principal and interest costs associated with MWRA’s outstanding senior lien debt is paid out of the Debt Service Fund. On a monthly basis funds are transferred from the Revenue Fund to the Debt Service Fund equal to 1/6th of the next interest payment or 1/12th of the next principal payment for each series of bonds. The schedule for principal and interest transfers is such that the payments are funded a month and one day ahead of the next payment date as required by the General Revenue Bond Resolution. The balance in the Debt Service Fund as of June 30, 2022 was \$183.0 million.

Subordinated Debt Service Fund – The principal and interest associated with MWRA’s outstanding subordinate lien debt. On a monthly basis funds are transferred from the Revenue Fund to the Subordinated Debt Service Fund equal to 1/6th of the next interest payment or 1/12th of the next principal payment for each series of bonds. The schedule for principal and interest transfers is such that the payments are funded a month and one day ahead of the next payment date as required by the General Revenue Bond Resolution. The balance in the Subordinated Debt Service Fund as of June 30, 2022 was \$65.0 million.

Water Pollution Abatement Fund – This fund is used for payments on the debt service due to the Massachusetts Clean Water Trust (formerly the Massachusetts Water Pollution Abatement Trust). The Water Pollution Abatement Fund is funded from the Revenue Fund. The Balance in the Water Pollution Abatement Fund was \$73.0 million on June 30, 2022.

Commonwealth Obligation Fund – This Fund is utilized to pay Commonwealth Obligations as defined under the General Revenue Bond Resolution. Primarily Commonwealth Obligations are amounts payable to the Commonwealth of Massachusetts including Watershed Trust expenses, Payments in Lieu of taxes and other state government charges. The Commonwealth Obligation Fund. The Commonwealth Obligation Fund balance is based of payments due to the Commonwealth and is funded on a regular basis from the Revenue Fund. The balance in the Commonwealth Obligation Fund on June 30, 2022 was \$0.0 million.

Construction Fund – The Construction Fund is primarily funded through the proceeds of debt issuances, and some current revenue. Moneys in the Construction Fund are utilized to pay the cost of the Authority’s capital projects and related costs as defined in the General Revenue Bond Resolution. The Construction Fund had a balance of \$228.0 million on June 30, 2022.

The following table shows a three-year history of fund balances as well as a projection for June 30, 2023. The FY23 year-end projection is based upon General Bond Resolution requirements, projected debt issuances, and projected interest rates. Year-end projected balances for FY23 are subject to change and may vary from the projection.

Fund Balances - \$s in Millions				
Funds	6/30/2020	6/30/2021	6/30/2022	Projected 6/30/2023
Revenue Fund	\$40.0	\$50.0	\$50.0	\$46.7
Operating Fund	\$79.0	\$83.0	\$83.0	\$83.0
Debt Service Fund	\$151.0	\$183.0	\$183.0	\$207.0
Subordinate Debt Service Fund	\$93.0	\$65.0	\$65.0	\$65.0
Water Pollution Abatement Fund	\$71.0	\$73.0	\$73.0	\$74.0
Commonwealth Obligation Fund	\$0.0	\$0.0	\$0.0	\$0.0
Construction Fund	\$141.0	\$228.0	\$228.0	\$126.8
Total	\$575.0	\$682.0	\$682.0	\$602.5

Reserves

Under the terms of its General Bond Resolution, MWRA maintains various reserve funds. Two of MWRA's reserves, Rate Stabilization and Bond Redemption, are used to smooth rate increases. Moneys in the funds are funded from year-end CEB budget surpluses. The amounts in the funds as of June 30, 2022, and the permitted and planned uses are discussed below:

Rate Stabilization - Under the terms of the General Bond Resolution, the annual use of Rate Stabilization monies cannot exceed 10% of the year's senior debt service. Rate stabilization is funded by CEB surpluses and is one of two funds available to smooth rate increases. This reserve balance was \$40.3 million as of 6/30/22. The FY15 through FY20 Final CEB did not include the use of Rate Stabilization Funds. The FY23 CEB includes the use of \$1.0 million in the HEEC reserve and a projected yearend balance of \$39.3 million. Planning estimates based on the FY23 Budget assumes use of \$4.5 million in Rate Stabilization between FY23 and FY27 with \$3.1 million of that total associated with the HEEC cable.

Bond Redemption - Monies in the Bond Redemption Fund can be used only to retire or prepay outstanding debt. Like Rate Stabilization, Bond Redemption is funded by CEB surpluses and is also available to smooth rate increases by reducing debt service. There is no annual limit on the amount of Bond Redemption funds used in a year. However, there are constraints based on bond maturity dates. The FY16, through FY22 CEB assumed no use of Bond Redemption. The balance as of June 30, 2022 was \$26.1 million and is projected to remain unchanged in FY23.

In addition to the Rate Stabilization and Bond Redemption funds, MWRA maintains four funded reserves required by the terms of the General Bond Resolution: Debt Service, Operating, Insurance, and Renewal and Replacement. The amount in each reserve, the basis for determining the funding requirement and when a reserve can be used to reduce rate revenue requirements are discussed below:

Debt Service Reserve - This is MWRA's largest reserve, and is funded from bond proceeds. The funding of this reserve is based on the lesser of four tests, and is currently funded at 50% of the maximum annual

debt service. The fund can be used to pay debt service when the amount in the reserve is greater than the remaining debt service. The balance of this reserve fund as of June 30, 2022, was \$156.6 million and projected to remain unchanged in FY23.

Operating Reserve - The required balance is one-sixth of operating expenses for a year, as defined in the Bond Resolution. The balance of this reserve fund as of June 30, 2022, was \$47.3 million and based on FY23 CEB the required balance by the end of FY23 will be \$49.7 million.

Insurance Reserve - MWRA mitigates the budgetary risk of self-insurance by maintaining an insurance reserve. The reserve which was established as part of the Bond Resolution requires that an independent insurance consultant review the adequacy of the funding level every three years. This reserve fund balance as of June 30, 2022, was \$14.0 million and is projected to remain unchanged in FY23. The \$14 million level has been determined to be acceptable and reasonable based on the last review completed in FY20.

Renewal and Replacement Reserve – The required balance is set at \$35 million with the difference between the \$10 million in cash and the required balance based on the triennial recommendation of a consulting engineer being available in short-term borrowing capacity. MWRA’s consulting engineer completed its triennial review of this reserve balance in 2020.

The following table shows a three-year history of reserve balances as well as projections for June 30, 2023. The FY23 year-end projections are based upon General Bond Resolution requirements and projected debt issuances. Year-end projected balances for FY23 are subject to change and may vary from the projection.

Reserve Balances - \$s in Millions				
Reserves	6/30/2020	6/30/2021	6/30/2022	6/30/2023 Projection
Rate Stabilization	\$43.0	\$41.5	\$40.3	\$39.3
Bond Redemption	\$26.1	\$26.1	\$26.1	\$26.1
Debt Service Reserve - 50% of max Debt Service	\$156.6	\$156.6	\$156.6	\$156.6
Operating Reserve - 1/6 of annual operating expenses	\$44.0	\$45.9	\$47.3	\$49.7
Insurance Reserve - Est. by independent consultant, as of 2020	\$14.0	\$14.0	\$14.0	\$14.0
Renewal & Replacement Reserve - \$10 million required balance	\$10.0	\$10.0	\$10.0	\$10.0
Total	\$293.7	\$294.1	\$294.3	\$295.7

STATEMENT OF FINANCIAL POSITION

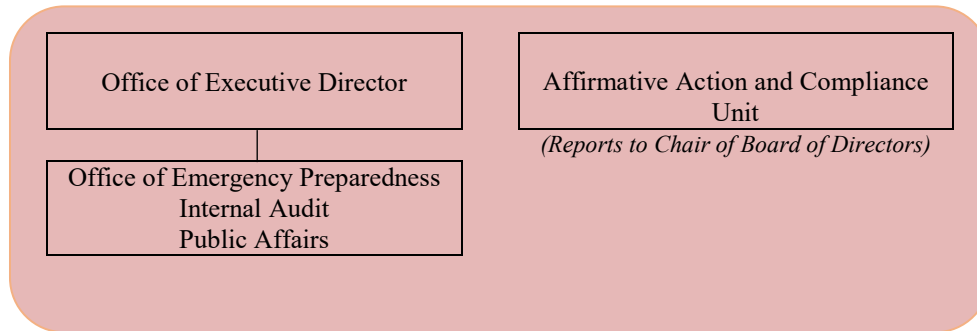
In accordance with its enabling act, each year MWRA submits annual reports to the Governor, the President of the State Senate, the House of Representatives, the Advisory Board, and the Chairs of the State Senate and House Committees on Ways and Means containing financial statements relating to its

operations maintained in accordance with Generally Accepted Accounting Principles in the United States of America (GAAP) and, commencing with the annual reports for 1986, audited by independent certified public accountants. MWRA's audited financial statements at June 30, 2021 are available online at www.mwra.com.



Executive Office
Budget

EXECUTIVE DIVISION



The **Executive Division** provides executive management and guides the implementation of MWRA policies established by the Board of Directors. It is responsible for developing and implementing specific goals and programs to achieve MWRA's primary mission of providing reliable and efficient water and sewer services, improving water quality, and for creating a framework within which all divisions can operate effectively. The Executive Division also oversees a centralized MWRA-wide security program to preserve and protect MWRA facilities, systems and employees.

The Executive Division includes the Office of Executive Director, Office of Emergency Preparedness, Internal Audit, Public Affairs, and the Affirmative Action and Compliance Unit (AACU). Each of these Departments is accounted for separately in the MWRA budget. In addition, the Director of the Tunnel Redundancy Program reports to the Executive Director. However, the Tunnel Redundancy Program is budgeted under the Operations Division budget.

The **Office of the Executive Director** includes the Board of Directors' cost center as well as the MWRA Advisory Board and Advisory Committees' cost centers. The Board of Directors formulates policies to guide MWRA actions and is responsible for major policy and fiscal decision-making. The MWRA Advisory Board was established by the Enabling Act to serve as "fiscal watchdog" for MWRA's customer communities. The Advisory Board makes recommendations to MWRA on annual expense budgets and capital improvement programs. In addition, the Advisory Board reviews and comments on MWRA reports, holds hearings on related matters, and makes recommendations to the Governor and the Legislature. The other advisory committees supported by this budget are the Water Supply Citizens' Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC). (A description of the Advisory Board,

FY23 Final Current Expense Budget OFFICE OF THE EXECUTIVE DIRECTOR

DEPARTMENT	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22
EXECUTIVE OFFICE	\$ 603,403	\$ 607,849	\$ 608,129	\$ 603,483	\$ (4,646) -0.8%
BOARD OF DIRECTORS	3,029	805	101,848	99,663	(2,185) -2.1%
ADVISORY BOARD / OTHER COMMITTEES	757,419	762,184	830,214	798,592	(31,622) -3.8%
TOTAL	\$ 1,363,851	\$ 1,370,838	\$ 1,540,191	\$ 1,501,738	\$ (38,453) -2.5%

WSCAC and WAC is set forth in Appendix E). The Executive Office budget accounts for less than 1% of the MWRA FY23 Direct Expense Budget.

FY23 Goals and Initiatives:

Ensuring a safe and reliable source of drinking water to MWRA customers, and wastewater discharges that meet all applicable regulations drives both capital and current expense budget costs. Five strategic priorities integral to MWRA’s mission were identified for action in MWRA’s FY2021-FY2025 Five-Year Strategic Business Plan.

- I. Drinking Water Quality and System Performance**
- II. Wastewater Management & System Performance**
- III. Infrastructure Management & Resilience**
- IV. Finance & Management**
- V. Environmental Sustainability**

Under each of these priorities, MWRA identified goals and initiatives to guide the Authority’s action. The Executive Department uses the Business Plan to provide the framework for MWRA staff to manage and measure performance. The Office of the Executive Director has also identified core initiatives that support MWRA’s mission and strategic priorities.

- Ensure delivery of reliable and cost-effective water and sewer services to customer communities.
- Ensure that water supply and wastewater collection and treatment preserve public health and protect natural resources.
- Provide overall management of the agency and ensure adherence to all applicable policies and regulations.
- Continue to aggressively pursue renewable and sustainable energy resources to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.
- Manage communication and garner support from key constituents for MWRA programs.

**FY23 Final Current Expense Budget
OFFICE OF THE EXECUTIVE DIRECTOR**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 601,777	\$ 592,551	\$ 701,341	\$ 694,510	\$ (6,831)	-1.0%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	850	850	-	0.0%
PROFESSIONAL SERVICES	169,971	162,437	191,918	197,122	5,204	2.7%
OTHER MATERIALS	1,391	14,712	3,450	3,450	-	0.0%
OTHER SERVICES	590,713	601,138	642,632	605,806	(36,826)	-5.7%
TOTAL	\$ 1,363,852	\$ 1,370,838	\$ 1,540,191	\$ 1,501,738	\$ (38,453)	-2.5%

Budget Highlights:

The FY23 Budget is \$1.5 million, a decrease of \$38,000 or 2.5%, as compared to the FY22 Budget.

- \$695,000 for **Wages and Salaries**, a decrease of \$7,000 or 1.0%, as compared to the FY22 Budget. This reflects retirements and backfilling at a lower wage. The FY23 Budget includes funding for five FTEs, the same as the FY22 Budget.

OFFICE OF THE EXECUTIVE DIRECTOR	FY22 FTEs	FY23 FTEs
EXECUTIVE OFFICE	5.0	5.0
TOTAL	5.0	5.0

- \$197,000 for **Professional Services**, 2.7% above the FY22 Budget. This budget funds the Water Supply Citizens’ Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC). This budget includes a 3.0% increase in health insurances and a 3% increase in hourly salary and other reimbursable expenses.
- \$606,000 for **Other Services**, a decrease of \$37,000 or 5.7%, as compared to the FY22 Budget. The primary component of this line item is the MWRA Advisory Board operating expenses, which are 5.7% under the FY22 Budget mainly in wages and salaries.



Fells Reservoir

OFFICE OF EMERGENCY PREPAREDNESS

The **Office of Emergency Preparedness (OEP)** was created in November 2005 to consolidate Authority-wide security and emergency response functions. It is responsible for oversight of the MWRA’s security and emergency response plans, policies, and procedures; implementation and training for the Emergency Response Plan; and management, training, and outfitting of the Emergency Service Unit (ESU), which will respond to any intentional or accidental contamination of the water supply. In April 2019, the MWRA bifurcated OEP, creating a separate Security Department. ESU was transferred to the Department of Planning and Sustainability. The Security Department continues to work in close coordination with the Division of Planning and Sustainability to accomplish the overall goals of security and preparedness on behalf of the MWRA and the community it serves.

FY23 Final Current Expense Budget OFFICE OF EMERGENCY PREPAREDNESS

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 298,628	\$ 341,226	\$ 478,633	\$ 488,406	\$ 9,773	2.0%
OVERTIME	121	5,895	-	-	-	-
MAINTENANCE	410,910	554,117	520,000	784,598	264,598	50.9%
TRAINING & MEETINGS	673	595	7,000	7,100	100	1.4%
PROFESSIONAL SERVICES	2,002,305	2,137,119	1,998,700	2,366,801	368,101	18.4%
OTHER MATERIALS	19,815	8,812	2,350	2,500	150	6.4%
OTHER SERVICES	4,001	201,481	102,152	381,032	278,880	273.0%
TOTAL	\$ 2,736,453	\$ 3,249,245	\$ 3,108,835	\$ 4,030,437	\$ 921,602	29.6%

FY23 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- ***Goal#1 – Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations***
 - Develop implement, and review existing policies and programs to provide security, and critical infrastructure protection the MWRA’s water systems.
 - Continue ensuring that new construction and rehabilitation of facilities include an integrated security and surveillance system improvement component. Continue task order security enhancement designs for selected water and wastewater critical sites, fencing and gate installation, guardrails, pipe gates, bollards, barbed wire and other facility hardening initiatives.
 - Establish a backup security monitoring center and communications head end at Norumbega.
 - Conduct facility security audits and implement the resulting enhancement and remedial work recommendations.
 - Improve the cyber security of the MWRA’s Physical Security Network.

II. Wastewater Management & System Performance

- Develop , implement, and review existing policies and programs to provide security, and critical infrastructure protection, for the MWRA’s wastewater systems. While this initiative is not specifically addressed under the goals of the Wastewater Management & System Performance Strategic Priority, security of the system is a key objective of the Office of Emergency Preparedness. All initiatives set forth in Section I above for MWRA’s water systems apply to MWRA’s wastewater systems as well, unless they address a specific water system location.

III. Infrastructure Management & Resilience

- ***Goal #10 – Prepare for catastrophic events or threats that could affect the water and wastewater delivery systems***
 - Manage and direct security guard, security monitoring, and security maintenance contracts.
 - Develop and maintain strong liaison relationships with law enforcement and other external stakeholders to ensure that threat intelligence is received, reviewed, reported and if appropriate, acted upon.

FY22 Year-End Accomplishments:

- Updating Emergency Response Plans, which is the second phase of America’s Water Infrastructure Act (AWIA).
- Completed more than 94 training events or drills, despite the limitations imposed by the Covid-19 Pandemic.

FY22 (7/1/21 to 6/30/22)		
Type	Number	Comment
Notification drills		use “regular incident” group notifications as drill
Active Shooter Training	14	Run, Hide, Fight
Spill Field Drills and Training	15	Boom deployment drills, DCR refreshers, reservoir spill response
Evacuation Drills	1	Fire drill Chelsea
Ops Equipment deployment	4	Shutdown of CWTP, DI, MPUs, Spot spill response, Mobile Scan trailer
Field Ops Tabletop	1	Derailment tabletop
Water quality tabletop drills	2	CWS copper sulfate treatment, Laboratory Health and Safety Training
Large tabletop/field drill	3	RR spill, Radiological spill in Wachusett, MSP Water Rescue
ESU/ DI ERT drills	2	Various
Community ERP trainings	7	ERP training – half day sessions via Webex
Community Sampling/Deployment	15	Water sampling and deployment to communities to fix equipment
Misc.	9	Laboratory Health and Safety Training, Tunnel Redundancy, Chemical ID
CMS Alarms	18	Contaminant Monitoring System
Drone Surveys	3	
Total	94	

- Implemented an electronic Visitor Management System (VMS) during the first Quarter of FY22. The VMS increased security by identifying visitors in advance of their arrival, streamlined their entry onto MWRA property and provided the ability to account for visitors via a muster report in the event of an emergency at an MWRA facility.
- Continued work on formalizing Security policies and metrics as an outcome of AWIA.
- One new cybersecurity policy was approved by the Executive Director in FY22. Four physical and cybersecurity policies were sent to the Executive Director in early FY 23 for his review and approval.
- Issued 9 Cybersecurity and/or Physical Security Situational Awareness/Training alerts to MWRA employees via Email, Toolbox Talks or Pipeline during FY22. Additionally, 2 Physical Security related Toolbox Talks were provided to operational employees.
- Provided Physical Security and Cybersecurity awareness training to all new employees during the onboarding process.

Budget Highlights:

The FY23 Final Budget is \$4.0 million, an increase of \$922,000 or 29.6% as compared to the FY22 Budget.

- \$488,000 for **Wages and Salaries**, an increase of \$10,000 or 2.0% as compared to the FY22 Budget, due primarily for wage increases associated with collective bargaining agreements. The FY23 Budget includes funding for four FTEs, matching the FY22 Budget.

OFFICE OF EMERGENCY PREPAREDNESS	FY22 FTEs	FY23 FTEs
EMERGENCY PREPAREDNESS	4.0	4.0
TOTAL	4.0	4.0

- \$785,000 for **Ongoing Maintenance**, an increase of \$265,000 or 50.9% from the FY22 Budget. This budget includes funding of \$139,000 to cover the MWRA-wide security systems preventative maintenance materials and equipment, including cameras, intrusion detection and card readers; \$603,000 for MWRA-wide security systems preventative maintenance services, an increase of \$253,000, and \$42,000 for the intrusion alarm annual and semi-annual monitoring services contracts, which was level funded.
- \$2.4 million for **Professional Services**, a \$368,000 or 18.4% over prior year’s Budget. The budget includes \$2.4 million for the Security Guard Services contract for all MWRA facilities: Chelsea, Charlestown Navy Yard (CNY), Deer Island Wastewater Treatment Plant (DITP) and Carroll Water Treatment Plant (CWTP). This security contract accounts for the budget increase.
- \$2,500 for **Other Materials**, slightly above the FY22 Budget of \$2,000.
- \$381,000 for **Other Services**, \$279,000 over the FY22 Budget as this includes \$277,000 Funds to cover for Verizon billing for security costs associated with telecommunication lines for Alarm and CCTV systems at the various MWRA facilities. This was funded under MIS in prior years.



Nut Island Headworks

AFFIRMATIVE ACTION AND COMPLIANCE UNIT

Under section 7(g) of MWRA’s enabling act, the **Affirmative Action and Compliance Unit (AACU)** is established to “report directly to the chairman of the Authority and provide for the enforcement of affirmative action plans for employment, procurement and contracting activities of the Authority.” The AACU develops, administers, and monitors compliance of Affirmative Action Plan programs and policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Disadvantaged Business Enterprises (DBE) in Authority procurement activities.

FY23 Final Current Expense Budget AFFIRMATIVE ACTION & COMPLIANCE UNIT

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 539,193	\$ 652,780	\$ 699,169	\$ 689,239	\$ (9,930)	-1.4%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	1,166	2,490	6,790	6,790	-	0.0%
OTHER MATERIALS	1,707	814	2,100	1,625	(475)	-22.6%
OTHER SERVICES	848	1,707	1,686	2,340	654	38.8%
TOTAL	\$ 542,914	\$ 657,791	\$ 709,745	\$ 699,994	\$ (9,751)	-1.4%

FY23 Goals and Initiatives:

In performing its core goals, the AACU undertakes the following initiatives on an on-going basis:

- Utilize a network of external partners to assist divisions and departments with affirmative action compliance and promote MWRA's non-discrimination policy for all individuals in or recruited into its workforce.
- Communicate to managers and supervisors MWRA's commitment to its equal opportunity policies and affirmative action programs.
- Provide assistance to the Human Resources Department in the coordination and oversight of all external/internal recruitment and selection activities, including interviews, hiring, transfers, and promotions of candidates, including members of protected classes.
- Provide for the equitable participation of minority/women and disadvantaged-owned businesses in procurement opportunities, ensure that minorities and women are represented in the labor force on construction contracts, and coordinate with other public entities regarding state and federal requirements.
- Support divisions and departments in understanding and implementing MBE/WBE/DBE policies, practices, as well as monitoring and reporting contractor compliance and expenditures.

FY22 Year-End Accomplishments:

- Provided management assistance to the Human Resources Department in the overall recruitment and selection process for qualified candidates for sixty-five 65 new hires and one hundred thirty eight 138 promotions.
- Conducted oversight of 95 construction and professional projects, including monitoring the minority and women workforce as well as MBE/WBE/DBE compliance. There were no FY22 annual site visits due to COVID 19.

Budget Highlights:

The FY23 Budget is \$700,000, a decrease of \$10,000 or 1.4% from the FY22 Budget.

- \$689,000 for **Wages and Salaries**, a decrease of \$10,000 or 1.4% from the FY22 Budget. This reflects retirements and backfilling at a lower wage. The FY23 Budget includes funding for seven FTEs, matching the FY21 Budget.

AFFIRMATIVE ACTION & COMPLIANCE UNIT	FY22 FTEs	FY23 FTEs
AACU	7.0	7.0
TOTAL	7.0	7.0



Baffle Dams Quabbin Reservoir

INTERNAL AUDIT

The **Internal Audit Department** is prescribed under section 7(h) of the MWRA’s enabling act to “monitor the quality, efficiency and integrity of the Authority’s operating and capital programs and make periodic recommendations and reports to the Executive Director and the Board of Directors.” **The Internal Audit Department** monitors the efficiency and integrity of MWRA operations by auditing financial and program operations; reviewing compliance with accounting and management control systems, laws and regulations, and coordinating the formulation and revisions to MWRA policies and procedures. Internal Audit also monitors MWRA contracts through its contract audit program, including approval of provisional consultant indirect cost rates and subsequent audit of consultant billings, performs construction labor burden reviews, construction change orders and claim audits, and vendor and other contract audits.

FY23 Final Current Expense Budget INTERNAL AUDIT

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 634,048	\$ 634,550	\$ 739,010	\$ 780,858	\$ 41,848	5.7%
MAINTENANCE	5	-	-	-	-	-
TRAINING & MEETINGS	1,376	65	6,585	7,800	1,215	18.5%
OTHER MATERIALS	1,735	750	1,982	2,025	43	2.2%
OTHER SERVICES	1,100	2,419	2,100	3,711	1,611	76.7%
TOTAL	\$ 638,264	\$ 637,784	\$ 749,677	\$ 794,394	\$ 44,717	6.0%

FY23 Goals and Initiatives:

In addition to its statutory core functions, the Department has set the following goals for FY23:

- Encourage more economical and efficient operations, adhere to sound management procedures, and use controls designed to safeguard MWRA assets.
- Assure that automated and supporting manual management information systems provide accurate and useful management information.
- Assure that contractors, consultants and vendors doing business with MWRA have adequate accounting and billing systems to provide current, complete and accurate cost and price information and project invoicing.

FY22 Year-End Accomplishments:

- Identified \$1,977,106 in savings through the fourth quarter related to: internal audits, management advisory services, consultant audits, preliminary consultant reviews, construction labor burden reviews, vendor reviews, facility lease agreements; the HEEC agreement for the new cable, the true-up of the capacity charge and O&M costs for 2021 for the new cable, and on-going savings from the lease of the engine house by the Fore River Railroad Corporation.

- Issued final audit reports on Navy Yard lease. Issued 4 incurred cost audits, 3 preliminary consultant reviews, 2 preliminary labor burden reviews on construction contracts, and 55 cost rate letters to professional service consultants.
- Provided management advisory analysis services dealing with MWRA overhead rates, unemployment compensation, HEEC tariff filings, and various contract, amendment and change order negotiations.
- Provided support to the Law Division in the matter of HEEC filings of the tariff with the Department of Public Utilities on the proposed new cross-harbor electrical cable and for the existing cable.
- Twenty-four audit recommendations have been closed during the period.

Budget Highlights:

The FY23 Budget is \$794,000, an increase of \$45,000 or 6.0% as compared to the FY22 Budget.

- \$781,000 for **Wages and Salaries**, an increase of \$42,000 or 5.7% as compared to the FY22 Budget, primarily for wage increases associated with collective bargaining agreements and reclassifications of 2 open positions to address staffing needs. The FY23 Budget includes funding for 7.0 FTE up from the 6.7 FTEs in FY22.

INTERNAL AUDIT DEPARTMENT	FY22 FTEs	FY23 FTEs
INTERNAL AUDIT	6.7	7.0
TOTAL	6.7	7.0



Alewife Brook Wastewater Pump Station

PUBLIC AFFAIRS

The **Public Affairs Department** is the institutional link to the public and government. The Department’s responsibilities are spread over five separate sections.

The **Legislative Section** of the Department works for passage of legislation necessary to carry out MWRA’s mission, monitors legislation, responds to inquiries by elected and appointed officials, and pursues funding from the state legislature for MWRA projects. MWRA’s highest legislative priority continues to focus on the need for a robust “Commonwealth Rate Relief Package” to help offset anticipated rate increases over the next several years.

The **Community Relations Section** deals directly with cities and towns in the MWRA service area, responds to inquiries about MWRA, proactively incorporates community concerns into MWRA project work, coordinates outreach and education initiatives to highlight MWRA programs, and provides technical expertise for specific projects and initiatives. Community Relations staff also work in conjunction with Planning Department staff to ensure compliance with state and local regulations and restrictions.

The **Communications Section** manages media relations, issues press releases and responds to information requests, oversees the design and distribution of MWRA publications, manages the internal and external web sites and social media platforms, and provides design, editorial, and graphics services for other sections of MWRA.

The **Education Section** is responsible for curriculum development, teacher training workshops, as well as providing school education materials on water quality, water conservation, wastewater topics, and environmental issues.

The Communications and Education Sections are led by the Special Assistant to the Executive Director, located in the Executive Office.

FY23 Final Current Expense Budget							
PUBLIC AFFAIRS							
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22		
WAGES & SALARIES	\$ 880,448	\$ 963,191	\$ 1,137,401	\$ 1,167,431	\$ 30,030	2.6%	
OVERTIME	1,257	365	500	500	-	0.0%	
FRINGE BENEFITS	6	-	-	-	-	-	
MAINTENANCE	-	64	-	-	-	-	
TRAINING & MEETINGS	6,996	-	9,061	9,061	-	0.0%	
PROFESSIONAL SERVICES	-	-	1,300	1,300	-	0.0%	
OTHER MATERIALS	16,442	17,700	25,941	25,941	-	0.0%	
OTHER SERVICES	22,061	19,402	50,022	50,370	348	0.7%	
TOTAL	\$ 927,210	\$ 1,000,722	\$ 1,224,225	\$ 1,254,603	\$ 30,378	2.5%	

FY23 Goals and Initiatives:

The core function of the Public Affairs Department is to support the MWRA's achievement of all five key strategic priorities set forth in the FY21-FY25 Five-Year Strategic Business Plan. To that end, the Department has set the following initiatives:

- Work with the Massachusetts Legislature to advocate on behalf of member communities regarding issues that are crucial to the Authority's core mission. The Executive Director and Director of Intergovernmental Affairs routinely meet with House and Senate leaders to discuss issues that are crucial to the Authority and its customers. All newly filed legislation and regulations that could impact the Authority from an operational and administrative perspective are analyzed and monitored, and appropriate responses are formulated in concert with the Office of the Executive Director (OED).
- Enhance overall public understanding of MWRA's mission, goals, and benefits to the public through extensive outreach and effective communication.
 - Develop and implement proactive strategies for educating and informing key MWRA constituencies and the public at large about MWRA's mission, projects and progress, and promote understanding for associated costs.
 - Gain public support for MWRA programs and projects while responding to the needs and concerns of elected, appointed public officials, and the public.
 - Continue to grow the user population of MWRA's Everbridge communication platform in order to reach as many residents as possible, keeping them up to date on meetings, reports, infrastructure projects, and CSO Notifications
 - Continue to expand the presence of MWRA's portable water fountain at public events in service communities.
- Maintain and update MWRA's Community Contact Database. This Community Contacts tracking application is used to notify MWRA's communities of any operational issues or emergencies affecting them or surrounding communities.
- Continue to provide accurate and timely information to the public through the MWRA's website and social media accounts, e.g., Twitter, Flickr and Instagram.
- A major initiative for FY23 will be a refresh of the MWRA's website.
- Continue to respond to media requests in a timely and accurate fashion.
- Continue to develop presentations and graphics for use in a wide range of MWRA programs.
- Communications staff now has responsibility for the MWRA's drone program and will continue to take baseline photos of MWRA facilities and infrastructure, in addition to other requests for drone footage, in compliance with FAA regulations.
- Continue to design and produce Annual Water Quality Report for every household within the MWRA service area.

- Continue to provide educational support through classroom visits, teacher training, educational material development, and facility tours. With classroom visits uncertain for the coming school year, School Program staff will continue to provide remote presentations and additional materials on the website.
- Provide technical support to 14 cities and towns that host MWRA's emergency back-up aqueducts as part of the Public Access Aqueduct Program.
- Continue to work with cities and towns to implement the Public Access Initiative on the Wachusett, Weston, Sudbury, and Cochituate Aqueducts.
- Provide support to MWRA staff to ensure that MWRA projects meet regulatory requirements, and provide input to regulatory agencies in order to ensure MWRA interests are recognized during the development of regulations.

FY22 Year-End Accomplishments:

- Governor Baker's House 1 Budget did not include a statewide appropriation for the Sewer Rate Relief Fund. However, the House Ways and Means Committee budget included a \$1,500,000 appropriation. Staff will continue to monitor this line-item as the budget process evolves. Historically, MWRA has received approximately 75% of that total appropriation.
- Successfully grew the Everbridge communication platform to over 1200 public opt-in subscription in an effort to keep community members informed of construction project updates, service notices, and public meetings. Sent critical updates for construction projects, Monthly Water Quality Updates and Board Meeting notifications. Continued efforts will be made to increase public opt-in subscriptions and expand MWRA utilization of this platform, including the newly developed CSO Public Notification effort.
- MWRA has shifted to both virtual and in-person public meetings and meetings with local officials to keep our communities and their residents updated on upcoming and ongoing infrastructure investments in our local communities.
- Aqueduct Trails: To date, MWRA staff has issued Section 8 (m) Permits to most communities hosting the Wachusett, Wachusett Open Channel, Weston, Sudbury, and Cochituate Aqueducts as part of the Public Access Aqueducts Program. To date, MWRA has authorized approximately 27 miles of Aqueduct Trails, including a small portion in Newton that was opened this year MWRA estimates that approximately 20 miles are currently open including a newly permitted section in the city of Marlborough. MWRA has also received applications for new trail segments in the towns of Northborough and Sherborn.

Wachusett Aqueduct and Open Channel

Northborough: 4.7 miles permitted, of which 4.2 miles opened to the public
Southborough: 2.2 miles opened to the public along the Open Channel
Marlborough: .5 miles permitted along the Open Channel

Bay Circuit Trail Connector

Framingham: 0.1 miles open to the public
Southborough: 0.4 miles open to the public

Weston Aqueduct

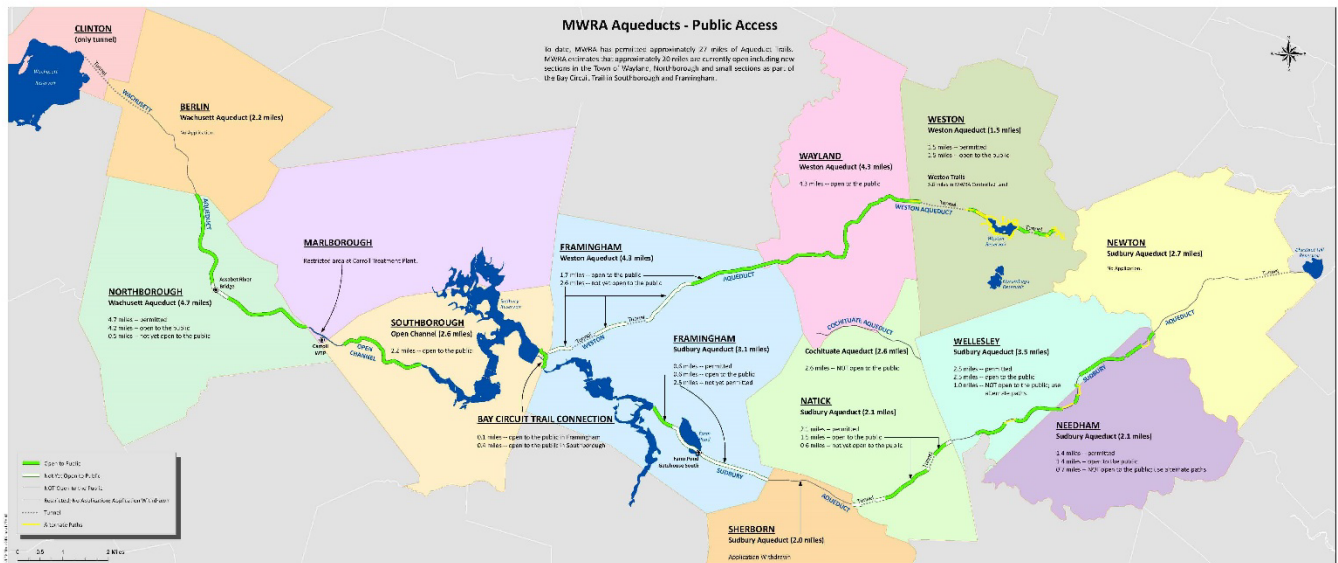
Framingham: 4.3 miles permitted, of which 3.0 miles opened to the public
Weston^[1]: 1.5 miles opened to the public and 500' alternative trail opened on private Pine Brook Country Club property to link public trail
Wayland: 4.3 miles opened to the public

Sudbury Aqueduct

Framingham: .6 miles open to the public
Natick: 2.1 miles permitted, of which 1.5 miles opened to the public
Wellesley: 2.5 miles opened to the public
Needham: 1.4 opened to the public and an additional .5-mile trail opened on private Olin/Babson College property to link public trail
Newton: .3 miles open to the public

Cochituate Aqueduct

Natick: 2.6 miles permitted (0 miles opened to the public)



^[1] Approximately 3.3 miles of additional trails were authorized surrounding the Loring Road Storage Tank and Weston Reservoir as part of previous MWRA commitments included in Memorandum of Agreements with the Town of Weston.

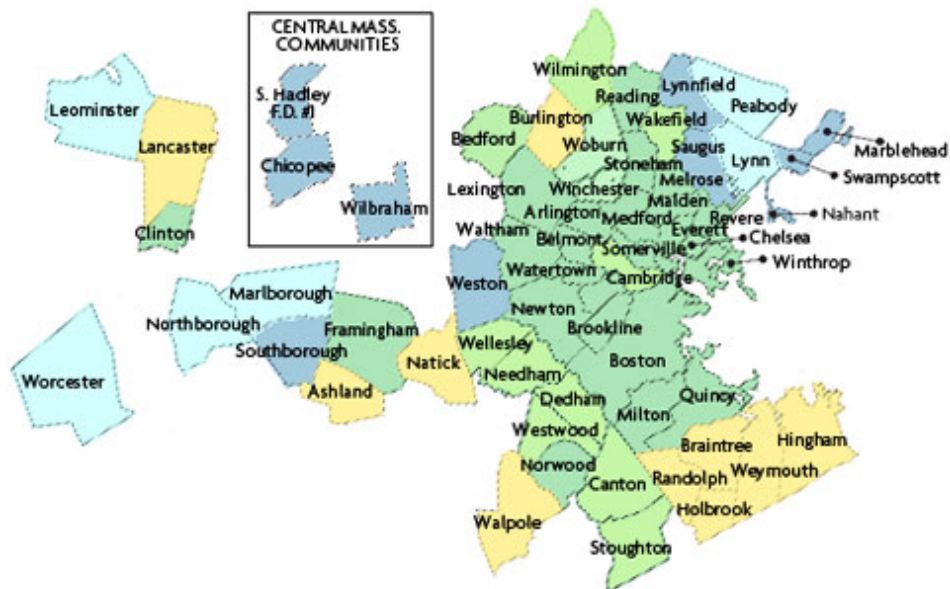
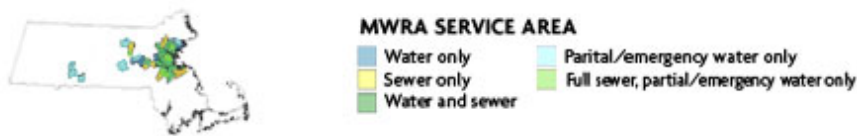
- The Annual Water Quality Report was mailed out to all households in MWRA water service communities in June in accordance with the EPA mandate.
- Staff have continued to provide monthly updates on construction projects on MWRA’s website.
- The School Education staff continues to conduct daily classroom visits within the MWRA service area to educate elementary school children on the importance of water and sewer infrastructure on their daily lives. The theme for the FY2022 annual poster and essay contest is “What A Clean Boston Harbor Means to Me”. This program provides an important opportunity for the students, teachers and parents to learn together about MWRA’s mission.

Budget Highlights:

The FY23 Budget is \$1.3 million, an increase of \$30,000 or 2.5%, as compared to the FY22 Budget.

- \$1.2 million for **Wages and Salaries**, an increase of \$30,000 or 2.6%, as compared to the FY22 Budget primarily for wage increases associated with collective bargaining agreements. The FY23 Budget includes funding for 11.9 FTEs.

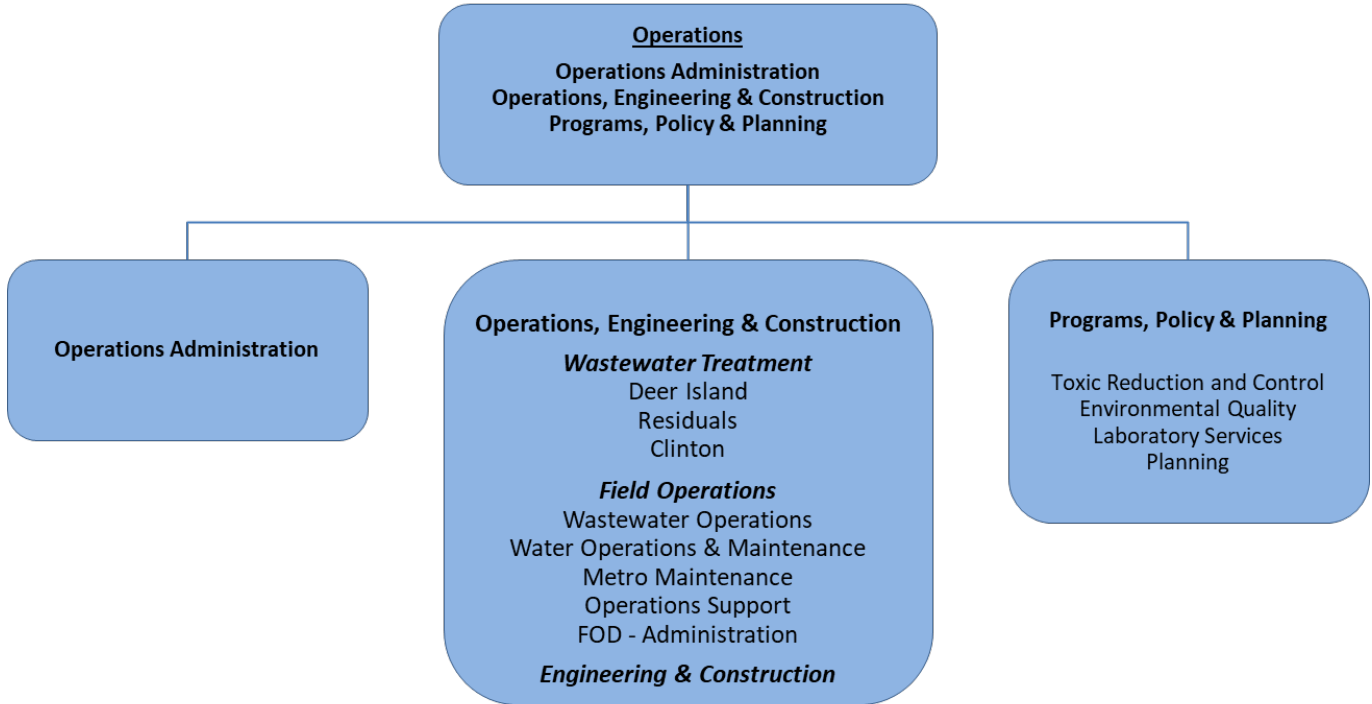
PUBLIC AFFAIRS DEPARTMENT	FY22 FTEs	FY23 FTEs
PUBLIC AFFAIRS	11.9	11.9
TOTAL	11.9	11.9





Operations Division Budget

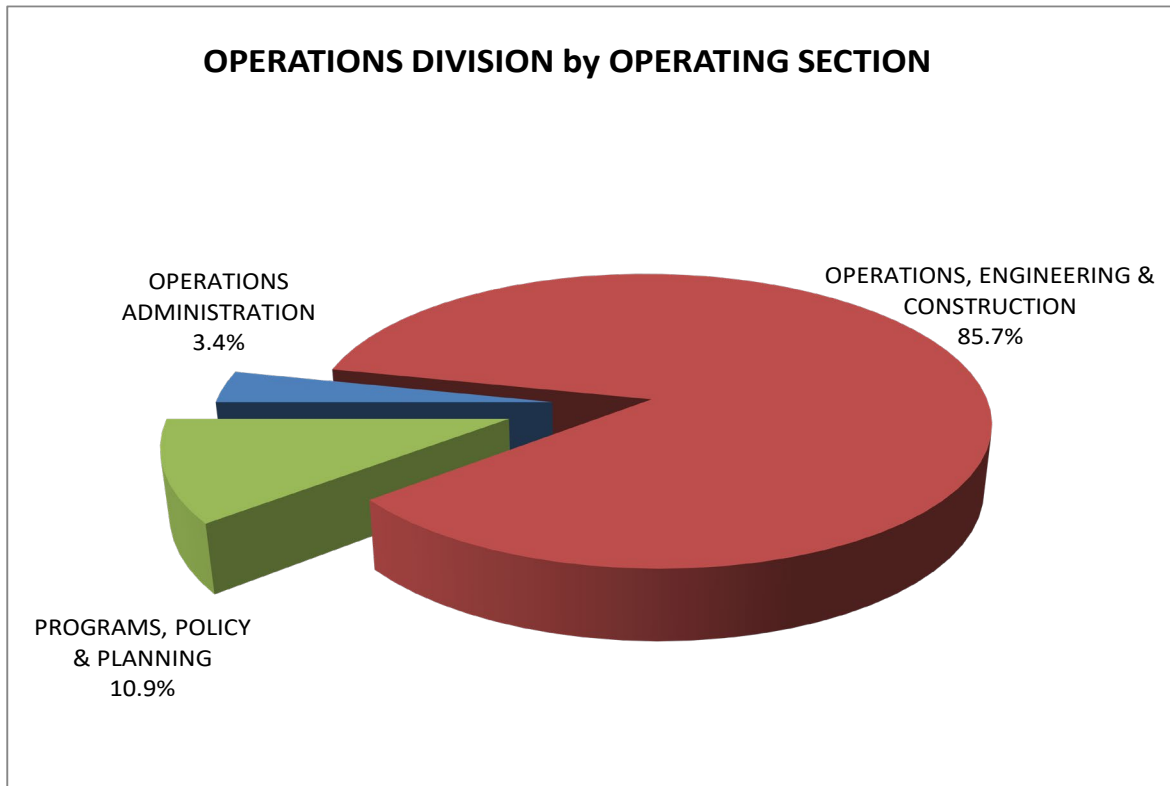
OPERATIONS DIVISION



The **Operations Division** provides MWRA’s wastewater and water system services including operations, maintenance, and treatment; environmental monitoring and laboratory testing and analyses; and engineering, construction, planning, and administration. MWRA’s Chief Operating Officer (COO) leads this division.

FY23 Final Current Expense Budget						
OPERATIONS DIVISION						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 85,822,647	\$ 87,116,373	\$ 91,719,752	\$ 92,667,395	\$ 947,643	1.0%
OVERTIME	4,357,092	4,316,953	5,023,499	5,200,714	177,215	3.5%
FRINGE BENEFITS	101,877	98,682	118,396	118,015	(381)	-0.3%
CHEMICALS	10,998,339	11,652,051	12,202,286	14,994,036	2,791,750	22.9%
UTILITIES	23,064,622	21,801,305	24,651,322	30,805,517	6,154,195	25.0%
MAINTENANCE	24,662,379	25,054,068	26,281,423	26,527,677	246,254	0.9%
TRAINING & MEETINGS	188,787	74,579	200,600	212,054	11,454	5.7%
PROFESSIONAL SERVICES	2,399,789	2,661,148	2,874,935	2,829,716	(45,219)	-1.6%
OTHER MATERIALS	4,367,458	4,571,632	4,826,810	5,255,764	428,954	8.9%
OTHER SERVICES	20,459,761	19,230,140	20,452,126	23,311,953	2,859,827	14.0%
TOTAL	\$ 176,422,751	\$ 176,576,931	\$ 188,351,149	\$ 201,922,841	\$ 13,571,692	7.2%

The Operations Division is composed of the Operations Administration Department and four operating sections, led by the Deputy Chief Operating Officer (DCOO), Chief Engineer, Director of Wastewater and Director of Water. In addition to managing the operating sections, the managers provide support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting and public constituency matters.



The **Operations Administration Department** provides division-level oversight and general management support in the following areas: administration, personnel, finance, contract administration, comprehensive energy planning and management, regulatory affairs and environmental management, and general management. The Operations Administration Department budget represents 3.9% of the Operations Division budget and includes funds for MWRA vehicle purchases and division-wide professional memberships.

The Department’s budget also covers the Tunnel Redundancy Program that oversees and manages the upcoming multi-decade \$1.4 billion water system Tunnel Redundancy Program, expected to be active from FY18 through FY42. Given the complexity of the project, the group is independent of existing engineering and construction departments and reports directly to the Executive Director. However, the department’s CEB is included within the Operations Division budget to allow for sufficient administrative support.

The **Programs, Policy & Planning Section** is composed of the Toxic Reduction and Control, Environmental Quality, Laboratory Services, and Planning departments. In total, the budgets for these departments represent 10.9% of the Operations Division’s budget. Brief descriptions of the departments in this section are as follows:

- The **Toxic Reduction and Control (TRAC) Department** operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA's Environmental Protection Agency (EPA-approved) Industrial Pretreatment Program and oversees implementation of MWRA's 8-M Permits processes.
- The **Environmental Quality Department (EnQual)** has two units: EnQual-Water and EnQual-Wastewater. EnQual-Water manages compliance with the reporting requirements of the MassDEP Drinking Water Regulations, as well as conducts and oversees the drinking water quality-monitoring program. EnQual-Wastewater manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permits. This unit analyzes environmental data and prepares reports on the quality of sewage influent and effluent and the water quality of Boston Harbor and its tributary rivers and Massachusetts Bay.
- The **Laboratory Services Department** supports various client groups in the Operations Division, the Massachusetts Department of Conservation and Recreation (DCR), and the MWRA member communities; providing field sampling, laboratory testing, and reporting services. Most of the testing is required to meet the strict guidelines of regulatory programs and permits including the Safe Drinking Water Act (SDWA) and MWRA's NPDES permits.
- The **Planning Department** provides planning, advocacy, and decision support services on policy, public health, regulatory, and operations matters regarding MWRA's potable water and wastewater systems.

The **Operations, Engineering & Construction Section** is composed of the Wastewater Treatment, Field Operations, and Engineering & Construction departments. In total, the budgets for these departments represent 85.7% of the Operations Division's budget. Brief descriptions of the departments in this section are as follows:

- The **Wastewater Treatment Department** operates and maintains the Deer Island Treatment Plant (DITP), Clinton Wastewater Treatment Plant, and Residuals Processing Facility (pelletization plant) in Quincy.
- The **Field Operations Department (FOD)** manages the following functions: wastewater pretreatment, wastewater collection and transport, water distribution, and water treatment including the Carroll Water Treatment Plant (CWTP). This department is responsible for operating, maintaining, and metering both the water and wastewater systems.
- The **Engineering and Construction Department** supports the maintenance, repair, and rehabilitation of the wastewater and water systems by providing in-house engineering, drafting, surveying, consultant management, construction management, and other technical assistance. The department is also responsible for implementation and monitoring of the Combined Sewer Overflow (CSO) plan.

FY23 Final Current Expense Budget						
OPERATIONS DIVISION by OPERATING SECTION						
OPERATING SECTION	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
OPERATIONS ADMINISTRATION	\$ 6,121,047	\$ 6,128,458	\$ 7,370,924	\$ 6,955,518	\$ (415,406)	-5.6%
OPERATIONS, ENGINEERING & CONSTRUCTION	149,421,756	149,125,859	159,458,478	172,973,491	13,515,013	8.5%
PROGRAMS, POLICY & PLANNING	20,879,948	21,322,614	21,521,747	21,993,832	472,085	2.2%
TOTAL	\$ 176,422,751	\$ 176,576,931	\$ 188,351,149	\$ 201,922,841	\$ 13,571,692	7.2%

FY23 Goals and Initiatives:

The Operations Division core function is to plan, develop, implement, and operate efficient, reliable, and economical water treatment/delivery and wastewater transport/treatment systems in an environmentally sound manner. Accordingly, the Division takes the lead on the following MWRA goals included in the FY21-FY25 Five-Year Strategic Business Plan:

I. Drinking Water Quality and System Performance

- **Goal #1- Compliance with Regulatory Requirements and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations. Special initiatives include:
 - Identify and evaluate the impact of different treatment strategies and scenarios on the mitigation of transportation related contaminants into the source water.
 - Evaluate new water quality monitoring equipment and testing techniques to monitor and maintain high quality water all the way to the ends of the community systems.
 - Participate with other nationwide water utilities in Water Research Foundation studies, specifically research opportunities pertaining to algae monitoring and mitigation strategies in source water.
 - Collaborate with CVA communities to modify chlorine-dosing strategy to minimize the formation of disinfection byproducts.
 - Increase water quality monitoring at the Quabbin Reservoir by the installation of a seasonal water quality-profiling buoy. Implement routine and automatic data transfers to ensure data is proactively reviewed and managed.
 - Evaluate data from UCMR4 2018-2020 monitoring and compare against nationwide occurrence data.
 - Advocate for responsible and reasonable new and revised state and federal drinking water regulations, and provide training and technical support to communities for new regulations.

- **Goal #2 – Water Quality Public Communications:** Continue to effectively report and communicate water quality information to our customers and public officials. Special initiatives include:
 - Regulatory communicate routine TCR monitoring data to Water Departments and assist with water quality sampling or training, as needed.
 - Continue to strengthen planning and emergency response documents for Boil Water Order (BWO) events. Work with departments to create, disseminate and train staff on materials that can be used during a BWO event or at a public information call center.

- **Goal #3 – Technical Assistance for Water Communities:** Assist member communities to improve local water distribution systems through ongoing financial, technical and operational support programs to maximize long-term water quality benefits. Special initiatives include:
 - Enhance outreach and technical assistance within the existing Lead Service Line Replacement program to support communities in response to EPA’s revisions to the Lead and Copper Rule.
 - Develop the capability to evaluate potential changes to corrosion control treatment using a pipe loop system constructed using “harvested” lead service lines.

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system. Initiatives include:
 - Continue to carry out the Pretreatment Program to protect receiving water quality, maximize the beneficial reuse of wastewater residuals, and protect workers and MWRA’s wastewater treatment plants and receiving waters.
 - Continue to monitor DITP processes to ensure high quality treated effluent, optimizing plant performance to ensure all applicable NPDES permit limits continue to be attained.
 - Operate the newly installed enhanced phosphorus control systems at the Clinton Wastewater Treatment Plant to ensure compliance with its new NPDES permit.
- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality. Special initiatives include:
 - Develop strategies to address emerging contaminants, such as PFAS, micro plastics, etc. as they are identified, and frame an approach to respond to the public’s concerns about these contaminants.
 - Assess thresholds for annual nitrogen loading, including evaluating the existing thresholds and the environmental impact of nitrogen, as well as whether these thresholds developed over 20 years ago are valid or should be modified.
 - Review new waste treatment technologies as they arise to continuously improve treatment performance and efficiency.
 - Continue to work with researchers investigating the use of wastewater as an indicator of the presence of the Covid-19 virus.
- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects. Initiatives include:
 - Continue to design and implement facility rehabilitation projects for various pump stations, headworks, CSO facilities and the Deer Island Treatment Plant.
 - Continue to implement an ongoing program to review, prioritize and accelerate interceptor renewal projects.
- **Goal #7 – CSO Plan Compliance:** Complete all CSO milestones by 2021 and demonstrate that the CSO Plan meets its performance objectives. Special initiatives include:
 - Conduct an evaluation of the CSO treatment processes to determine potential opportunities to better meet permit limits. Confirm or reassess treatment processes as part of CSO facility rehabilitation projects.

- Implement a subscriber-based CSO Public Notification Program. Provide notification of a CSO overflow within 4 hours of start of the discharge.
- Implement near real-time SSO reporting system to provide public information and ensure reporting timeframes meet regulatory requirements.
- **Goal #8 – Technical Assistance for Wastewater Communities:** Assist member communities to improve their wastewater collection systems through ongoing technical, financial, and operational support programs. Initiatives include:
 - Provide technical and operational support including TV inspections, fieldwork assistance, or other targeted assistance, as needed.
 - Promote and manage MWRA’s Inflow/Infiltration Local Financial Assistance Program to facilitate reduced I/I in local community infrastructure.

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
 - The FY23 Capital Improvement Program forecasts \$278.5 million in spending in FY23, of which \$109.8 million supports Wastewater System Improvements and \$133.1 million supports Waterworks System Improvements.
 - For FY23, the FY23 Final CIP includes 200 active contracts of which 70 are for design of Wastewater and Waterworks Systems Improvements and 47 are for construction, with projected spending of \$51.7 million for design and \$155.8 million for construction. In addition, there are 83 active other contracts with total spending of \$71.0 million.

Special initiatives include:

- Continue use of Condition Monitoring for all Water and Wastewater sites. Expand Condition Monitoring techniques to provide earlier indication of asset degradation.
- Conduct an updated benchmarking analysis in order to identify gaps and sustain the goal of maximizing asset protection while potentially identifying new best practices in the industry.
- Update the wastewater metering system and evaluate new technologies to ensure continued accurate flow accounting and to enhance its usefulness for operational and evaluation purposes by adding additional monitoring locations.
- Continue to research and develop Key Performance Indicators (KPI) to compare our performance internally and against the industry.
- Enhance and monitor water pipeline protection to maximize pipeline lifetime.
- Expand integration between the MWRA’s Authority-wide Enterprise Asset Management (EAM) system Maximo with Lawson (Infor), Process Information (PI) and Automated Vehicle Location (AVL) systems to expand the use of Predictive Management (PdM) tasks, increasing functionality, asset tracking and improved workflow to reduce equipment downtime and control budget spikes. Utilize updated MAXIMO to increase opportunities for paperless work.
- Continue to upgrade and improve upon the Supervisory Control and Data Acquisition (SCADA) and Process Information and Controls System (PICS) hardware and software to meet the current industry standard and to address cyber security concerns.
- **Goal #10 – Emergency Preparedness:** Prepare for catastrophic events and malicious acts that could affect the water and wastewater systems. Operations Division initiatives include:

- Continue to improve and incorporate redundancy and operational flexibility within the water system to ensure uninterrupted service.
- Design and implement projects including those that eliminate or mitigate single points of failure within MWRA's water transmission and distribution system.
- Continue to train staff on various potential emergency scenarios and participate in broader Massachusetts Emergency Management Agency (MEMA) and other training exercises.
- Complete the Preliminary Design and Environmental Impact Report for the Metropolitan Tunnel Redundancy Program and initiate final design.
- Update MWRA's earthquake preparedness to bring our facilities up to current standards as they are rehabilitated.
- Move forward with Wastewater Facility Emergency Response Planning to identify potential measures to minimize disruptions from failures of facilities, including development of a comprehensive Emergency Response Plan for each facility.
- Create and implement a predetermined schedule of review for facility risk assessments.
- Participate in Lower Mystic Resiliency Planning as an abutter to the Lower Mystic.

VI. Environmental Sustainability

- **Goal #17 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets.
 - Self-generate ~ 28.4% of the Deer Island Treatment Plant's (DITP) required power through optimization of power generation assets, including the wind turbines, Steam Turbine Generation (STG) back pressure system, photovoltaic panels, and Combustion Turbine Generators (CTGs).
 - Contribute ~ \$3.2 million in energy revenue to MWRA's ratepayers through optimization of power generation assets and participation in energy revenue programs such as demand response, energy credits, power sales, and utility rebates. Also, avoid at least \$1.4 million in capacity charges through use of self-generation assets during peak load events.

Special initiatives include:

- Incorporate employee education on energy efficiency in MWRA training outlets, e.g. tool box talks.
- Design new gas turbine combined heat and power equipment to take advantage of the higher power and thermal efficiencies of new equipment, maximizing the production of additional electric power for on-site use at Deer Island as well as cost savings while reducing maintenance spending on aging equipment.
- Evaluate and implement where feasible combined heat and power technology in plant operations to improve energy efficiency (e.g. pellet plant, Clinton)
- Continue to develop the battery storage projects and work with the utility and its contractor to optimize demand savings. Evaluate opportunities for future battery storage projects. Explore community solar opportunities that will stimulate large-scale remote solar installations and save money on our electric bills.
- Expand our fleet of electric vehicles and charging stations.
- Explore a new MWRA-wide building/plant information management system that includes a comprehensive energy management system.

- **Goal #18 – Climate Change Adaptation:** Continue to monitor climate change research and move forward with plans to reduce impacts of projected sea level rise and storm surge events on MWRA infrastructure. Initiatives include:
 - Continue to incorporate design modifications into facility renovations and maintenance activities to address sea level rise and storm surge.
 - Plan and install flood protection barriers at water and wastewater sites which fall below expected elevations of flood waters under condition of a FEMA 100 year storm plus 2 ½ feet to minimize damage and still provide service.
- **Goal #19 – Water System Expansion:** Advance reasonable water system expansion. Initiatives include:
 - Continue to provide assistance to communities seeking admission to the MWRA’s water system or seeking emergency withdrawals.
 - Work with prospective communities to inform them of the benefits of admission.

The strategic priorities and goals that apply to each department within the Operations Division are presented in departmental budget sections. For more information about MWRA’s Business Plan, please refer to the Business Plan section of the Transparency page on MWRA’s website at mwra.com.

FY22 Year-End Accomplishments:

For more information about this topic, please refer to the Performance Indicator section of the Transparency page on MWRA’s website at mwra.com.

I. Drinking Water Quality and System Performance

- Met water quality and treatment standards in the drinking water system during FY22.
 - MWRA’s algae monitoring season is complete. DCR continued to collect occasional algae samples on Wachusett Reservoir once ice-cover dissipated. Staff performed algal toxin and taste and/or odor compound sampling at treated water taps through November; this sampling coincided with UCMR4 community entry-point cyanotoxin monitoring. Results revealed no cyanotoxin detections during any routine or UCMR4 sampling events.
 - Completed contract with UMass Amherst, under an Interdepartmental Service Agreement, to investigate possible contamination from a railroad contamination event in Wachusett Reservoir.
 - Successfully procured and deployed a new profiling water quality monitoring buoy onto Quabbin Reservoir. Hand-cast and buoy sondes were also procured to provide parameter data throughout the water column. Staff facilitated inclusion of buoy data onto our buoy server and into OMMS and PI Processbook.
- Performed reservoir level management control at all metropolitan reservoirs to maintain normal operating levels.
- The Laboratory Services Department performed 135,000 tests (including data entry of field tests) related to drinking water quality including the annual Lead and Copper Rule testing.
- The Laboratory Services Department performed numerous tests in support of community efforts to identify and reduce lead service lines in schools.
- Water Loan Program – Local Water System Assistance Program - Through June 2022, distributed \$32.1 million in Local Water System Assistance Program interest-free loans, plus an additional \$6.3 million under the Lead Service Line Replacement Loan Program. In total, MWRA has distributed

\$498.7 million in loans to fund 585 local projects with participation from 43 of the 47 eligible water communities. Since 1998, MWRA has replaced or cleaned and lined 593 miles of local water main (about 8% of the regional system) via projects funded by MWRA's financial assistance. In addition, MWRA has loaned \$31.3 million via 34 distributions to 14 communities for Lead Water Service Line Replacement projects.

- Community Leak Detection - Through June 2022, assisted eight (8) municipalities in the MWRA's service area with leak detection (via task-order contracts) in their systems in FY22.

II. Wastewater Quality and System Performance

- Deer Island received the Platinum Peak Performance Award for 2021 from the National Association of Clean Water Agencies (NACWA) for the 15th continuous year. The award recognizes facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. DITP has had no permit violations for over 15 years.
- Deer Island met secondary permit limits at all times, treating on average 98.9% of flows with full secondary treatment. More detailed information about DITP's NPDES Permit compliance is available on the Transparency/Performance Indicator section of MWRA's website.
- Eversource completed the second annual maintenance on the new 115 kVA cross-harbor marine power cable to Deer Island during November 2021. DITP operated on CTG power-only for just under 15 hours continuously. All flows received disinfection and met numerical effluent standards.
- Processed 95.9 average tons per day of sludge at the Pelletization Plant and disposed of 5,087 tons of grit and screenings through a contracted vendor.
- Year to date through February, the TRAC Department completed the following Environmental Protection Agency (EPA)-required work for significant industrial users (SIUs): 198 inspections, 166 monitoring events, and 384 sampling of connections. TRAC also issued or renewed 295 permits to SIUs and non-SIUs.
- TRAC issued the first set of annual invoices to approximately 700 permitted dental facilities. March marks the start of the second year of the Dental Discharges permit.
- The Department of Laboratory Services performed 136,000 tests (including data entry of field tests) for wastewater quality including the MA Bay water column testing for the Harbor and Outfall Monitoring program.
- Implemented and improved MWRA's CSO notification web page and database to meet the new rapid CSO notification requirements in the CSO Variances.
- Met all NPDES reporting requirements including routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, Contingency Plan, DITP blending order. Missed no reporting deadlines, even with the impacts of COVID-19.
- EnQual carried out permit-required environmental monitoring of Boston Harbor and Massachusetts Bay water column, sediments, fish and shellfish and CSO receiving water quality. The department finalized six technical reports, put monitoring results on its website, and sent reports to government regulators, the Outfall Monitoring Science Advisory Panel and interested members of the public.
- Sewer Grant/Loan Program – Through June 2022, distributed \$31.3 million in grants and interest-free loans to member sewer communities for Infiltration/Inflow reduction and sewer system rehabilitation projects in FY22. In total, MWRA has distributed \$509.8 million in grants and loans to fund 646 local projects with participation from all 43-member sewer communities.

III. Infrastructure Management and Résilience

Maintenance

- For FY22, the Operations Division spent \$23.8 million on maintenance of which \$9.8 million was for materials and \$14.0 million was for services.
- Procured and implemented numerous contracts for maintenance services, including the following:
 - Diver Assisted Suction Harvesting of Invasive Plants at Wachusett Reservoir Lower Basin and CovesCommunity
 - Leak Detection Survey Services
 - Groundskeeping services for Western Operations facilities
 - Hydraulic equipment services
 - Crane maintenance services
 - Wachusett Reservoir North and South Dike instrumentation services
 - DITP Thermal and Hydro Plant maintenance
 - Instrumentation maintenance and calibration
- Procured and implemented numerous contracts for maintenance projects including:
 - DITP Gas Protection System Replacement Phase I
 - DITP Tafts and Shirley Intersection Improvements
 - DITP Chemical Tank Relining and Pipe Replacement
- DITP - Completed numerous maintenance projects including the following representative work:
 - Painting and coating contract which painted Digester overflow boxes, all primary scum wells, and six carbon absorbers in our odor control facilities.
 - Fabricated in house and installed two large chutes in stainless steel and all supports. These chutes are on the pug mill process in Residuals.
 - Purchased and installed one 24'' and one 30'' W3 Strainers, which replace existing units which were from start-up of plant.
 - Chiller upgrade work which included high pressure cleaning, replace some fiberglass covers, and seal the sump area which had a major leak.
 - Replaced Digester Mixer which is critical to the proper operation of the Digester. It provides the driving force for mixing the digester's contents and assists in maintaining a uniform temperature within the sludge mass.
- **Clinton Wastewater Treatment Plant** - Completed numerous maintenance projects at the including the following representative work:
 - Maintenance staff rebuilt thickened sludge transfer pumps #1 and #3.
 - Maintenance staff reinstalled the #2 grit screw and installed new safety chain on same grit tank.
 - Maintenance staff replaced doctor blades on belt filter press #1. They also re-piped the polymer system that feeds the belt filter press.
 - Operations staff rebuilt #1 and #2 polymer pumps that feed the disk filters.
 - Completed the paintings and coatings contract.
- **Water System** - Completed numerous maintenance projects including the following representative work:
 - Completed the B-side of the 2020/2021 CWTP half plant maintenance.

- Operated Lonergan Intake to divert water from Ware River to Quabbin reservoir, transferring 65 million gallons of water in one day.
- Performed PRV maintenance at Meters 93, 100, 106, 126, 157 & 171, Section 28, Arlington Covered Reservoir, Deer Island Tank and Spot Pond Storage Tank.
- Performed leak detection performed on 10.5 miles of MWRA water main and community assistance was provided to Arlington, Malden, Medford, Melrose, Newton, Revere, Somerville and Swampscott.
- In water system through June 2021, exercised 1,185 and replaced 21 mainline valves; exercised 751 and replaced ten blow-off valves.
- **Wastewater System** - Completed numerous maintenance projects including the following representative work:
 - Completed two temporary shutdowns of the odor control system at Nut Island to allow the contractor to tie in new ductwork.
 - Replaced incline gearbox for Channel 2 at Ward Street Headworks.
 - In the wastewater system through June 2021, inspected 23.0 miles and cleaned 30.7 miles of MWRA pipeline. Inspected 1,025 structures and rehabilitated 64 manholes. Also inspected 23 and cleaned six inverted siphon barrels.

Capital Improvements

- Capital spending for FY22 totaled \$139 million broken out by category as follows: \$70 million for Wastewater System projects, \$63 million for Water System projects, and \$5 million for Business and Operations Support projects.
- Awarded or Issued Notices to Proceed for numerous contracts including the following:
 - Wastewater System:
 - Remote Headworks Shafts Access Improvement
 - DITP Asset Protection Program and Clinton including the following:
 - DI Replacement of Odor Control Damper
 - Clinton Screw Pump Replacement
 - Water System:
 - CP-3 Section 23, 24, 47 Rehabilitation
 - CWTP SCADA Construction
 - Waltham Water Pipeline
 - New Roofs at Water Pump Stations
 - Marlborough Emergency Pump Station Connection
 - Carroll Water Treatment Plant Chemical Feed System Improvements
 - Wachusett Lower Gate House Windows and Doors
 - NEH Improvements Construction
 - Quabbin Admin Building Water Supply
 - Southborough Electrical Distribution Upgrades
- Substantially completed numerous design and construction phases including the following:
 - Wastewater System:
 - Chelsea Creek Upgrades Construction
 - Wastewater Meter Equipment Replacement

- Gravity Thickener Rehabilitation Construction
 - Dorchester Interceptor Sewer Construction
 - Fuel Oil Tank Construction 1
 - DI Chemical Tank and Digester Pipe Construction
 - Clinton Valves and Pipeline Replacement
- Water System:
 - Northern Intermediate High Section 89 & 29 Redundancy Design CA/RI
 - Northern Low Service Rehabilitation – Section 50 & 57 Design/ESDC
 - Weston Aqueduct Sluice Gate Construction
 - Wachusett Dam Bridge Crane Removal
 - CP-6 Tops of Shafts 6, 8, 9A Construction
 - Shaft 2 Construction River Road Improvements Construction
 - T

For more information about projects in the Capital Improvement Program, please refer to the Fiscal Year 2023 Capital Improvement Program document located on the Budget page of the MWRA's website at mwra.com.

Emergency Preparedness

- Assisted with implementation of MWRA's Pandemic Emergency Action Plan to meet requirements of America's Water Infrastructure Act (AWIA). Issued regular internal reports on the status and prevailing guidance regarding the COVID19 pandemic in Massachusetts. Also worked with the current vendor, Biobat, to monitor and report the presence of the virus in MWRA's wastewater.
- Completed and certified compliance with the Emergency Response Planning requirements of America's Water Infrastructure Act. Initiated major staff training exercise related to potential railroad spills at Wachusett Reservoir.
- In July and August, staff presented at MWRA's Community Emergency Response Planning Training on building flushing after lengthy shutdowns due to COVID19 and proper coliform sampling technique. Provided a virtual presentation to the Chelsea sampling staff on proper coliform sampling technique and chlorine residual measurement.
- Coordinated the design, procurement and installation training for flood protection equipment to be installed at key MWRA wastewater facilities. Participated in Metro Mayors' Climate Change Coalition Task Force and continued to monitor new research related to the effects of climate change in the service area. Co-chaired and participated in multi-agency Mystic River Regional Infrastructure exercise.

VI. Environmental Sustainability

- Received a total of \$889,000 in revenue for energy generated at numerous facilities including hydroelectric from Oakdale Station and Cosgrove Station; wind from Charlestown Pump Station; and solar from Carroll Water Treatment Plant.
- Continue to leverage MWRA's self-generation assets and participation in the competitive energy market to offset operating costs. The combined impact of participation in the Independent System Operators of New England (ISO-NE) load response program, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded

efficiency projects resulted in \$2.3 million in revenue in FY22. MWRA also avoided more than \$1.4 million in capacity charges through operation of self-generation assets during peak load events as called by the regional transmission organization (ISO New England).

- Deer Island self-generated 27.3% of the plant’s total required power FY22.
- Continued to operate and optimize the phosphorous treatment system and natural gas lines at the Clinton Wastewater Treatment Plant; third full year of operation for both.

Budget Highlights:

The FY23 Budget is \$201.9 million which is \$13.6 million, or 7.2%, more than the FY22 Budget.

- The FY23 Budget of \$92.7 million for **Wages and Salaries** is an increase of \$948,000 or 1.0% from the FY22 Budget primarily due to wage increases associated with collective bargaining agreements. The FY23 Budget funds 919 full-time equivalent positions for the Operations Division departments, including Tunnel Redundancy staffing. Fifteen finance related positions were transferred to Finance Division in for FY23.

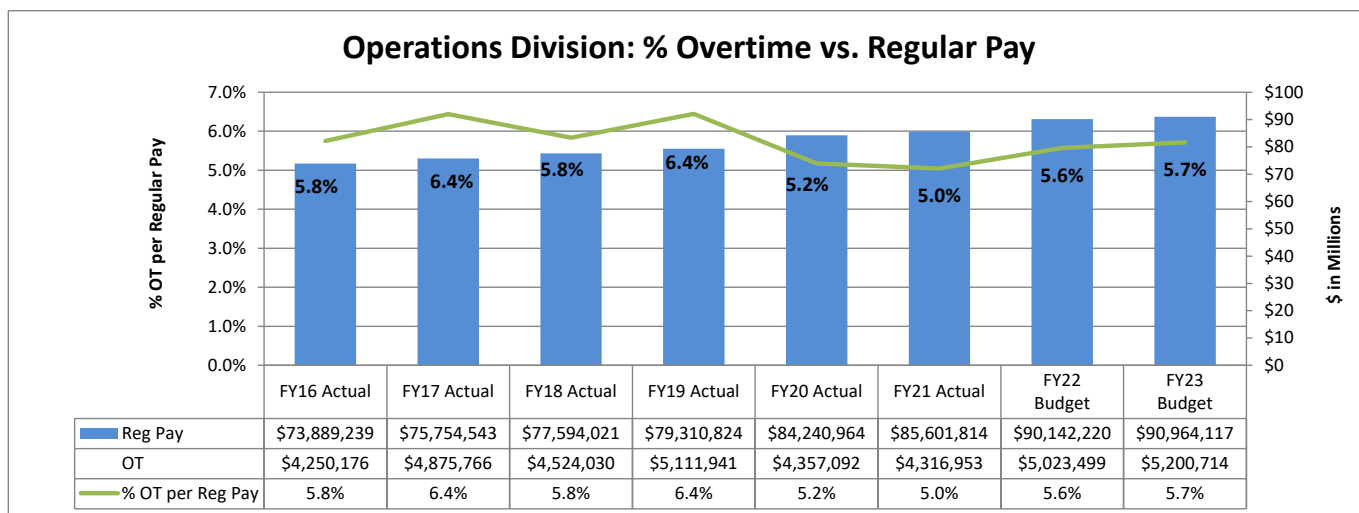
FTEs		
Operations by Department		
DEPARTMENT	FY22 FTEs	FY23 FTEs
OPERATIONS ADMINISTRATION*	40.6	33.6
OPERATIONS, ENGINEERING & CONSTRUCTION	734.1	726.1
PROGRAMS, POLICY & PLANNING	159.4	159.4
TOTAL	934.0	919.0

*includes Tunnel Redundancy

Staffing for the water system Tunnel Redundancy Program remains at 16 positions in the FY23 Budget. The MWRA currently plans to add FTEs over the next few fiscal years to support this project.

The Wages and Salaries line also includes \$942,000 for Stand-by Pay to ensure staffing availability and response during emergencies, \$331,000 for Interns, and \$105,000 for Temporary Employees to assist with lead testing in schools.

- The FY23 Budget of \$5.2 million for **Overtime** is a net increase of \$177,000 or 3.5% from the FY22 Budget primarily due to collective-bargaining wage increases and resizing estimates based on trends. The budget includes \$2.3 million for emergencies and storms; \$1.4 million for planned work primarily required on off-shifts and during periods of lower flows; and \$1.3 million for routine coverage of operations per prevailing collective bargaining agreements.



- The FY23 Budget of \$15.0 million for Chemicals is an increase of \$2.8 million or 22.9% over the FY22 Budget, due to the supply chain issues impacting recent contractual prices and market projections. The FY23 Budget includes \$7.8 million for disinfection and treatment in the water system and \$7.2 million for disinfection, treatment, and odor control in the wastewater system. The budget includes \$3.2 million for soda ash, \$5.1 million for sodium hypochlorite, \$2.4 million for ferric chloride, \$732,000 for hydrogen peroxide, \$382,000 for activated carbon, \$682,000 for polymer, \$488,000 for liquid oxygen, \$437,000 for carbon dioxide, \$372,000 for hydrofluosilicic acid, \$441,000 for sodium bisulfite, \$291,000 for aqua ammonia, and \$239,000 for sodium hydroxide.

- The FY23 Budget of \$30.8 million for **Utilities** includes \$23.0 million for electricity, \$4.1 million for diesel fuel, \$2.8 million for water, \$838,000 for natural gas, and \$135,000 for propane and other utilities. The utility budget is \$16.3 million for the Deer Island Treatment Plant, \$6.6 million for Wastewater Operations, \$6.5 million for Water Operations, \$1.0 million for the Chelsea office and maintenance facilities, and \$420,000 for the Clinton Wastewater Treatment Plant. The utilities budget is \$6.2 million or 25.0% more than the FY22 budget, primarily due to higher electricity prices due to higher generation costs, higher transmission and distribution charges in addition to higher diesel fuel prices driven by supply issues and greater demand.

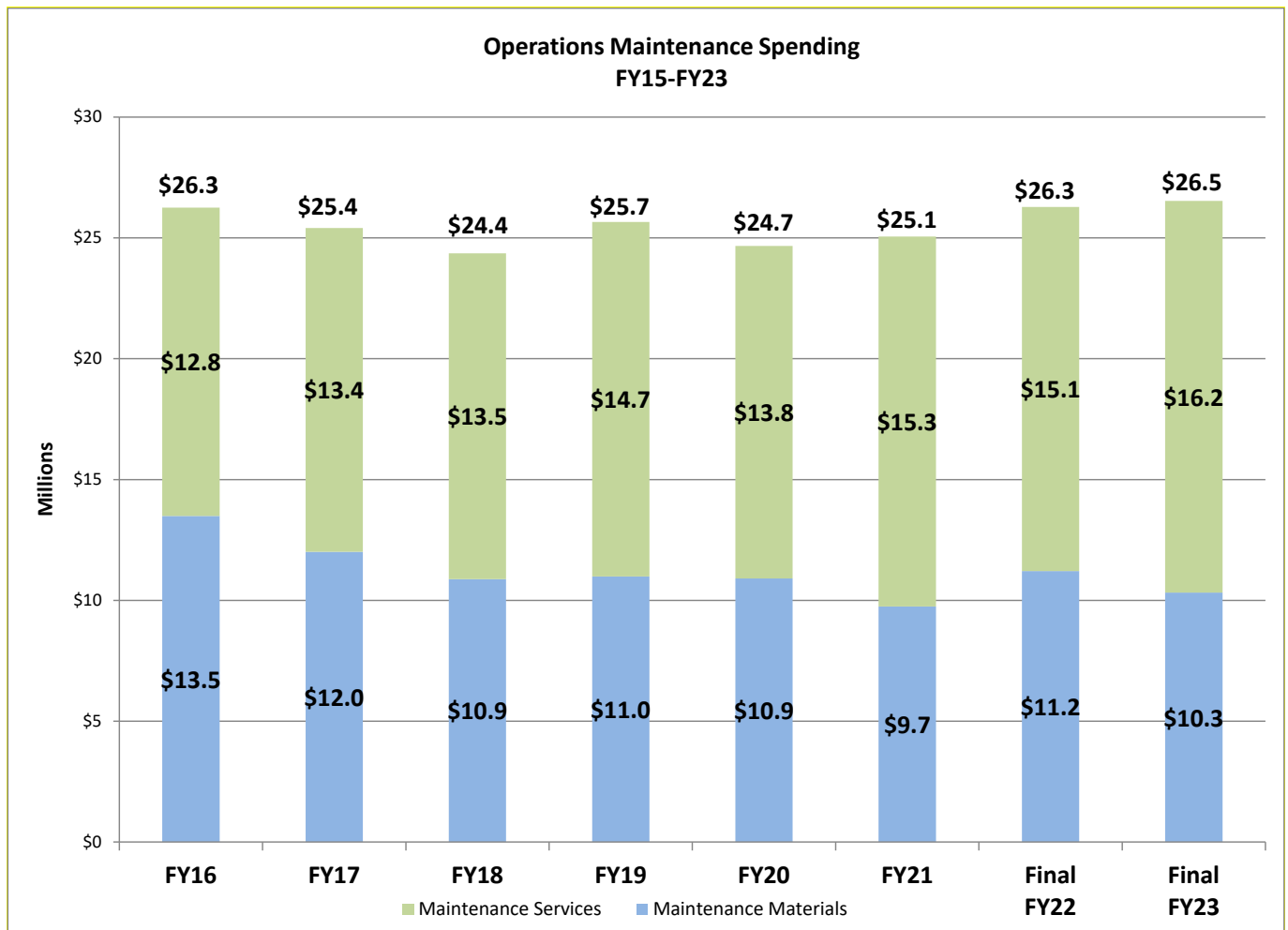


- The FY23 Budget for **Maintenance** is \$26.5 million, a net increase of \$246,000 or 0.9% from the FY22 Budget primarily due to changes in project priorities from year to year. The FY23 Budget includes \$16.3 million for services and \$10.2 million for materials. By maintenance area, the largest categories of spending for materials and services include \$10.2 million for plant and machinery; \$6.9 million for building and grounds; \$3.3 million for specialized equipment; \$3.6 million for electrical; \$1.6 million for pipeline; and \$1.2 million for HVAC systems. The budget also funds special initiatives such as

energy conservation projects at DITP and in the Field Operations Department facilities; invasive plant control in the water reservoirs; painting and coating upkeep at the wastewater treatment plants; and easement clearing on MWRA's aqueducts. As shown below, the range of maintenance spending has been fairly consistent over the last few fiscal years.



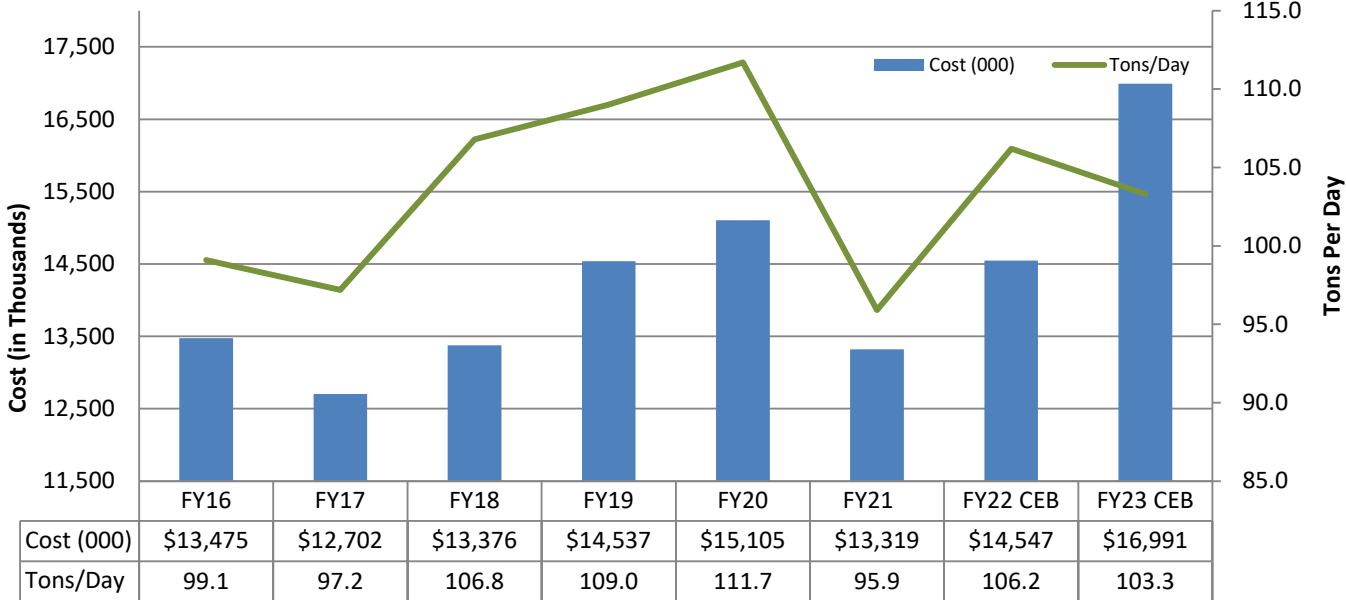
Norumbega Covered Storage Tank and Norumbega Open Reservoir (now a backup supply)



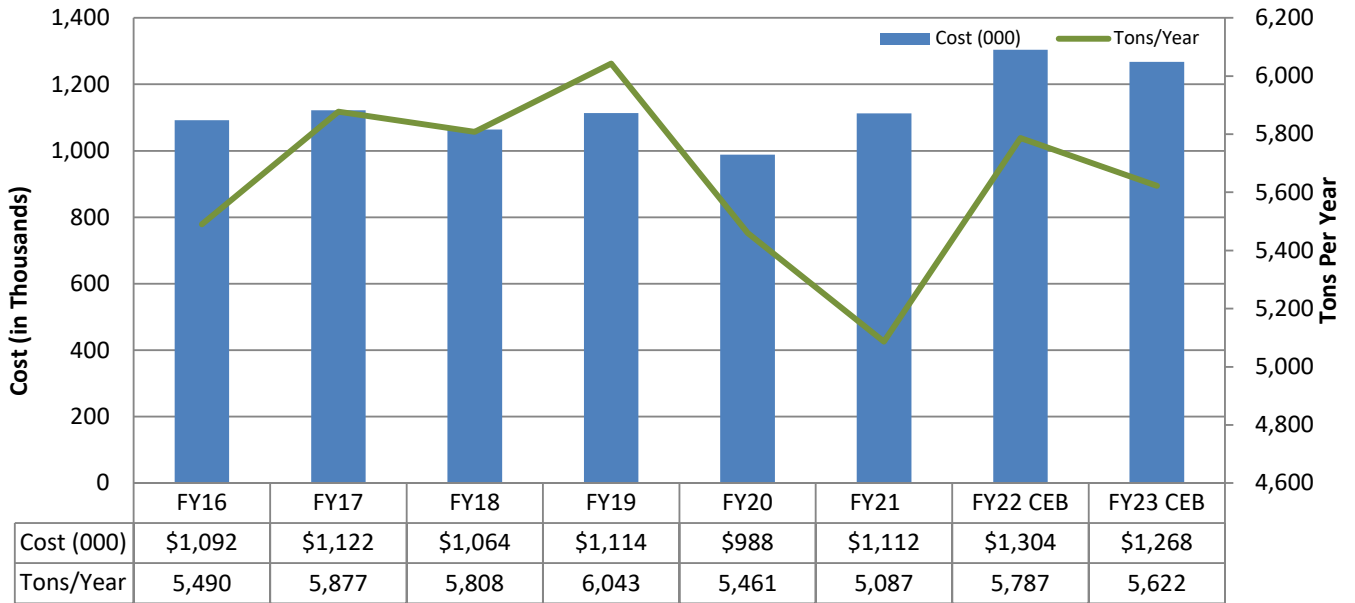
- The FY23 Budget of \$212,000 for **Training and Meetings** covers specialized training, attendance at industry conferences, and site visits as required to vendors and other plants. It specifically funds training for topics such as spill response and boom deployment; spill control and prevention; trenchless technology; cyber security; and electrical voltage. The budget also continues to include funds to support workforce development efforts as part of MWRA’s succession planning initiative. The FY23 Budget is \$11,000 greater than the FY22 Budget due to the expectation that in-person trainings and travel will return to pre-COVID19 levels.
- The FY23 Budget for Professional Services is \$2.8 million, including \$1.9 million for lab and testing services, \$560,000 for engineering services, and \$377,000 for all other services. Major items in the budget include \$1.3 million for Harbor and Outfall Monitoring; \$207,000 for as-needed engineering services to support CEB-funded projects; \$205,000 for Dam Asset Maintenance Plan development; \$200,000 Bays Eutrophication Model for DITP NPDES permit, \$150,000 for site remediation inspection services; \$90,000 for services associated with SCADA system; \$100,000 for continuation of a research study on controlling algae and cyanobacteria at Wachusett and Quabbin reservoirs.; \$86,000 for a comprehensive reservoir-wide plant survey in the water system; and \$53,000 for invasive species control services in the reservoirs. The FY23 Budget is \$45,000 or 1.6% less than the FY22 Budget primarily due to the inclusion of funding for COVID19 testing and the reassessment of needs for various services.

- The FY23 Budget of \$5.3 million for **Other Materials** includes \$1.5 million for Vehicle Replacements; \$1.2 million for Lab and Testing Supplies; \$238,000 for Vehicle Expenses (gas, mileage reimbursement); \$402,000 for Health and Safety Supplies; \$460,000 for Equipment and Furniture; \$480,000 for Work Clothes; and \$319,000 for other materials. The increase of \$429,000 or 8.9% from the FY22 Budget is primarily due to higher vehicle expense.
- The FY23 Budget for **Other Services** is \$23.3 million, including \$17.0 million for sludge pelletization; \$2.5 million for building space leases and rentals (including the Chelsea office facility); \$1.3 million for grit and screenings removal and disposal; \$667,000 for telecommunications services; \$645,000 for dues, memberships, and subscriptions; \$474,000 for police details; and \$271,000 for other services. The FY23 Budget increase of \$2.9 million or 14.0% from the FY22 Budget is primarily due to the net effect of increases in the contractual prices for grit and screenings removal and sludge pelletization contracts, memberships and dues, offset by resizing of budgets for other items based on trends and needs.

Sludge



Grit & Screenings



Alewife Brook Wastewater Pump Station

OPERATIONS ADMINISTRATION

Operations Administration funds the CEBs for two departments including Operations Administration and Tunnel Redundancy Program Management.

The **Operations Administration Department** includes the Office of the Chief Operating Officer (COO); the Office of the Deputy Chief Operating Officer (DCOO); and division-level support staff. The department's primary goal is to oversee, manage, and implement MWRA policies and procedures pertaining to the following functions: administration, labor relations, finance, contract administration, comprehensive energy planning and management, regulatory affairs, environmental management, and general management.

The **Tunnel Redundancy Program Management Department** was created by MWRA's Board of Directors on February 15, 2017 to oversee the planning, design, and construction of a northern and a southern deep rock tunnel that will provide redundancy for the Metropolitan Tunnel system (waterworks). This \$1.5 billion CIP-funded project will take more than a decade to complete. Also, given the complexity of the project, the group is independent of existing engineering and construction departments and reports directly to the Executive Director. However, the department's CEB is included within the Operations Division budget to allow for sufficient administrative support.

FY23 Final Current Expense Budget OPERATIONS ADMINISTRATION

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 4,042,320	\$ 3,998,384	\$ 4,888,712	\$ 4,042,741	\$ (845,971)	-17.3%
OVERTIME	6,706	2,151	5,000	5,000	-	0.0%
FRINGE BENEFITS	-	-	360	360	-	0.0%
MAINTENANCE	66	1,693	-	-	-	-
TRAINING & MEETINGS	49,797	25,740	47,300	62,300	15,000	31.7%
PROFESSIONAL SERVICES	10,000	-	161,002	161,002	-	0.0%
OTHER MATERIALS	1,357,886	1,469,724	1,545,000	1,555,000	10,000	0.6%
OTHER SERVICES	654,272	630,766	723,550	1,129,115	405,565	56.1%
TOTAL	\$ 6,121,047	\$ 6,128,458	\$ 7,370,924	\$ 6,955,518	\$ (415,406)	-5.6%

FY23 Final Current Expense Budget OPERATIONS ADMINISTRATION by Programs

PROGRAM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
OPERATIONS ADMINISTRATION	\$ 5,191,136	\$ 5,049,769	\$ 5,442,999	\$ 4,678,724	\$ (764,275)	-14.0%
WATER REDUNDANCY PGR MGMT	929,911	1,078,689	1,927,925	2,276,794	348,869	18.1%
TOTAL	\$ 6,121,047	\$ 6,128,458	\$ 7,370,924	\$ 6,955,518	\$ (415,406)	-5.6%

FY23 Goals and Initiatives:

The Operations Administration Department's purview and function supports all the goals of the Operations Division set forth in the department budgets in the Operations, Engineering & Construction section and the Program, Policy and Planning section.

Key FY23 initiatives include:

- **Tunnel Redundancy Program** – Plans for FY23 include hiring additional staff, raising awareness of the project in the engineering and construction communities, and developing detailed plans for all phases of implementation including procurement, design, engineering, and construction.
- **Energy** – Continue to refine and implement MWRA’s comprehensive energy management strategy, primarily with a focus on expanding solar energy sites and securing grant funding from relevant programs; increasing the use of electric vehicles in MWRA’s fleet; optimizing energy generation assets for ‘behind the meter’ use and revenue from power sales and market-based incentive programs; implementing MOUs with two utility companies for energy conservation projects at numerous facilities; and consolidating energy data management to support decision-making.
- **Regulatory** – Continue to advocate for MWRA during the regulatory review processes for key issues including implementation of the CSO Program assessment phase and development of the requirements for the new NPDES permit for the Deer Island Treatment Plant.
- **Organizational succession** – Continue to develop and implement succession plans to ensure efficient and effective organizational continuity as a significant portion of MWRA’s workforce retires in the next few years. Key aspects of this initiative include documenting institutional policies and practices; identifying and developing employees qualified for promotion into key positions; hiring additional qualified employees to ensure ‘depth of bench’ in staffing in critical functions; and in general, providing programs to the overall MWRA workforce for learning and development.

Budget Highlights:

The FY23 Budget is \$7.0 million, a decrease of \$415,000 or 5.6%, compared to the FY22 Final Budget.

- \$4.0 million for **Wages and Salaries**, a decrease of \$846,000 or 17.3%, as compared to the FY22 Final Budget. The FY23 Budget supports 33.6 full-time equivalents (FTEs), eight (8) few than FY22 due to the transfer of 8 finance related positions to Finance Division. That total includes 16 positions from the Tunnel Redundancy Management Unit as the program ramps up. The FY23 Budget also funds wage increases associated with collective bargaining agreements.
- \$47,000 for **Training & Meetings** to fund attendance at conferences for the COO, DCOO, and department staff as well as division-wide attendance at major industry professional conferences held annually. The budget also funds attendance by tunnel redundancy program staff at industry conferences to stay current on relevant technical topics and to educate potential engineering and construction vendors about the upcoming projects.
- \$161,000 for **Professional Services** for inspection of MWRA’s underground storage tanks.
- \$1.6 million for **Other Materials**; \$10,000 above the FY22 Final Budget. The major item in this budget line is \$1.5 million for vehicle purchases for replacement of vehicles valued at less than \$100,000, MWRA’s minimum threshold for funding from the Capital Improvement Program (CIP). The FY23 Budget supports replacement of up to 35 vehicles or approximately 6% of the active fleet. This line item also includes \$35,000 for purchase of geotech software for the Tunnel Redundancy Program.
- \$1.1 million for **Other Services** which includes \$400,000 for Rock Core Shed, \$150,000 for fuel tank storage maintenance services and \$538,000 for memberships and dues, primarily in industry associations for MWRA and departmental staff. MWRA continues to fund annual memberships in organizations such as the National Association of Clean Water Agencies (NACWA), Association of Metropolitan Water

Agencies (AMWA), American Water Works Association (AWWA), and Boston NOW (focused on Boston Harbor).



Aerial view of Boston Harbor

OPERATIONS, ENGINEERING & CONSTRUCTION

Operations, Engineering & Construction

Wastewater Treatment

Deer Island
Residuals
Clinton

Field Operations

Wastewater Operations
Water Operations & Maintenance
Metro Maintenance
Operations Support
FOD - Administration

Engineering & Construction

The work of this section is directed by a team of three senior managers including the Director of Wastewater, Director of Waterworks, and Chief Engineer; each of whom report to the Chief Operating Officer (COO). The purview of this section is as follows:

- operations and maintenance of MWRA's wastewater treatment facilities including Deer Island Wastewater Treatment Plant, Clinton Wastewater Treatment Plant, Residuals Pelletizing Facility, Combined Sewer Overflow facilities, and screenhouses;
- operations and maintenance of MWRA's wastewater distribution system including pipelines, pump stations, and other appurtenances;
- operations and maintenance of MWRA's water treatment facilities including the Carroll Water Treatment Plant serving communities in the Boston metropolitan area and the Brutsch Water Treatment Plant serving communities in the Chicopee Valley Aqueduct (CVA) Water System communities;
- operations and maintenance of the water distribution system including pipelines, pump stations, and valves;
- operations and maintenance of the wastewater and water metering system, Operations Control Centers, and Supervisory Control and Data Acquisition (SCADA) system;
- engineering and construction functions for the Operations Division; and
- energy conservation, capacity, and efficiency maintenance and capital projects.

**FY23 Final Current Expense Budget
OPERATIONS, ENGINEERING & CONSTRUCTION**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 65,345,744	\$ 66,708,817	\$ 70,091,951	\$ 71,595,483	\$ 1,503,532	2.1%
OVERTIME	4,015,408	4,060,883	4,766,520	4,940,788	174,268	3.7%
FRINGE BENEFITS	96,906	95,932	113,826	114,326	500	0.4%
CHEMICALS	10,998,338	11,652,051	12,202,286	14,994,036	2,791,750	22.9%
UTILITIES	23,025,392	21,755,123	24,623,626	30,765,890	6,142,264	24.9%
MAINTENANCE	24,121,938	24,687,373	25,792,779	25,985,140	192,361	0.7%
TRAINING & MEETINGS	118,953	42,550	115,600	115,600	-	0.0%
PROFESSIONAL SERVICES	718,921	525,118	766,354	724,850	(41,504)	-5.4%
OTHER MATERIALS	1,539,563	1,358,822	1,598,503	1,948,972	350,469	21.9%
OTHER SERVICES	19,440,593	18,239,190	19,387,033	21,788,406	2,401,373	12.4%
TOTAL	\$ 149,421,756	\$ 149,125,859	\$ 159,458,478	\$ 172,973,491	\$ 13,515,013	8.5%

The Operations, Engineering & Construction Section is composed of the Wastewater Treatment, Field Operations, and Engineering and Construction departments, which report directly to the Chief Operating Officer. In total, the budgets for these programs represent 84.7% of the Operations Division's FY22 Budget.

**FY23 Final Current Expense Budget
OPERATIONS, ENGINEERING & CONSTRUCTION by Programs**

PROGRAM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WASTEWATER TREATMENT	\$ 71,615,005	\$ 70,065,232	\$ 73,297,023	\$ 80,023,031	\$ 6,726,008	9.2%
FIELD OPERATIONS	69,394,861	70,505,232	77,111,095	83,627,066	6,515,971	8.5%
ENGINEERING & CONSTRUCTION	8,411,890	8,555,395	9,050,360	9,323,394	273,034	3.0%
TOTAL	\$ 149,421,756	\$ 149,125,859	\$ 159,458,478	\$ 172,973,491	\$ 13,515,013	8.5%

WASTEWATER TREATMENT

The primary function of the Wastewater Treatment Department is to collect and treat community wastewater so that it can be discharged either into the Massachusetts Bay or the South Nashua River in compliance with federal and state environmental standards. The second function of the Department is to recycle sludge to produce fertilizer and provide for the proper disposal of any materials not suitable for treatment or fertilizer.

FY23 Final Current Expense Budget WASTEWATER TREATMENT

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 21,366,988	\$ 21,693,689	\$ 23,036,018	\$ 23,542,334	\$ 506,316	2.2%
OVERTIME	1,358,131	1,541,508	1,338,054	1,409,571	71,517	5.3%
FRINGE BENEFITS	36,231	38,647	32,255	32,755	500	1.6%
CHEMICALS	4,858,710	5,176,989	5,350,423	6,463,588	1,113,165	20.8%
UTILITIES	13,231,939	12,009,953	14,139,548	16,694,289	2,554,741	18.1%
MAINTENANCE	13,454,555	14,335,844	12,417,928	12,492,377	74,449	0.6%
TRAINING & MEETINGS	22,038	1,449	32,100	32,100	-	0.0%
PROFESSIONAL SERVICES	44,031	33,082	66,502	86,500	19,998	30.1%
OTHER MATERIALS	877,307	573,495	749,200	726,950	(22,250)	-3.0%
OTHER SERVICES	16,365,075	14,660,576	16,134,995	18,548,104	2,413,109	15.0%
TOTAL	\$ 71,615,005	\$ 70,065,232	\$ 73,297,023	\$ 80,028,567	\$ 6,731,544	9.2%

The **Deer Island Treatment Plant**, the **Residuals Management Program**, and the **Clinton Treatment Plant** comprise the Wastewater Treatment Department. Together, the budgets for these programs represent 40% of the Operations Division's FY23 Final Budget.

FY23 Final Current Expense Budget WASTEWATER TREATMENT by Program

PROGRAM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
DEER ISLAND	\$ 52,419,229	\$ 53,170,041	\$ 54,843,170	\$ 58,886,669	\$ 4,043,499	7.4%
RESIDUALS	16,279,616	14,649,472	16,042,441	18,480,624	2,438,183	15.2%
CLINTON	2,916,160	2,245,719	2,411,412	2,661,274	249,862	10.4%
TOTAL	\$ 71,615,005	\$ 70,065,232	\$ 73,297,023	\$ 80,028,567	\$ 6,731,544	9.2%

DEER ISLAND WASTEWATER TREATMENT PLANT

The **Deer Island Wastewater Treatment Plant** (Deer Island or DITP) budget accounts for 29% of the Operations Division's FY23 Final Budget. DITP has a peak capacity of 1.27 billion gallons per day (bgd) and peak secondary treatment capacity of 700 million gallons per day (mgd).

Wastewater influent from MWRA customer communities arrives at the plant through four underground tunnels. Pumps then lift the influent 80 to 150 feet, depending on the tunnel, to the head of the plant.

North system flows pass through grit channels and bar screens at the headworks that remove grit and screenings for disposal in an off-island landfill. South system flows are pre-treated for grit at Nut Island and the Braintree-Weymouth Intermediate Pump Station. Flow is routed to primary treatment clarifiers, which remove about half of the pollutants brought to the plant in typical wastewater (removes 50% of total suspended solids and up to 50% of pathogens and toxic contaminants). In the clarifiers, gravity separates sludge and scum from the wastewater.



In secondary treatment, reactors and clarifiers remove non-settleable solids through biological and gravity treatment. The biological process is a pure oxygen-activated sludge system, using aerobic microorganisms to consume organic matter that remain in the primary effluent flow. Secondary treatment raises the level of pollution removal to over 85%. More than 100 tons of pure oxygen is manufactured each day at Deer Island's cryogenic oxygen facility to support the aerobic biological treatment process.

Sludge from primary and scum from both primary and secondary treatment is thickened in gravity thickeners. Sludge from secondary treatment is thickened in centrifuges. Polymer is used in the secondary sludge thickening process to increase its efficiency. Digestion occurs in the egg-shaped anaerobic digesters at the Deer Island Treatment Plant. There are a total of 12 digesters, each 90 feet in diameter at their widest point and approximately 140 feet tall (128 ft. liquid level). Microorganisms naturally present in the sludge work to break sludge and scum down into methane gas, carbon dioxide, solid organic byproducts, and water. Digestion significantly reduces sludge quantity for later recycling. The methane gas produced in the digesters is used in the plant's on-site power generating facility to save operating costs by reducing consumption of fuel oil for heating and purchased electricity. The remaining digested sludge is pumped through pipes embedded in the sidewall of the Nut Island inter-island tunnel and Braintree-Weymouth

extension tunnel directly to the MWRA’s Pelletizing Facility at Fore River, where it is further processed into a fertilizer product.

FY23 Final Current Expense Budget DEER ISLAND TREATMENT PLANT						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 20,362,682	\$ 20,599,294	\$ 21,925,820	\$ 22,407,337	\$ 481,517	2.2%
OVERTIME	1,276,823	1,463,658	1,290,545	1,351,895	61,350	4.8%
FRINGE BENEFITS	34,473	37,062	31,255	31,255	-	0.0%
CHEMICALS	4,461,609	4,823,236	4,920,486	5,983,528	1,063,042	21.6%
UTILITIES	12,986,073	11,736,232	13,828,831	16,273,949	2,445,118	17.7%
MAINTENANCE	12,479,161	13,844,766	11,993,487	12,010,607	17,120	0.1%
TRAINING & MEETINGS	22,038	1,271	28,600	28,600	-	0.0%
PROFESSIONAL SERVICES	42,531	5,059	42,000	42,000	-	0.0%
OTHER MATERIALS	517,930	458,154	530,700	495,700	(35,000)	-6.6%
OTHER SERVICES	235,909	201,309	251,446	256,446	5,000	2.0%
TOTAL	\$ 52,419,229	\$ 53,170,041	\$ 54,843,170	\$ 58,881,317	\$ 4,038,147	7.4%

Organizational Structure:

The Deer Island Treatment Plant has six major functional areas: Operations, Thermal Power Plant, Process Control, Maintenance, Capital Engineering, and Operations and Maintenance (O&M) Support.

- Operations manages the day-to-day treatment operation of plant processing units, performs minor preventative maintenance activities, and oversees plant functions 24 hours per day, seven days per week.
- Thermal Power Plant manages and operates the Deer Island generation and thermal systems. Power Plant personnel provide 24-hour operation of the high-pressure, high temperature steam power plant. This facility is capable of producing up to 75 megawatts of electrical power including green energy assets with hydro-electric power, wind and solar.
- Process Control manages and maintains the following programs in support of plant operations; real-time process instrumentation and control system (PICS), operational data system (OMS), plant performance monitoring and reporting programs, and regulatory compliance programs including all plant permits, water quality, and air quality. Process Control provides the technical expertise for plant unit operations and routinely performs process optimization studies to help increase performance and reduce operating costs.
- Maintenance performs preventive, predictive, and corrective maintenance repairs on all equipment, utilizing a computerized maintenance management system (CMMS) to coordinate scheduling and document all work completed. Staff has developed the Reliability Centered Maintenance (RCM) program, which has improved plant performance by applying maintenance resources where they are most effective. RCM analyzes the operating systems with the objective of ensuring critical functions perform as required. Implementation of a preventive maintenance program using RCM helps reduce the cost of maintaining the plant and improves the efficiency by anticipating when maintenance will be required. An on-island warehouse, managed by Procurement Department staff, ensures there is

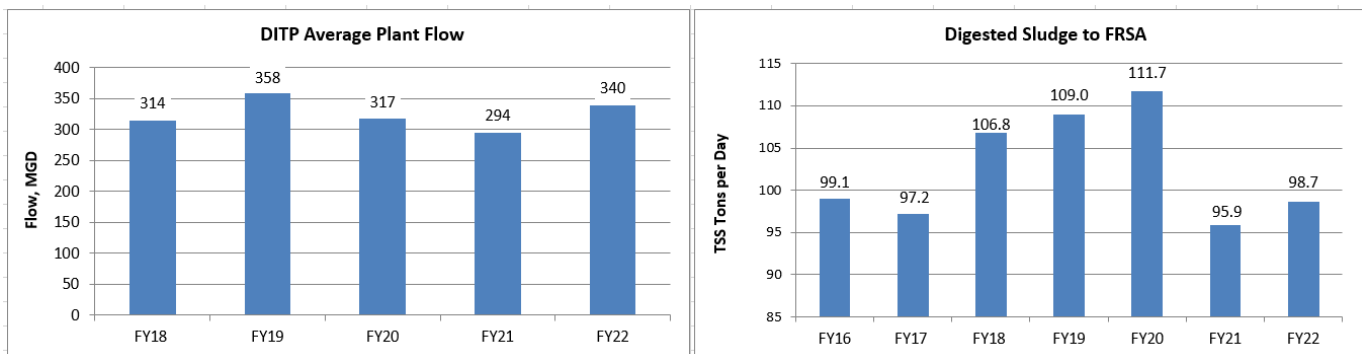
adequate stock for maintenance repairs and plant operations.

- **Capital Engineering** provides technical support services for both Operations and Maintenance. Staff is responsible for all aspects of plant engineering including developing, procuring, and implementing all service contracts, consultant designs, and capital improvement projects at Deer Island. This group also manages the on-island Technical Information Center, which provides services to the DITP community and external clients, and ensures quick access to plant drawings and technical information for operational and maintenance needs.
- **O&M Support** is responsible for supporting the business needs of the plant. The Administration and Finance Unit provides financial and administrative support to meet daily operational needs of the plant.

The Deer Island Director’s Office provides overall management for the plant plus policy direction and support in the areas of public access and community relations.

Operating Assumptions:

Deer Island’s FY23 Budget assumes treatment of an average flow of 321 mgd based on four years (FY18-21) of historical data. The projected quantity of digested sludge to be pumped to FRSA (TSS basis) is 103.3TPD. This is based on six years of recent operating data for FY16-21.



Deer Island’s FY23 Budget accounts for the impact of self-generation of electricity from the steam turbine generators (STG), combustion turbine generators (CTG), hydroelectric generators, wind turbine generators, and photovoltaic panels. These assets will provide approximately 28.5% of the total electricity needs of the plant.

Deer Island continues to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Permit issued in 1999, which has been administratively continued since FY05. Given the uncertainty regarding the timing of the permit renewal from the Environmental Protection Agency (EPA), Deer Island’s FY23 Budget assumes that the plant will continue to operate under the guidelines of the 1999 NPDES permit. When the new permit is issued, it is anticipated that Deer Island’s treatment process will be required to kill enterococcus in addition to fecal coliform to comply with the new regulations at a substantial increase in chemical quantities and cost.

FY23 Goals and Initiatives:

I. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system. Through FY22, Deer Island has met all of its compliance goals.

- **Key Regulatory Performance Measurements:**

Effluent Characteristic	Permit Limits	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
Dry Day Flow (mgd)	436	282.9	317.7	297.0	100%
cBOD (mg/L)	25	6.1	5.7	6.3	100%
TSS (mg/L)	45	10.1	8.6	11.4	100%
TCR (ug/L)	631	<40	<40	<40	100%
Fecal Coliform	14,000	6	6	8	100%
pH (S.U.)	6 to 9	6.7	6.7	6.7	100%
Acute Toxicity	Pass	Pass	Pass	Pass	100%
Chronic Toxicity	Pass	Pass	Pass	Pass	100%

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.
 - Issue Notice to Proceed for numerous contracts including the following major DITP asset protection projects including:
 - Radio Repeater System Upgrade 2, Design: Combined Heat and Power Design/ESDC/REI, Fire Alarm System Replacement Construction, Digester & Storage Tank Rehab Design/ESD, HVAC Design/ESDC, Deer Island Dystor Membrane, Cryo Plant Equipment Replacement Design/ESDC/REI, Clarifier Rehab Phase 2 Construction, Clarifier Rehab Phase 2 REI, MCC & Switchgear Replacement Construction, DITP Roofing Replacement, Deer Island As-Needed Design Phases 10-1, 10-2 & 10-3.
 - Make substantial progress according to FY23 CIP schedule for other near-term major DITP projects including:
 - Eastern Seawall and Shoreline Protection Remediation, Fire Alarm System Replacement, Misc. Variable Frequency Drive Replacements, South System Pump Station Variable Frequency Drive Replacement Design/ESDC/REI, , Clarifier Rehab Phase 2, and MCC Switch Gear Replacement Design/ESDC/REI.
 - Substantially complete CIP phases for DITP asset protection including the:
 - Replacement of Odor Control Dampers.

II. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support services levels. Through FY22, Deer Island has met all of its goals in this area.

○ **Key Maintenance Measurements:**

Indicator	FY20 Actual*	FY21 Actual	FY22 Actual	FY23 Goal
Critical Equipment Availability	99.8	99.8	99.8%	100%
Predictive Maintenance Completion	96%	96%	98.8%	100%
Predictive Maintenance - % of work orders	24%	25%	25%	25%
867Maintenance Backlog (hours)	17,194 Standard	19,672 Standard	17,639 Standard	Within industry standard
Preventive Maintenance Completion	92%	94%	98.7%	100%
Maintenance Kitting - % of work orders	56%	56%	57.1%	57%

*FY20 actuals were impacted by COVID 19 shutdown during Q4.

V. Environmental Sustainability

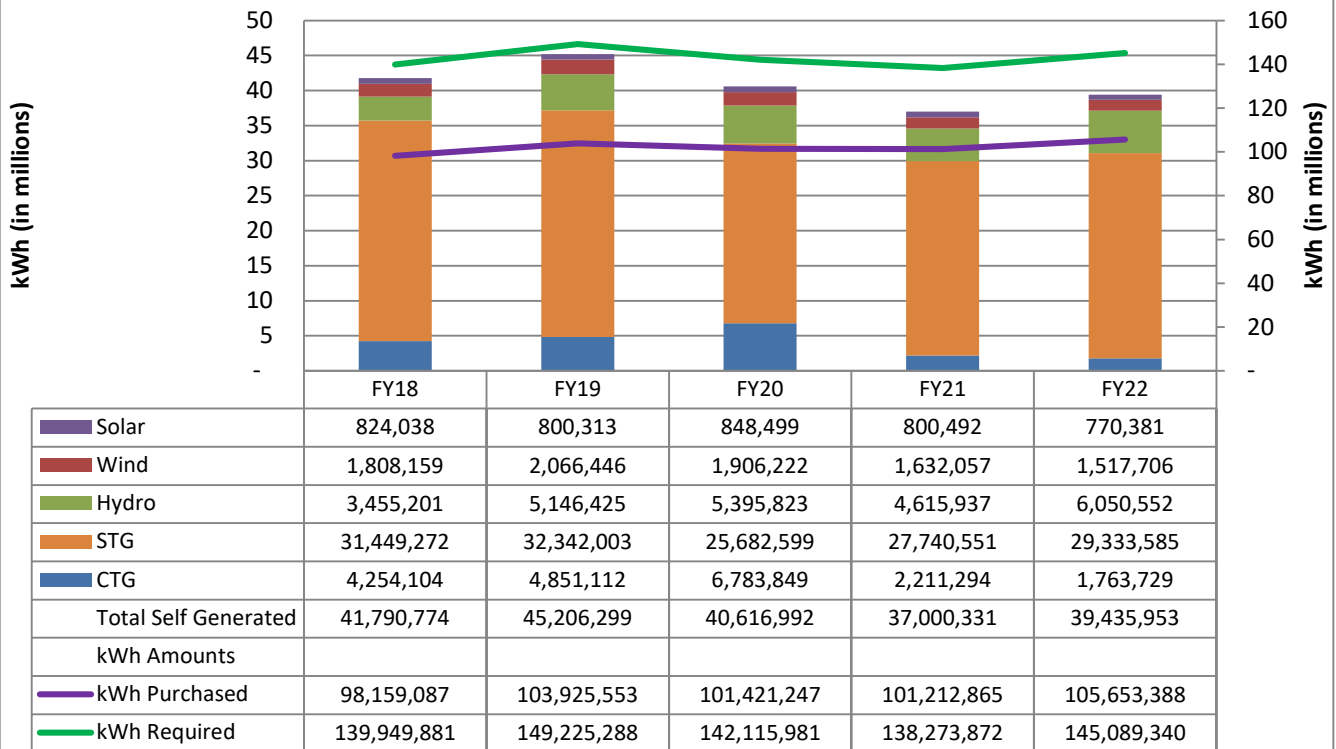
- **Goal #15 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.

○ **Key Performance Measurements and Accomplishments:**

Indicator	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
% Required Power Self-Generated - Total	28.6%	26.8%	27.3%	28.5%
% Required Power Self-Generated – Renewables	23.8%	25.2%	26.1%	26.4%
Thermal/Power Plant Digester Gas Utilization	98.1%	97.6%	98.3%	98.1%
Avoided capacity costs	\$714,000	\$1,368,400	\$1,198,867	\$867,000
Generate revenue from energy programs (RPS credits, demand response)	\$1,451,000	\$1,894,133	\$1,472,827	\$1,090,570

- Continue to implement projects to reduce energy use, increase energy revenue, decrease greenhouse gas emissions, and increase self-generation capacity, particularly via renewable energy.

DITP Electricity (Actuals)



FY22 Year-End Accomplishments:

- Deer Island received the Platinum Peak Performance Award for 2021 from the National Association of Clean Water Agencies (NACWA) for the 15th continuous year. The award recognizes facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. DITP has had no permit violations for over 15 years.
- Deer Island met secondary permit limits at all times, treating on average 98.9% of flows with full secondary treatment. More detailed information about DITP’s NPDES Permit compliance is available on the Transparency/Performance Indicator section of MWRA’s website.
- Eversource completed the second annual maintenance on the new 115 kVA cross-harbor marine power cable to Deer Island during November 2021. DITP operated on CTG power-only for just under 15 hours continuously. All flows received disinfection and met numerical effluent standards.
- Completed numerous major maintenance projects including:
 - Deer Island sent out four reactor/aerator gearboxes for overhaul. Mechanical issues with the gearboxes due to wear were identified by the Condition Monitoring group through the use of vibration. The gearboxes were removed, installed, and functionally tested by Deer Island maintenance staff.

- New LED emergency lighting was purchased and installed by Deer Island maintenance electricians. The following facilities were complete change out. They were Primary Operations Building, all tank top electric buildings and all associated stairwells.
 - Deer Island plumbers purchased and installed all four actuator and four valves on the W3 water system located in Disinfection. Mechanics replaced two W3 pumps which feed the water thorough the plant. The W3 actuators, valves and pumps were replaced to improve redundancy and reliability.
 - Thermal Power Plant - Boiler Continuous Emissions Monitoring System replaced two NOx and two CO2 analyzer probes located in the Thermal Power Plant. This enhances Operations staff to better monitor the air from the boilers to prevent permit violations.
 - Two fuel pumps located in the fuel farm were replaced and added dampers to avoid vibration when pumps are on line. The fuel pumps are back-up for the primary fuel pumps. These fuel pumps supply fuel oil to boilers and combustion turbine generators when on line.
 - Purchased and installed one SPX-50 hose pump in South System Pump Station. The pump was twelve years old and was badly worn.
 - Maintenance staff purchased two new large sump pumps and stainless steel stock to repair pump bases. Mechanics installed pumps and machine shop fabricated new bases so pumps would operate in optimal mode. Welders also repaired stairs and railing for safe access to sump pump area located in the lowest level of North Main Pump Station.
 - Digester Mixer #4 was replaced due to internal bearings had severe wear and was vibrating outside the acceptable specification tolerance. The mixer is the driving force for mixing the digester's contents and assists in maintaining a uniform sludge mass.
 - The Cryogenic facility requires annual maintenance to ensure reliable operation. Instrument staff completed a scheduled project which included replacing oxygen flow control valve and the Inlet Block valve, and both indicating Positioners.
 - The Residuals Complex has numerous in line grinders which provide continuous grinding of sludge into uniform, homogenized slurry. Mechanical staff changed out ten In-line grinders which are smaller than the larger channel grinders due to normal wear and tear.
- Issued Notice to Proceeds for Asset Protection Program contracts including the following:
 - Deer Island Replacement of Odor Control Dampers (Jan-2022)
 - Substantially completed projects:
 - Deer Island Gravity Thickener Rehabilitation Construction (Sep-2021)
 - Deer Island Gas Protection System Replacement Phase 1 (Oct-2021)
 - Deer Island Chemical Tank & Digester Pipe (Dec-2021)
 - Deer Island Combined Heat and Power Alternatives Study (Jan-2022)

Budget Highlights:

The FY23 Budget is \$58.9 million, an increase of \$4.0 million or 7.4% compared to the FY21 Budget.

- \$22.4 million for **Wages and Salaries**, an increase of \$487,000 or 2.2%, compared to the FY22 Budget, primarily due to wage increases associated with reserves for un-awarded collective bargaining agreements (FY21, FY22& FY23). The FY23 Budget also includes \$171,000 for stand-by pay to support operational and maintenance needs primarily during storms and emergencies.

- \$1.4 million for **Overtime**, an increase of \$61,000 or 4.8% compared to the FY22 Budget primarily due to wage increases associated with reserves for un-awarded collective bargaining agreements (FY21, FY22& FY23). The FY23 Budget is based on multi-year historical trends and supports overtime required for operational coverage, critical maintenance projects, and regulatory requirements (i.e. inspections).
- \$6.0 million for **Chemicals**, a increase of \$1.1 million or 21.6% compared to the FY22 Budget. The increase is due price adjustments. The FY23 Budget, which is based on multi-year historical usage trends and projected market prices, includes \$2.3 million for ferrous/ferric chloride, a increase of \$459,000 primarily due to price offset by slight decrease in quantity; \$1.7 million for sodium hypochlorite, a increase of \$237,000 primarily due to price, offset by a decrease in quantity; \$732,000 for hydrogen peroxide, an increase of \$55,000 due to price; \$625,000 for polymer, an increase of \$170,000; \$288,000 for activated carbon, an increase of \$22,000; \$149,000 for sodium bisulfite, an increase of \$31,000 and \$201,000 for sodium hydroxide, an increase of \$90,000.
- \$16.3 million for **Utilities**, a increase of \$2.4 million primarily due to \$1.3 million increase in electricity for higher pricing offset slightly by a decrease in quantity; \$987,000 increase in diesel fuel for higher pricing and \$148,000 for water for higher pricing.
- \$12.0 million for **Maintenance**, an increase of \$17,000 or 0.1% compared to the FY22 Budget. The FY23 Budget includes \$5.5 million for materials and \$6.5 million for services. Of the total, \$6.3 million or 53% is for plant and machinery materials and services, \$2.1 million is for electrical system maintenance and \$2.0 million is for building and grounds work, and. The budget reflects project priorities with a particular emphasis on maintenance of critical equipment.
- \$42,000 for **Professional Services**, level funded from the FY22 Budget. The FY23 Budget includes \$42,000 for as-needed engineering services.
- \$496,000 for **Other Materials**, a decrease of \$35,000 or 6.6% from the FY22 Budget primarily due to decrease in equipment/furniture based on projected needs. The FY21 Budget includes \$166,000 for health and safety materials, \$120,000 for work clothes, \$86,000 for equipment and furniture, \$58,000 for vehicles expenses (bulk fuel and mileage reimbursements), and \$44,000 for office supplies.
- \$256,000 for **Other Services**, an increase of \$5,000 or 2.0%, from the FY22 Budget due to \$5,000 increase in health/safety. The FY23 Budget includes \$104,000 for health and safety services, \$55,000 for permit fees, \$37,000 for telephones, \$29,000 for membership dues and subscriptions, \$15,000 for freight charges, and \$5,000 for printing services. The budget is based on historical averages for most items in this category.

RESIDUALS MANAGEMENT

The **Residuals Management Program** manages the processing and disposal of approximately 99-110 dry tons per day (on average per year) total suspended solids (TSS) of sludge from the anaerobic digestion process at the Deer Island Wastewater Treatment Plant, as well as the disposal of grit and screenings from all MWRA facilities. MWRA pumps liquid sludge from Deer Island through the inter-island tunnel to the Fore River Pelletizing Plant where the sludge is dewatered, dried, and shipped by either rail or truck for use as fertilizer or to other appropriate disposal. MWRA is committed to the beneficial use of biosolids to the greatest extent practicable. MWRA seeks to dispose of all sludge and grit and screenings in a reliable, economical, and environmentally sensitive manner.

- MWRA has contracted with the New England Fertilizer Company (NEFCo) since 1991 to operate the sludge pelletizing plant and to market and distribute biosolids products. The first 10-year contract ran from 1991-2001. The second 15-year contract continued from 2001 to December 31, 2015. MWRA and NEFCo negotiated a five-year contract extension that commenced in January 2016 and ended December 31, 2020. MWRA and NEFCo negotiated another two-year extension, which commenced January 1, 2021 and is in effect during calendar years 2021 and 2022. The extension includes a third optional year for calendar year 2023, which the MWRA Board of Directors approved to execute at the June 2022 Board of Director’s meeting.
- The FY23 Budget is based on the assumption of 103.3 average tons per day (TPD; TSS basis), consistent with historical averages from recent years.
- Grit and screenings (minor residuals) from MWRA's headworks and certain pump stations are collected and disposed of in landfills. MWRA contracts with a third party operator for this service. Minor residuals are by-products of wastewater pre-treatment and primary/secondary treatment processes and include grit, screenings, and scum screenings.

FY23 Final Current Expense Budget RESIDUALS MANAGEMENT PROGRAM

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 156,456	\$ 163,308	\$ 159,145	\$ 159,421	\$ 276	0.2%
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	3,200	3,200	-	0.0%
PROFESSIONAL SERVICES	-	18,681	2	20,000	19,998	999900.0%
OTHER MATERIALS	23,995	30,508	20,000	30,000	10,000	50.0%
OTHER SERVICES	16,099,165	14,436,975	15,860,094	18,268,003	2,407,909	15.2%
TOTAL	\$ 16,279,616	\$ 14,649,472	\$ 16,042,441	\$ 18,480,624	\$ 2,438,183	15.2%

FY23 Goals and Initiatives:

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Continue marketing efforts for Bay State Fertilizer.

- Maintain beneficial use of MWRA’s processed pellets.
- **Key Performance Measurements:**

Indicator	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
Pelletize all sludge received from DITP	100%	100%	100%	100%
Average Tons Per Day Sludge (TSS basis)	111.7	95.9	98.7	103.3
Monthly Ave % Capture – Processed Sludge (goal per contract with NEFCo)	91.3%	91.5%	90.7%	90%
Properly dispose of grit & screenings	100%	100%	100%	100%
Annual grit and screenings tonnage	5,460	5,087	5,390	5,622

- **Goal #6 – Capital Improvements:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.
 - Continue work on the following Residuals Asset Protection Program contracts:
 - Residuals Facility Plan/EIR

FY22 Year-End Accomplishments:

- Through NEFCo, processed and pelletized 98.7 tons per day of sludge on average from DITP.
- Through contracted operator, collected and properly disposed of 5,390 tons of grit and screenings.
- For FY22, earned \$19,900 in sales of Bay State Fertilizer, MWRA’s retail product.

Budget Highlights:

The FY23 Budget is \$18.5 million, which is \$2.4M or 15.2% more than the FY22 Budget.

- \$159,000 for **Wages and Salaries**, an increase of \$276 or 0.2%, funds one permanent position and stand-by pay to provide coverage for emergencies during off-shifts. This department also receives on-going management oversight and staff support from other departments of the MWRA including Deer Island, Treasury, and Operations Administration.
- **Professional Services** has a budget of \$20,000, an increase of \$20,000 from FY22 due to the inclusion of funding for bi-annual stack testing required in FY23.
- **Other Materials** has a budget of \$30,000, an increase of \$10,000 from FY22 to fund plastic bag material for sale of Bay State Fertilizer based on past cost.
- \$18.3 million for **Other Services**, an increase of \$2.4M or 15.2% from the FY22 Final Budget primarily due to increases in contractual prices for sludge pelletization services. The two major items funded in the FY23 Final Budget include \$1.3 million for grit and screenings disposal and \$17.0 million for sludge pelletization services, both are provided through contracts with private vendors.



MWRA Sludge Pelletizing Facility

CLINTON

The Clinton Wastewater Treatment Plant provides advanced wastewater treatment services to the Town of Clinton and the Lancaster Sewer District. MWRA assumed formal operational responsibility for the Clinton plant in 1987. Since then MWRA has designed and constructed new primary, secondary, and advanced treatment facilities, which incorporated rehabilitated portions of the existing plant with new construction. The new facilities, designed to meet all current and projected National Pollutant Discharge Elimination System (NPDES) discharge standards, were completed in 1992.

A new NPDES permit issued March 1, 2017 imposes additional requirements on phosphorus removal. As such, MWRA commenced operations of a new Phosphorous building as of May 2018 to meet more stringent phosphorus removal requirements and lower discharge limit. The Clinton Plant complies with the new phosphorous limits established under the NPDES permit that took effect as of April 2019. Clinton's new NPDES permit will be issued during FY23 under the medium wastewater treatment facility general permits.

FY23 Final Current Expense Budget CLINTON WASTEWATER TREATMENT PROGRAM

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 847,850	\$ 931,087	\$ 951,053	\$ 970,223	\$ 19,170	2.0%
OVERTIME	81,308	77,850	47,509	57,676	10,167	21.4%
FRINGE BENEFITS	1,758	1,585	1,000	1,500	500	50.0%
CHEMICALS	397,101	353,753	429,937	480,060	50,123	11.7%
UTILITIES	245,866	273,721	310,717	420,340	109,623	35.3%
MAINTENANCE	975,394	491,078	424,441	481,770	57,329	13.5%
TRAINING & MEETINGS	-	178	300	300	-	0.0%
PROFESSIONAL SERVICES	1,500	9,342	24,500	24,500	-	0.0%
OTHER MATERIALS	335,382	84,833	198,500	201,250	2,750	1.4%
OTHER SERVICES	30,001	22,292	23,455	23,655	200	0.9%
TOTAL	\$ 2,916,160	\$ 2,245,719	\$ 2,411,412	\$ 2,661,274	\$ 249,862	10.4%

The plant provides secondary treatment using an activated sludge process in combination with advanced nutrient removal, chlorination and dechlorination. The major facilities include headworks, primary settling tanks, digesters, sludge processes, trickling filters, aeration tanks, secondary tanks, phosphorus removal via filtration and a chemical addition building. The plant discharges its effluent into the South Nashua River in accordance with the discharge limits of the facility's NPDES permit, with a design flow of 3.01 mgd. The plant has a potential peak flow rate of 12 mgd. Residual materials are pressed and transported to an MWRA-owned landfill for final disposal. Staff manage and regularly monitor the landfill site, which discharges leachate back to the Clinton Wastewater plant for treatment.

FY23 Goals and Initiatives:

This department contributes significantly to the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan;

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Fully comply with new phosphorous removal requirements.
 - Comply with Department of Environmental Protection (DEP) finding for landfill height levels and sloping that require ongoing remediation efforts.
 - **Key Regulatory Performance Measurements:**

Effluent Characteristic	Permit Limit	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal % compliance
Daily Average Flow (mgd) – 12 month rolling average	3.01 mgd	2.38 mgd	2.27 mgd	3.25 mgd	100%
BOD (mg/L)	20 mg/L	1.95 mg/L	1.79 mg/L	1.53 mg/L	100%
TSS (mg/L)	20 mg/L	2.82 mg/L	2.75 mg/L	2.35 mg/L	100%
TCR (mg/L)	17.6 mg/L	<0.02 mg/L	<0.02 mg/L	<0.02 mg/L	100%
E.coli (cfu/100mL)	126/100mL	6.97/100mL	5.23/100mL	5.33/100mL	100%
pH (S.U.)	6.5-8.3	7.38	7.39	7.39	100%
Acute Toxicity	>100%	>100%	>100%	>100%	100%
Chronic Toxicity	≥62.5%	≥62.5%	(*)<62.5%	<62.5%	100%
Total Phosphorus (mg/L) annual avg	0.15 mg/L Apr-Oct 1.0 mg/L Nov-Mar	0.11 mg/L	0.11 mg/L	0.15 mg/L	100%
Total Ammonia as Nitrogen (mg/L)	2 mg/L Jun-Oct 5 mg/L May 10 mg/L Nov-Apr	0.105 mg/L	0.109 mg/L	0.066 mg/L	100%

(*) FY21 Chronic Toxicity levels below target due to Q1. Staff investigated these intermittent instances of apparent toxicity in the plant effluent and found no obvious cause. The next three tests showed no evidence of toxicity (all results were 100%).

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects included in the FY23 CIP.

Issue notice to proceed for:

- Digester Cover Replacement (Aug-2022)

Reach substantial completion on:

- Digester Cover Replacement (Jun-2023)
- Screw Pump Replacement (May-2023)

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
 - Make substantial progress or complete major maintenance projects.
 - Install mixing of chlorine before contact chamber
 - Repair sludge press controls
 - Replace sodium bisulfite tank and pump
 - Replace Sodium Hypochlorite Tank
 - Replace Trickling Filter #4
 - Install sodium bisulfite containment system

V. Environmental Sustainability

- **Goal #15 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.
 - Continue operations of recently installed natural gas line to replace use of fuel oil in the facility.
 - Continue to evaluate and implement energy audit recommendations.

FY22 Year-End Accomplishments:

- Staff performed process operation and maintenance of the new phosphorus reduction facility (PRF). The PRF was shut down for the winter and restarted in March in order to meet very low NPDES permit limits for phosphorus effective April 1, 2020. During the winter downtime, staff implemented a number of minor system modifications and improvements were made to increase the reliability of the system including replacement of a few of the filter cartridges and some backwash nozzles. The lower seasonal effluent phosphorus limit of 150 ug/L and 3.8 pounds per day loading limit became effective starting April 1, 2019. The effluent for FY22 has met these new lower limits.
- Completed numerous maintenance projects including the following:
 - Assisted DITP staff in the replacement of the sodium hypochlorite piping.
 - Maintenance staff replaced RAS pump #4
 - Maintenance staff replaced two Chemical building sump pumps
 - Maintenance staff rebuilt Ferric pump #2 and replaced Hypochlorite pump #1&2
 - Operations staff rebuilt #1 and #2 polymer pumps that feed the disk filters.
 - Maintenance staff replaced wash box seals and pinion gear on belt filter press #1. They also worked on belt filter press sludge hopper.
 - Maintenance replaced Aerzen blower # 4B
 - Maintenance staff replaced the feed pump to the phosphorus analyzer.
- Substantially completed Clinton Valves and Pipe Replacement contract. A total of 52 valves were replaced controlling flow to RAS, WAS and Clarifloculators.
- Issued notice to proceed for Clinton Screw Pump Replacement contract.

Budget Highlights:

The FY23 Budget for Clinton is \$2.7 million, a decrease of \$303,000 or 11.2% from the FY22 Budget.

- \$970,000 for **Wages and Salaries**, a change of \$19,000 or 2.0%, from the FY22 Budget due to wage increases associated with reserves for un-awarded collective bargaining agreements (FY21, FY22 & FY23).
- \$58,000 for **Overtime**, an increase of \$10,000 or 21.4% compared to the FY22 Budget. Overtime is used for critical maintenance work and to meet the 24 hour, 7 days per week emergency coverage requirement. The increase based on historical spending and reflects potential impact of un-awarded collective bargaining agreements (FY21, FY22, FY23).
- \$480,000 for **Chemicals**, an increase of \$50,000 or 11.7% from the FY22 Budget. The increase is due to price increases. The FY23 Budget continues the requirements of the new NPDES permit for the entire year. As of April 2020, the new permit requires year around limits for phosphorus discharge,

which primarily impacts the use of Ferric Chloride and Polymer. Ferric Chloride and Polymer are used along with a disc filter operation as part of the new phosphorus reduction facility currently in operation.

- \$420,000 for **Utilities**, an increase of \$110,000 or 35.3% from the FY22 Budget due higher electricity pricing. The budget includes \$385,000 for electricity, \$28,000 for natural gas, and \$3,000 for water.
- \$482,000 for **Maintenance**, an increase of \$57,000 or 13.5% from the FY22 Budget primarily for an increase for the phosphorus filter replaements. This increase will allow for 1/6 of the filters to be replaced annually.
- \$25,000 for **Professional Services**, level funded from the FY22 Budget. This funds consultant engineering and resident inspection services to support maintenance projects.
- \$201,000 for **Other Materials**, an increase of \$3,000, or 1.4% from the FY22 Budget. This line item includes \$190,000 for clean fill for the landfill operation.
- \$24,000 for **Other Services**, level funded from the FY22 Budget. This line item includes \$13,000 for permit fees, \$6,000 for telephones, and \$3,500 for railroad easement expenses.



Clinton Wastewater Treatment Plant

FIELD OPERATIONS

The primary function of the **Field Operations Department (FOD)** is to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The Department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Wastewater Treatment Plant.

FY23 Final Current Expense Budget FIELD OPERATIONS

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 35,699,047	\$ 36,522,093	\$ 38,202,739	\$ 38,922,245	\$ 719,506	1.9%
OVERTIME	2,595,474	2,493,631	3,297,440	3,414,379	116,939	3.5%
FRINGE BENEFITS	60,520	57,191	81,071	81,071	-	0.0%
CHEMICALS	6,139,628	6,475,062	6,851,863	8,530,448	1,678,585	24.5%
UTILITIES	9,793,453	9,745,170	10,484,078	14,071,601	3,587,523	34.2%
MAINTENANCE	10,665,002	10,351,216	13,374,851	13,492,763	117,912	0.9%
TRAINING & MEETINGS	65,904	36,869	67,000	67,000	-	0.0%
PROFESSIONAL SERVICES	674,890	492,036	699,852	638,350	(61,502)	-8.8%
OTHER MATERIALS	644,436	774,541	826,378	1,202,822	376,444	45.6%
OTHER SERVICES	3,056,507	3,557,423	3,225,823	3,206,387	(19,436)	-0.6%
TOTAL	\$ 69,394,861	\$ 70,505,232	\$ 77,111,095	\$ 83,627,066	\$ 6,515,971	8.5%

FOD consists of five operating units: Wastewater Operations, Water Operations and Maintenance, Metropolitan Maintenance, Operations Support, and Administration.

FY23 Final Current Expense Budget FIELD OPERATIONS by Programs

Program	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WASTEWATER OPERATIONS	\$ 12,848,013	\$ 12,074,142	\$ 13,008,111	\$ 14,915,150	\$ 1,907,039	14.7%
WATER OPERATIONS & MAINT	29,750,166	31,512,426	33,982,478	39,284,354	5,301,876	15.6%
METRO MAINTENANCE	16,206,724	14,391,217	15,846,598	14,792,207	(1,054,391)	-6.7%
OPERATIONS SUPPORT	5,299,848	7,926,371	9,536,746	9,331,738	(205,008)	-2.1%
FOD ADMIN	5,290,110	4,601,076	4,737,162	5,303,617	566,455	12.0%
TOTAL	\$ 69,394,861	\$ 70,505,232	\$ 77,111,095	\$ 83,627,066	\$ 6,515,971	8.5%

Wastewater Operations operates MWRA's wastewater transport facilities, including four continuously staffed headworks facilities; twelve fully automated pumping stations; and six Combined Sewer Overflow (CSO) facilities which are similarly unstaffed. The wastewater system is monitored and controlled from the operations control center (OCC) in MWRA's Chelsea facility. Wastewater Operations aims to meet all operational and regulatory performance standards and requirements efficiently and cost-effectively.

**FY23 Final Current Expense Budget
WASTEWATER OPERATIONS**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 6,483,474	\$ 5,934,968	\$ 6,239,413	\$ 6,316,601	\$ 77,188	1.2%
OVERTIME	1,022,829	896,256	1,060,657	1,084,523	23,866	2.3%
FRINGE BENEFITS	24,234	20,362	34,140	34,140	-	0.0%
CHEMICALS	489,521	541,675	578,752	684,952	106,200	18.3%
UTILITIES	4,652,312	4,313,405	4,962,520	6,647,687	1,685,167	34.0%
MAINTENANCE	44,772	46,999	-	-	-	-
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	50,564	120,827	46,743	68,205	21,462	45.9%
OTHER SERVICES	80,307	199,650	85,886	79,042	(6,844)	-8.0%
TOTAL	\$ 12,848,013	\$ 12,074,142	\$ 13,008,111	\$ 14,915,150	\$ 1,907,039	14.7%

Water Operations and Maintenance operates and maintains the water supply and treatment facilities to provide an adequate supply of properly treated drinking water to meet all operational and regulatory performance requirements. The Unit is responsible for the treatment and delivery of approximately 200 million gallons per day (average mgd) of water from the Quabbin and Wachusett reservoirs to the community water systems. Water must be supplied to customer



communities at the expected pressure. This unit is also responsible for the maintenance of 300 miles of distribution pipeline and 6,000 valves in a water system that encompasses a service area from Chicopee in the western part of the state to Lynnfield, Wakefield, Marblehead, Norwood and Canton in the metropolitan area. This unit operates twelve pumping stations in the Metropolitan area and operates and maintains MWRA’s western waterworks facilities, including the Carroll Water Treatment Plant, the Metro West Tunnel, the Brutsch Water Treatment Plant, the Cosgrove Intake Facility, the Norumbega Reservoir, and the covered storage facilities. There are two operations centers providing monitoring and control of the water system on a 24-hour per day basis. The Metropolitan Operations and Control Center (OCC) is located at MWRA’s Chelsea office Facility and the Western Operations Center is located at the Carroll Water Treatment Plant.

**FY23 Final Current Expense Budget
WATER OPERATIONS & MAINTENANCE**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 13,786,071	\$ 14,046,969	\$ 14,446,474	\$ 15,156,078	\$ 709,604	4.9%
OVERTIME	942,710	1,101,764	1,227,405	1,306,148	78,743	6.4%
FRINGE BENEFITS	22,542	25,390	28,557	28,557	-	0.0%
CHEMICALS	5,650,053	5,933,387	6,273,111	7,845,496	1,572,385	25.1%
UTILITIES	4,615,632	4,906,464	4,948,638	6,523,895	1,575,257	31.8%
MAINTENANCE	3,851,951	4,336,886	5,929,565	7,305,144	1,375,579	23.2%
PROFESSIONAL SERVICES	352,295	250,665	414,851	398,349	(16,502)	-4.0%
OTHER MATERIALS	238,535	264,191	268,475	287,994	19,519	7.3%
OTHER SERVICES	290,377	646,710	445,402	432,693	(12,709)	-2.9%
TOTAL	\$ 29,750,166	\$ 31,512,426	\$ 33,982,478	\$ 39,284,354	\$ 5,301,876	15.6%

Metro Maintenance is responsible for the maintenance of MWRA’s wastewater and water facilities within the Route 128 area. Staff maintain interceptors, pumps, facility equipment, and buildings and grounds.

**FY23 Final Current Expense Budget
METRO MAINTENANCE**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 10,265,012	\$ 9,169,426	\$ 9,483,080	\$ 9,937,090	\$ 454,010	4.8%
OVERTIME	537,069	415,465	814,097	832,415	18,318	2.3%
FRINGE BENEFITS	12,981	10,137	16,701	16,701	-	0.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	50,294	-	-	-	-	-
MAINTENANCE	4,602,551	4,323,262	5,023,897	3,564,873	(1,459,024)	-29.0%
PROFESSIONAL SERVICES	322,886	166,984	155,000	110,000	(45,000)	-29.0%
OTHER MATERIALS	246,792	242,850	242,678	249,340	6,662	2.7%
OTHER SERVICES	169,139	63,093	111,145	81,788	(29,357)	-26.4%
TOTAL	\$ 16,206,724	\$ 14,391,217	\$ 15,846,598	\$ 14,792,207	\$ (1,054,391)	-6.7%

Operations Support provides technical support to the FOD in three key areas. Engineering staff coordinate all engineering issues related to the operation of the water and wastewater systems. The SCADA unit is responsible for the maintenance of the water and wastewater Supervisory Control and Data Acquisition (SCADA) systems. Meter Data and Meter Maintenance staff maintain revenue meters and provide flow data. Staff collect meter data for operational and revenue generating purposes from the water and wastewater systems. They maintain 179 revenue water meters, 26 master water meters, 187 revenue wastewater meters and 35 other wastewater-monitoring sites. The data collection and analysis supports Rates and Budget Department’s allocation of MWRA rate revenue requirements.

**FY23 Final Current Expense Budget
OPERATIONS SUPPORT**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 3,766,162	\$ 5,979,074	\$ 6,615,420	\$ 6,438,234	\$ (177,186)	-2.7%
OVERTIME	51,093	61,956	140,441	143,601	3,160	2.3%
FRINGE BENEFITS	763	1,302	1,644	1,644	-	0.0%
CHEMICALS	54	-	-	-	-	-
UTILITIES	9,310	64,318	57,753	57,753	-	0.0%
MAINTENANCE	1,041,069	1,234,121	1,923,082	1,867,977	(55,105)	-2.9%
PROFESSIONAL SERVICES	10,977	7,133	130,001	130,001	-	0.0%
OTHER MATERIALS	47,279	51,643	187,749	170,522	(17,227)	-9.2%
OTHER SERVICES	373,141	526,824	480,656	522,006	41,350	8.6%
TOTAL	\$ 5,299,848	\$ 7,926,371	\$ 9,536,746	\$ 9,331,738	\$ (205,008)	-2.1%

FOD Administration provides financial, administrative, planning, and policy oversight functions for the entire Department.

**FY23 Final Current Expense Budget
FOD ADMIN**

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 1,398,328	\$ 1,391,656	\$ 1,418,352	\$ 1,074,242	\$ (344,110)	-24.3%
OVERTIME	41,773	18,190	54,840	47,692	(7,148)	-13.0%
FRINGE BENEFITS	-	-	29	29	-	0.0%
UTILITIES	465,905	460,983	515,167	842,266	327,099	63.5%
MAINTENANCE	1,124,659	409,948	498,307	754,769	256,462	51.5%
TRAINING & MEETINGS	65,904	36,869	67,000	67,000	-	0.0%
PROFESSIONAL SERVICES	(11,268)	67,254	-	-	-	-
OTHER MATERIALS	61,266	95,030	80,733	426,761	346,028	428.6%
OTHER SERVICES	2,143,543	2,121,146	2,102,734	2,090,858	(11,876)	-0.6%
TOTAL	\$ 5,290,110	\$ 4,601,076	\$ 4,737,162	\$ 5,303,617	\$ 566,455	12.0%

FY23 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.
 - Optimize operation of water treatment facilities to produce high quality, safe drinking water while maximizing water aesthetics (i.e. taste, clarity and odor).
 - Monitor drinking water quality in collaboration with member communities and the Department of Conservation and Recreation (DCR) in order to verify high quality water and provide guidance for operating decisions.

- Operate the reservoir system to optimize both quality and quantity of water available for water supply purposes and to meet statutory and regulatory requirements for downstream releases.

- **Key Regulatory Performance Measurements:**

Indicator	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
Turbidity < 5NTU	100%	100%	100%	100%
pH >9.1 & Alkalinity >37 mg/l	100%	100%	100%	100%
Disinfection Effectiveness	100%	100%	100%	100%

- Complete the 2022/2023 Carroll Water Treatment Plant half plant maintenance.
- Inspect, clean, and/or paint water storage tanks according to the prevailing maintenance plan.
- Continue valve replacement and exercising annual goals.

II. Wastewater Management and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.

- **Key Regulatory Performance Measurements:**

Regulatory Compliance and Operational Capacity				
Indicator	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
Total annual flow (billion gallons based on DITP mgd) – Process all flow at headworks within system parameters	116.1	107.5	123.93	118.7
Minimize choking at headworks (# of hours/highly dependent on weather):				
Nut Island	1.5	0	0	0
Columbus Park	109.62	39.82	76.30	0
Ward Street	86.76	14.35	49.06	0
Chelsea Creek	3	1.7	52.77	0

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support service levels.

- Continue to ensure proper operations and maintenance of the water and wastewater systems and minimize system downtime by performing:
 - Preventative maintenance
 - Predictive maintenance
 - Corrective maintenance on equipment and linear assets
 - Leak surveys of the water system

- Water system valve inspections and exercise
- Wastewater pipelines, structures, water storage tanks, and inverted siphons inspections, and cleanings.
- Inspect, maintain, and improve the dams, dikes, and other facilities constituting the watershed system infrastructure through ongoing maintenance and an adequate multi-year capital improvement program to ensure system reliability and limit potential flood hazards.
- **Key Maintenance Measurements:**

Indicator	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
% Total Revenue Calculated Using Meters				
Water	99.17%	99.65%	99.5%	100%
**Wastewater	94.69%	91.7%	95%	95%
Water System:				
Leak Detection – miles surveyed)	144.17	101.71	190.48	140
Main Line Valves – # exercised	1,433	838	1168	1,100
Main Line Valves – # replaced	20	10	21	12
Blow-off Valves – # exercised	938	440	745	600
Blow-off Valves – # maintained	14	4	10	10
Wastewater System:				
Pipeline Inspections – miles	27.18	23.02	30.69	32
Pipeline Cleaning – miles	28.85	30.72	38	36
Structure Inspections – # structures	747	1025	814	650
Manhole Rehabilitation – # manholes	51	64	84	105
Inverted Siphon Inspections – # siphons	41	23	35	48
Inverted Siphon Cleaning – # siphons	70	7	47	36
Metro Maintenance – Equipment and Facilities:				
Ops Light Preventive Maint (PM) - % maint hours	14%	11%	14%	10%-15%
Preventive Maintenance Completion	100%	100%	100%	100%
*Maint Kitting – % work orders kitted	31%	50%	63%	60%
Ops Light Maint % PM Completion	100%	100%	100%	100%
Maintenance Backlog – crew hours	13,275	14,112	18,476	9-13.5k

* Maintenance Kitting: FY18–FY20 based on % of work orders kitted

** For FY20, the value is for July 2019 through March 2020 and June 2020. April & May 2020 were calculated using historical averages due to COVID related data gaps and thus are not considered in the calculation.

VI. Environmental Sustainability

- **Goal #17 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.
 - Continue to implement projects to reduce energy use, increase energy revenue, decrease greenhouse gas emissions, and increase self-generation capacity, particularly via renewable energy, including:
 - Energy audits at all facilities as needed.
 - Stand-alone renewable energy projects at all MWRA facilities.
 - Electrification for heating and MWRA vehicle fleet energy efficiency, non-fossil fuel heating, and renewable energy projects into new construction, rehabilitation projects, and equipment replacement.
 - **Key Performance Measurements:**

Indicator	FY20 Actual	FY21 Actual	FY22 Actuals	FY23 Goal
Energy programs - Generate revenue from FOD-managed facilities:				
Power Sales	\$725,273	\$687,819	\$927,553	\$705,182
Demand Response	\$138,297	\$188,124	\$132,534	\$159,875
Renewable Portfolio Standard Credits	\$320,443	\$383,516	\$397,298	\$194,917

*Including Cosgrove hydro-turbine as of FY19

FY22 Year-End Accomplishments:

Water System

- Completed the CWTP half plant maintenance.
- Installed two encapsulating couplings over heavily corroded air valves located on the Shaft 9A line in Malden, to prevent a tunnel isolation due to a catastrophic failure.
- Repaired the remaining mechanical couplings on 24-inch HDPE Watertown Section. Successfully disinfected and activated the water main after being isolated for 4.5 years.
- Installed flood control super sacks at the Farm Pond Inlet Structure in Framingham to prevent the draining of Farm Pond into the Sudbury Aqueduct.
- Installed an emergency connection from the Hultman Aqueduct to the Town of Natick.
- Installed the chemical feed system for the Lead Pipe Rig and continue to acclimate the lead pipes.
- Expanded the use of wireless communications to improve reliability of backup and primary links.
- Maintained over water and wastewater meter sites and performed quarterly calibrations checks at each site.
- Completed installation of piezometers in Wachusett Reservoir’s North and South Dikes as required under Dam Safety Regulations.
- Invasive species removal at Wachusett, Sudbury, Foss, Ware River and Chestnut Hill Reservoirs.
- Developed Emergency Action Plans for the NIH Service Area and provided training for MWRA staff and NIH communities.

- Successfully repaired a broken air valve on Section 89 while continuing supply to the NIH communities
- Manage the consultant for the CWTP SCADA System Upgrades contract and provide SCADA support for the replacement of all PLCs.
- Successfully maintained all instrumentation, network, and communications infrastructure for the MWRA Water and Wastewater systems.
- Continue cybersecurity projects to improve SCADA cybersecurity profile in accordance with NIST guidelines.
- Assisted many customer communities with both routine and emergency assistance, including
 - o Leak detection for Arlington, Boston, Cambridge, Lynn Marlborough, Medford, Melrose, Milton, Newton, Revere, Saugus, Somerville and Swampscott.
 - o Assisted in the shock chlorination of the towns of Norwood and Winthrop's storage tanks
 - o Assisted the Town of Winthrop with a hydrant survey of chlorine residuals.
 - o Provided technical support to the City of Newton to assist in troubleshooting headlosses within their system Also provided technical support on how to supply their system during maintenance and repairs of their storage tank.

Wastewater System

- Hayes Pump Station: Plumbers installed new suction and discharge gauges needed for flow tests for rehabilitation
- DeLauri Pump Station: Machinist's fabricated new rake guides with structural enhancements which will prevent the rakes from catching and tripping the clutch
- New Neponset Pump Station: Electricians replaced fixtures with more efficient LED explosion proof lighting in the Wet Well and Screen Room areas
- Hingham Pump Station: Electricians installed new LED explosion proof fixtures in Wet Well
- Hingham Pump Station: Plumbers installed new suction, discharge and check valves for three RWW pumps
- Hingham Pump Station: Plumbers installed new plug valve on the bypass pump connection
- Braintree Weymouth Intermediate Pump Station: Electrical Service Vendor removed and replaced Facility Main Transformer with Temporary Transformer
- Nut Island Headworks: Machinists, Welders and Mechanics fabricated and installed a new baffle box Grit Vortex #6
- Nut Island Headworks: Mechanics and Machinist replaced Screen Conveyor #2 carry belt, worn bearings, shafts and rollers
- Columbus Park Headworks: Mechanics rehabilitated #3 channel, replacing all collector and drive chain, a headshaft shaft, sprockets and flights
- Chelsea Creek Headworks: Mechanics inspected Channel # 1 as part of facility turn over from Construction
- Somerville CSO Chemical Building: Electricians installed new LED exterior lighting
- Chelsea Administration Building: Plumbers and Facility Specialists removed and replaced shower stalls in first floor women's locker room

- Electrical Thermal Imaging: Electrical Service Contractor and Medium Voltage Electricians performed non-invasive thermal imaging scans at Columbus Park Headworks, Ward Street Headworks, Hayes Pump Station, Squantum Pump Station, New Neponset Pump Station, Braintree/Weymouth Replacement Pump Station, Quincy Pump Station, Framingham Pump Station, Somerville Marginal CSO, Cottage Farm CSO, Somerville Marginal CSO and Cottage Farm CSO

Energy Conservation

- Incorporated several energy efficiency components into the Chelsea Creek HW rehabilitation project that was completed in FY22.
- Applied for, and was approved to participate in Eversource's EV Make Ready program. Under this program, Eversource will provide all of the electrical infrastructure for 20 new EV charging stations at the Chelsea Facility. This work is expected to begin in CY23.
- Installed facility-wide energy efficient LED lighting at the Carroll Water Treatment Plant and at the Clinton WWTP, as well as at various locations on Deer Island and at the Nut Island Headworks.
- Installed energy efficient Variable Frequency Drives on three pumps at Deer Island
- Applied for and received grant funding to do an assessment of the hydroelectric turbines at Deer Island to review ways to optimize their generation.
- Purchased five additional electric vehicles.

Budget Highlights:

The FY23 Final Budget is \$83.6 million, an increase of \$6.5 million or 8.5% from the FY22 Budget.

- \$38.9 million for **Wages and Salaries**, an increase of \$720,000 or 1.9% over the FY22 Budget, and reflects increases to collective bargaining agreements. The FY23 Budget includes \$467,000 for stand-by pay to ensure support for operational and maintenance needs during wet weather and emergencies and \$67,000 for interns to provide support in several areas including Operations Engineering, SCADA, and Pipe and Grounds Maintenance.
- \$3.4 million for **Overtime**, an increase of \$117,000 or 3.5% over the FY22 Budget. The FY23 Budget for overtime, which incorporates collective bargaining increases, includes \$1.7 million for emergency related overtime; \$954,000 for planned overtime; and \$674,000 for operational coverage needs.
- \$8.5 million for **Chemicals**, an increase of \$1.7 million or 24.5% over the FY22 Budget. The FY23 budget includes \$7.8 million for water treatment chemicals and \$685,000 for wastewater treatment chemicals and is based on multi-year historical usage trends and projected market prices. The budget includes \$3.4 million for sodium hypochlorite, \$3.0 million for soda ash, \$488,000 for liquid oxygen, \$437,000 for carbon dioxide, \$372,000 for hydrofluosilicic acid, \$291,000 for aqua ammonia, \$240,000 for sodium bisulfite, \$144,000 for activated carbon, \$133,000 for other oxidizers, and \$38,000 for sodium hydroxide, and \$10,000 for other chemicals (sodium thiosulfate, HCl, urea).
- \$14.1 million is included for **Utilities**, an increase of \$3.6 million or 34.2% over the FY22 Budget. The FY23 Budget includes \$11.0 million for electricity, \$1.7 million for diesel fuel, \$810,000 for natural gas, \$571,000 for water and \$90,000 for propane. There is a \$2.9 million increase in Electricity largely driven

by a rate increase for the new Interval (supplier) contract. In addition, there is a \$538,000 increase in Diesel Fuel, a \$132,000 increase in natural gas, a \$27,000 increase in propane, and a \$19,000 increase in water, all driven by higher pricing.

- \$13.5 million for **Maintenance**, an increase of \$174,000 or 0.9% over the FY22 Budget due to project priorities and projected needs. The FY23 Budget includes \$4.9 million for services, \$4.5 million in day-to-day needs, \$4.1 million in major projects, and \$55,000 for energy initiatives. Some of the major projects included for the FY23 Budget are:

Annual Tank Cleaning - West	\$1,300,000
Invasives Control – Wachusett Reservoir Basins and Coves	\$425,000
Eastern Ave Traffic Light	\$360,000
Shaft 8 Retaining Wall Repair	\$260,000
Dam Asset Maintenance – Piezometer Installation	\$225,000
JCWTP Ozone Generator PLC Replacement	\$200,000

- \$67,000 for **Training and Meetings**, level-funded with the FY22 Budget. The budget covers training required for work duties, health and safety compliance, job-related licensures and certifications, cyber-security and SCADA technical training.
- \$638,000 for **Professional Services**, a decrease of \$62,000 or 8.8% from the FY22 Budget primarily due to a decrease in use of engineering services to support several projects. The FY23 Budget includes \$485,000 for engineering services comprised of \$205,000 for an asset maintenance plan for MWRA dams; \$150,000 for as-needed engineering services to support CEB-funded maintenance projects; and \$130,000 for a consultant to configure SCADA firewalls, software, and data modules. Additionally, the professional Services budget includes \$86,000 for an annual Macrophyte (invasive species) survey at the reservoirs; and \$53,000 for quality assurance services for Macrophyte harvesting, \$10,000 for PCB Abatement Services and \$4,000 for Digsafe Membership.
- \$1.2 million for **Other Materials**, an increase of \$376,000 or 45.6% over the FY22 Budget primarily due to the addition of electric vehicle (EV) chargers for the Chelsea and Southboro facilities. The FY23 Budget includes \$373,000 for the EV chargers and vehicle expenses for gas, mileage reimbursements, and tolls; \$269,000 for work clothes; \$194,000 for health and safety supplies; \$98,000 for computer software; \$61,000 for equipment and furniture; and \$33,000 for office supplies.
- \$3.2 million for **Other Services**, a decrease of \$19,000 or 0.6% from the FY22 Budget primarily due to a decrease in Other Equipment Rentals. The FY23 Budget includes \$2.0 million for annual lease payments for the Chelsea office building; \$586,000 for telecommunication services, and \$460,000 for police details.



Wachusett Aqueduct Water Pump Station Forebay

ENGINEERING AND CONSTRUCTION

The **Engineering and Construction Department (ECD)** manages and coordinates the planning, design, and construction of system improvements that ensure a safe and adequate water supply and reliable wastewater collection and treatment. Staff is organized into three units: Wastewater Engineering, Water Engineering, and Construction.

The Department provides in-house engineering, consultant management (during the facilities planning, environmental review, design, and engineering services during construction stages of capital projects), drafting, surveying, construction management, and other technical assistance. This work supports projects necessary for the maintenance, repair, and rehabilitation of wastewater and waterworks systems. In accordance with the CIP, the Department plans and implements the rehabilitation of existing facilities and construction of new facilities. This includes pipelines, pump stations, storage facilities, and treatment facilities on schedules that allow for sufficient system capacity and performance.

The **Wastewater Engineering Unit** manages all wastewater design and engineering projects including Combined Sewer Overflow (CSO) engineering activities as well as specialized technical services in electrical, structural, mechanical, and civil engineering disciplines.

The **Water Engineering Unit** manages all water design and engineering projects. The unit also maintains the Design Information Services Center (DISC), which provides computer-aided design and drafting (CADD) services.

The **Construction Unit** provides contract management and resident inspection on all MWRA water and wastewater construction and rehabilitation projects, with the exception of Deer Island Treatment Plant.

FY23 Final Current Expense Budget ENGINEERING AND CONSTRUCTION

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 8,279,709	\$ 8,493,035	\$ 8,853,194	\$ 9,136,441	\$ 283,247	3.2%
OVERTIME	61,803	25,744	131,026	116,838	(14,188)	-10.8%
FRINGE BENEFITS	155	94	500	500	-	0.0%
MAINTENANCE	2,381	313	-	-	-	-
TRAINING & MEETINGS	31,011	4,232	16,500	16,500	-	0.0%
OTHER MATERIALS	17,820	10,786	22,925	19,200	(3,725)	-16.2%
OTHER SERVICES	19,011	21,191	26,215	33,915	7,700	29.4%
TOTAL	\$ 8,411,890	\$ 8,555,395	\$ 9,050,360	\$ 9,323,394	\$ 273,034	3.0%

FY23 Goals and Initiatives:

The Engineering and Construction Department has significant responsibility for the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan;

Wastewater Quality and System Performance

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects. Initiatives include:
 - Continue to design and implement facility rehabilitation projects for various pump stations, headworks, and CSO facilities.
 - Continue to implement an ongoing program to review, prioritize, and accelerate interceptor renewal projects.
- **Goal #7 – CSO Plan Compliance:** Demonstrate that the CSO Plan meets its performance objectives. Ensure compliance with CSO NPDES permit requirements.
 - Comply with the CSO Variances for the Alewife Brook/Upper Mystic River Basin and Lower Charles River/Charles Basin issued to MWRA and CSO communities for the period Sept 1, 2019 through Aug. 31, 2024.

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk consistent with customer, community, and regulatory support levels.
 - Issue Notices to Proceed for numerous contracts in accordance with the FY23 CIP.
 - Substantially complete numerous project phases in accordance with the FY23 CIP.

For more information about Capital Improvement Program projects, please refer to the Fiscal Year 2022 Capital Improvement Program document located on the Budget page of the MWRA's website at mwra.com.

FY22 Year-End Accomplishments:

- Awarded or Issued Notices to Proceed for numerous contracts including the following:
 - Wastewater System:
 - Remote Headworks Access Improvement
 - Water System:
 - CWTP SCADA Construction
 - CP-3 Section 23, 24, 47 Rehabilitation
 - Waltham Water Pipeline
 - NEH Improvements Construction
 - Marlborough Emergency Pump Station Connection
 - Carroll Water Treatment Plant Chemical Feed System Improvements
 - Wachusett Lower Gate House Windows and Doors
 - Southborough Electrical System Upgrade
 - Quabbin Admin Building Water Supply
 - New Roofs at Water Pump Station
- Substantially completed numerous design and construction phases including the following:
 - Wastewater System:
 - Chelsea Creek Upgrades Construction
 - Dorchester Interceptor Sewer Construction
 - Fuel Oil Tank Replacement Construction 1
 - Wastewater Meter Equipment Replacement

- Water System:
 - CP-6 Tops of Shafts 6, 8, 9A Construction
 - Northern Low Service Rehabilitation – Section 50 & 57 Design/ESDC
 - Weston Aqueduct Sluice Gates Construction
 - Shaft 2 Construction
 - River Road Improvements Construction
 - Wachusett Dam Bridge Crane Removal
 - Weston Aqueduct Sluice Gate Construction

Budget Highlights:

The FY23 Budget is \$9.3 million, an increase of \$273,000 or 3%, as compared to the FY22 Budget.

- \$9.1 million for **Wages and Salaries**, an increase of \$283,000 or 3.2% compared to the FY22 Budget primarily for wage increases associated with collective bargaining agreements. FY23 CEB has 79 approved positions and funds 76 positions net of the vacancy rate.
- \$117,000 for **Overtime**, which includes wage increases and overtime associated with nine construction projects scheduled for FY23. Overtime covers resident inspection at construction sites after regular work hours to ensure monitoring of construction projects. Overtime also covers unplanned design or survey needs, evening attendance at public meetings, and achieving project deadlines.
- \$17,000 for **Training & Meetings** to cover attendance at conferences and technical seminars. This funds staff attendance at conferences as part of MWRA’s workforce development and succession planning strategies.
- \$19,000 for **Other Materials** to cover office supplies, work clothes, health and safety supplies, and survey equipment.
- \$34,000 for **Other Services** for printing/duplicating, telephone expenses, memberships and dues, on-line engineering services and police details.

PROGRAMS, POLICY AND PLANNING

Programs, Policy & Planning

Toxic Reduction and Control
Environmental Quality
Laboratory Services
Planning

The Deputy Chief Operating Officer oversees this section, which focuses on the following:

- Master planning, business planning, and strategic initiatives (such as system expansion);
- Environmental programs and regulatory coordination;
- Water and wastewater quality testing and reporting;
- Divisional budget preparation and monitoring;
- Financial planning and analysis;
- Accounts payable and contract administration;
- Human resources management functions; and
- Energy program planning, evaluation, analysis, reporting and audits.

The Deputy Chief Operating Officer also provides support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting, and public constituency matters.

FY23 Final Current Expense Budget PROGRAMS, POLICY & PLANNING

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 16,434,583	\$ 16,409,172	\$ 16,739,089	\$ 17,029,169	\$ 290,080	1.7%
OVERTIME	334,978	253,918	251,979	254,926	2,947	1.2%
FRINGE BENEFITS	4,971	2,750	4,210	3,329	(881)	-20.9%
UTILITIES	39,230	46,182	27,695	39,627	11,932	43.1%
MAINTENANCE	540,375	365,002	488,645	542,537	53,892	11.0%
TRAINING & MEETINGS	20,039	6,290	37,700	34,154	(3,546)	-9.4%
PROFESSIONAL SERVICES	1,670,867	2,136,030	1,947,579	1,943,863	(3,716)	-0.2%
OTHER MATERIALS	1,470,009	1,743,087	1,683,307	1,751,792	68,485	4.1%
OTHER SERVICES	364,896	360,183	341,543	394,435	52,892	15.5%
TOTAL	\$ 20,879,948	\$ 21,322,614	\$ 21,521,747	\$ 21,993,832	\$ 472,085	2.2%

The Programs, Policy & Planning Section is composed of the Toxic Reduction and Control, Environmental Quality (EnQual), Laboratory Services, and Planning departments. The Environmental Quality Department has two units; EnQual-Wastewater and EnQual-Water Quality Assurance. In total, the budgets for these programs represent 11.4% of the Operations Division's FY22 Budget.

**FY23 Final Current Expense Budget
PROGRAMS, POLICY & PLANNING by Program**

PROGRAM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
TOXIC REDUCTION & CONTROL	\$ 5,169,831	\$ 5,276,090	\$ 5,199,131	\$ 5,184,001	\$ (15,130)	-0.3%
ENVIRONMENTAL QUALITY	5,263,263	5,401,703	5,469,816	6,042,138	572,322	10.5%
LABORATORY SERVICES	7,077,097	7,990,181	7,957,914	7,575,666	(382,248)	-4.8%
PLANNING	3,369,757	2,654,640	2,894,886	3,192,027	297,141	10.3%
TOTAL	\$ 20,879,948	\$ 21,322,614	\$ 21,521,747	\$ 21,993,832	\$ 472,085	2.2%



Nut Island Headworks

TOXIC REDUCTION AND CONTROL

The Toxic Reduction and Control (TRAC) Department operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA’s Environmental Protection Agency (EPA) approved Industrial Pretreatment Program and is responsible for all associated activities which include conducting inspections (approximately 1,250 annually), issuing permits (approximately 300 annually), conducting sampling (more than 2,000 events annually), and carrying out enforcement activities (approximately 300 annually). The program tracks more than 1,900 permitted facilities and 4,000 gas/oil separators. TRAC uses a software application to manage an extensive amount of industrial data on analytical test results, compliance status, and facility sampling and permitting requirements.

FY23 Final Current Expense Budget TOXIC REDUCTION AND CONTROL

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 4,802,033	\$ 4,940,884	\$ 4,888,998	\$ 4,870,192	\$ (18,806)	-0.4%
OVERTIME	198,357	146,013	130,979	133,926	2,947	2.2%
FRINGE BENEFITS	2,910	1,647	2,910	1,647	(1,263)	-43.4%
MAINTENANCE	10,404	27,970	12,000	12,800	800	6.7%
TRAINING & MEETINGS	266	1,025	7,000	5,300	(1,700)	-24.3%
OTHER MATERIALS	134,326	136,079	131,185	137,577	6,392	4.9%
OTHER SERVICES	21,535	22,472	26,058	22,558	(3,500)	-13.4%
TOTAL	\$ 5,169,831	\$ 5,276,090	\$ 5,199,131	\$ 5,184,001	\$ (15,130)	-0.3%

FY23 Goals and Initiatives:

II. Wastewater Management and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Continue to carry out the Pretreatment Program to protect receiving water quality, maximize the beneficial reuse of wastewater residuals, and protect workers and MWRA’s wastewater treatment plants and receiving waters.
 - Ensure compliance with MWRA and Federal regulations by issuing appropriate enforcement actions as outlined in the Enforcement Response Plan.
 - Staff will continue to transition the 8M permitting process into TRAC’s Pre-treatment Information Management System (PIMS) software.
 - TRAC staff will utilize the PIMS software to schedule and track work and to draft permits and track permit requirements. Sampling required by permits is entered into the PIMS system by permittees’ contract laboratories. This electronic reporting system is subject to EPA’s Cross Media Electronic Reporting Rule (CROMERR) and as such, needs to be upgraded to meet the requirements of the rule. TRAC staff are working with MWRA’s MIS staff to ensure that the PIMS system meets these requirements.

- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality.

- Prepare updated Local Limits Studies for Clinton and Deer Island in accordance with EPA guidelines to confirm appropriate discharge limits from industries.
- Continue to closely follow developing permit issues such as the impact of changes in bacterial and nutrient water quality standards; effluent loading limits; emerging contaminants and PFAS regulations; stormwater permitting; endangered species designations and phosphorus and PFAS in biosolids.

FY22 Year-End Accomplishments:

- TRAC issued the first biannual compliance report to 750 dental facilities that hold a Dentist Group permit.
- EPA New England’s consultant, PG Environmental, conducted an Industrial Pretreatment Program Audit of the TRAC program. EPA’s consultant reviewed six permits. During the audit debrief, EPA reviewed its findings with TRAC staff. A report documenting only minor audit findings from EPA was issued
- TRAC is in the final stages of implementing its Cross Media Electronic Reporting Rule (CROMERR) compliant WebSMR application for accepting electronic data from laboratories submitting wastewater sampling results on behalf of TRAC permitted industrial users. After performing a successful pilot test early in FY22, the final group of laboratories is registering to submit CROMERR compliant electronic data. The next step is to seek EPA approval.
- Key performance indicators includes;

Indicators	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goals
EPA Required SIU Monitoring Events	172	166	159	164
Non-SIU Monitoring Events	76	136	90	92
SIU Connections to be Sampled	388	384	421	396
EPA Required SIU Inspections	195	198	184	183
SIU Permits due to Expire	83	52	82	59
Non-SIU Permits due to Expire	242	243	268	246
Issue Annual Industrial Pretreatment Program Report	Oct 2020	Oct 2021	Oct 2022	Oct 2023

Budget Highlights:

The FY23 Budget is \$5.2 million, a decrease of \$15,000 or 0.3%, from the FY22 Budget.

- \$4.9 million for **Wages & Salaries**, a decrease of \$19,000 or 0.4% from the FY22 Budget primarily due to new employees hired at lower wage rate partially offset by wage increases associated with collective bargaining agreements. The budget includes \$82,000 for stand-by pay for wet weather sampling events.

- \$134,000 for **Overtime**, an increase of \$3,000 or 2.2% from the FY22 Budget primarily due to increases associated with collective bargaining agreements. Overtime covers sampling, monitoring, and inspections during off-hours as well as emergencies and wet weather events.
- \$13,000 for **Ongoing Maintenance**, essentially level funded with the FY22 Budget. This funds sampling equipment, materials, and maintenance of equipment used in sampling discharges at permitted industries.
- \$138,000 for **Other Materials**, an increase of \$6,000 or 4.9% from the FY22 Budget. Funding in this line item mainly supports lab and testing supplies, health and safety materials, and work clothes.
- \$23,000 for **Other Services**, a decrease of \$4,000 or 13.4% from the FY22 Budget. This line item also funds printing costs for regulations, public advertising of industrial users in Significant Noncompliance, and police details for sampling work done in public streets.



Sampling of Clinton Effluent Channel

ENVIRONMENTAL QUALITY

The core functions of the Environmental Quality Department are to monitor and report on the quality of drinking water and to ensure compliance with regulatory reporting requirements governing drinking water; to monitor wastewater and the receiving water environment as laid out in the Ambient Monitoring Plan; and to ensure compliance with regulatory reporting requirements governing wastewater treatment and discharges.

FY23 Final Current Expense Budget ENVIRONMENTAL QUALITY

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 3,485,432	\$ 3,751,078	\$ 3,690,499	\$ 3,790,297	\$ 99,798	2.7%
OVERTIME	20,699	15,174	22,000	22,000	-	0.0%
FRINGE BENEFITS	95	127	200	200	-	0.0%
MAINTENANCE	116,522	95,901	138,020	223,520	85,500	61.9%
TRAINING & MEETINGS	13,087	(200)	17,000	17,000	-	0.0%
PROFESSIONAL SERVICES	1,364,677	1,325,405	1,403,117	1,770,421	367,304	26.2%
OTHER MATERIALS	187,794	103,629	116,100	127,100	11,000	9.5%
OTHER SERVICES	74,957	110,589	82,880	91,600	8,720	10.5%
TOTAL	\$ 5,263,263	\$ 5,401,703	\$ 5,469,816	\$ 6,042,138	\$ 572,322	10.5%

The **Environmental Quality Department** (EnQual) has two units: EnQual-Water Quality Assurance (EnQual-Water) and EnQual-Wastewater (EnQual-WW). EnQual-Water manages compliance with the reporting requirements of the Massachusetts Department of Environmental Protection (MADEP) Drinking Water Regulations, as well as conducts and oversees the drinking water quality-monitoring program. Activities include maintaining the Contaminant Monitoring System (CMS) and other water quality instrumentation, and a mobile CMS unit for as-needed sampling including emergency response situations. The group also conducts an algae monitoring program, responds to customer complaints, conducts sampler training; reviews and reports system and community water quality data while assessing needs for treatment plant chemical dose changes; and conducts community sampler training. The unit assists water department officials with water quality concerns such as declining chlorine residuals, total coliform or *E. coli* detections including preparation for possible Boil Water Order events, storage tank management, and regulatory level assessments.

EnQual-WW manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permits. The group must submit permit reports to state and federal regulators, the science advisory panel and its subcommittees, and post many of these reports on its Harbor and Bay web pages. EnQual-WW manages environmental data and monitors and reports on the environmental quality of Massachusetts Bay, sewage influent and effluent, Boston Harbor and its tributary rivers, and Harbor beaches. EnQual-WW uses the monitoring data to demonstrate benefits of CSO control and support future decision-making. EnQual-WW also keeps current with upcoming and draft regulations, providing comments and evaluating potential impacts on MWRA operations.

**FY23 Final Current Expense Budget
ENVIRONMENTAL QUALITY by Program**

PROGRAM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
ENQUAL	\$ 3,082,629	\$ 3,110,135	\$ 3,110,603	\$ 3,531,221	\$ 420,618	13.5%
WATER QUALITY ASSURANCE	2,180,634	2,291,568	2,359,213	2,510,917	151,704	6.4%
TOTAL	\$ 5,263,263	\$ 5,401,703	\$ 5,469,816	\$ 6,042,138	\$ 572,322	10.5%

The Environmental Quality Department has significant responsibility for the following MWRA goals included in the Five-Year Strategic Business Plan (FY21-FY25):

FY23 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirements and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations and reporting requirements.
 - Manage water facility NPDES permits, and provide monthly and quarterly reports to regulators.
 - Under the existing Interdepartmental Service Agreement with UMass Amherst, continue to develop strategies for the control of disinfection by-products, and treatment of algae and cyanobacteria in the Wachusett and Quabbin Reservoirs.
 - In coordination with the MA Department of Conservation & Recreation (DCR), continue to develop operational emergency response plans for nuisance and harmful algal blooms, detection of taste and odor compounds, and algal toxins. In FY23, we will meet more readily to discuss important water quality topics.
 - Continue to monitor algal toxins and taste and odor compounds in source and drinking water and adapt the program to the rapidly changing regulatory landscape of this issue.
 - Continue the process of transitioning water quality reporting to automated platforms from an EnQual-Water database.
 - Continue to respond to MADEP and the U.S. Environmental Protection Agency (USEPA) regarding regulatory changes for drinking water quality monitoring.
 - In FY23 and continuing into FY24, staff will be replacing the current CMS units with upgraded scan units.
 - On an on-going basis, staff will continue to assess the market for new technologies associated with continuous drinking water monitoring and alarming to determine if wholesale system replacements are warranted.
 - Manage water facility NPDES permits, and provide monthly and quarterly reports to regulators.
- **Goal #2 –Water Quality Public Communications:** Continue to effectively report and communicate water quality information internally and to our customers.
 - As part of an Authority Consequence Management Plan, operate a comprehensive network of water quality monitoring stations; maintain a mobile water quality trailer to provide field-monitoring capabilities; and oversee a quality-monitoring program for emergency standby reservoirs. Develop and train staff on emergency response procedures and contaminant response procedures for reservoir or distribution system events.

- Collect samples and evaluate data to develop a program for the emergency standby reservoirs, including management goals to ensure they are ready for use in the event of a drinking water shortage. Continue to annually report on reservoir data.
- Train water department staff from MWRA communities in drinking water sampling and chlorine residual and other water quality parameter testing, drinking water quality complaints, emergency response, and regulatory compliance assistance. Disseminate monthly community chlorine residual reports to communities. Train additional MWRA-member community staff on the use of water quality instruments that measure multiple parameters.
- Finalize updates to several response plans including those for total coliform, water quality complaints, Contaminant Monitoring Alarm Management and *E. coli* detections/Boil Water Orders.

II. Wastewater Quality and System Performance

- **Goal #4– Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Respond to public interest and improve timeliness of accurate reporting, continually improve systems to more quickly gather and report accurate combined sewer overflow (CSO) and sanitary sewer overflow location and volume data. Sewage overflows (CSO, Blending, and certain SSOs) are now reported within two hrs to a subscriber list and posted on MWRA’s website.
 - Continue to implement the water quality modeling requirements of the Deer Island Treatment Plant (DITP) NPDES permit.
 - Continue to develop and manage a monitoring program for Boston Harbor and its tributary rivers, and Massachusetts Bay, reflecting permit and variance requirements, relevant current concerns, and long-term interests of the area.
 - Continue to implement the reporting requirements of DITP and Clinton Treatment Plant NPDES permits. Respond to regulatory changes and program initiatives, including any new permits.
 - Continue to produce scientific reports and manage environmental monitoring data; make data and analysis available in-house, in public presentations, online, and in designed print products; keep up-to-date data available for presentations to regulators and other interested parties.
- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality.
 - Prepare for and meet with regulators regarding the updated NPDES Permit for DITP.
 - Review draft permits, including general permits that affect MWRA facilities, and regulatory changes, e.g., water quality standards and criteria.
- **Goal #7 – Combined Sewer Overflow Plan Compliance:** Complete all CSO milestones in the Long Term Control Plan and assess the performance of the combined sewer system, and identify additional mitigation projects as needed to meet goals. .
 - Provide technical and scientific support for the development of the EPA-required CSO Program performance assessment.
 - Working with staff from Planning, Engineering and Construction, and Operations, continue work on the CSO performance assessment, including ongoing water quality monitoring.

- To continue to meet Variance requirements for the Mystic/Alewife and Charles watersheds, produce annual water quality report bringing together disparate datasets such as localized rainfall data, metered and modeled CSO discharges, and receiving water quality.

FY22 Year-End Accomplishments:

III. Drinking Water Quality and System Performance

- ***Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:***

- In FY22, MWRA and DCR collected algae samples on Wachusett and Quabbin Reservoirs. Staff performed algal toxin and taste and/or odor compound sampling at treated water taps through November 2021. Results revealed no cyanotoxin detections during any routine sampling events.
- Continued to develop and implement automation of weekly water quality reporting and application development. Worked with the MIS Dept. to upgrade Aquarius software to make use of its new and improved capabilities and reporting technology.
- Staff, working in conjunction with the Engineering & Construction department and consultant CDM Smith, have met to redesign the Route 12 shed sampling intake system through a task order.
- Throughout FY22 staff completed the following initiatives:
 - Community assistance sampling events: 22 events
 - Water quality complaint assistance: 3 events
 - Offline pipeline or tank clearance sampling: 28 events
 - Drinking water sampler training: 6 events
- During FY22, ENQUAL sampling staff provided sampling support for the Carroll Water Treatment Plant lead pipe-rig study. This project involves multiple groups across the agency and its goal is to measure lead in tap water using community lead service lines with various corrosion control treatment.
- Staff participated in expert panel discussions regarding distribution system water quality and corrosion control.

- ***Goal #2 –Water Quality Public Communications: Continue to effectively report and communicate water quality information to our customers and public officials.***

- In FY22, continued to assess the market for new technologies associated with continuous drinking water monitoring and alarming and determine if wholesale system replacements are warranted. Determined that s::can continues to provide the functionality MWRA requires for the CMS program.
- Assisted numerous MWRA communities with sampling or testing needs in FY22. Most assistance was related to storage tank clearance sampling following cleaning events, coliform detection investigations, special Optimal Water Quality Parameter sampling, or testing community samples to help determine if sample is groundwater or a system leak.
- Provided updated community sampling training and community water quality briefings.

- Participated in a Wachusett Reservoir railroad contamination drill in May 2022; and a USEPA-hosted water contamination exercise over 5 days in June 2022.
- Continued to provide monthly virtual drinking water sampler training to newly hired MWRA and community sampling staff. Staff also completed a drinking water sampling video which has since been posted on MWRA's YouTube channel.
- Presented information on water quality at both the spring and fall Emergency Response Planning training that MWRA provides routinely. Staff also presented water quality topics to community Superintendents on 4 occasions in October 2021.
- Prepared and presented an Emergency Action Plan associated with bulk chemical supplies for water and wastewater treatment; maintained communications with chemical suppliers to ensure adherence to delivery schedules and contract requirements. Conducted training sessions on chemical delivery acceptance procedures for water and wastewater operators and participated in a state audit of chemical delivery paperwork.

EnQual-Wastewater

- ***Goal #4– Compliance with Regulatory Requirements:***

- EnQual-Wastewater published 12 technical reports in FY22.
 - Implemented and improved MWRA's sewage notification web pages and database to meet the new rapid notification requirements for CSOs, SSOs, and blending in the Sewage Notification Regulation (314 CMR 16.00). Submitted the preliminary Sewage Notification Plan as required. Led an interagency coordination effort in metro Boston to prepare for compliance. Based on lessons learned from large storms in FY22, developed and updated standard operating procedures to allow effective communication and training for future staff to utilize during very large storms.
- Met all NPDES reporting requirements including routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, Contingency Plan, DITP blending order. Missed no reporting deadlines.
- Completed update of software used to implement the DITP permit's water quality modeling requirements and reduced backlog of annual reports.
- Observing Covid-19 protocols, conducted all ambient monitoring sampling required under the DITP NPDES permit, collecting and analyzing seawater, sediment and flounder, lobster, and mussel samples for evidence of outfall-related environmental degradation (none was observed).
- Complied with reporting requirements for new MultiSector General Permit for industrial stormwater discharges for Deer Island.

- ***Goal #5 – Regulatory Changes:***

- Submitted comments on the Medium WWTF Draft General Permit, which will apply to Clinton. Reviewed and (where appropriate) commented on other draft permits.
- Provided information to by USEPA Region 1 to inform on issues related to their preparation of a new DITP permit, and met with both USEPA and MADEP.
- Held several internal meetings and prepared briefings and presentations to be able to comment quickly on a draft DITP permit when issued.

Goal #7 – Combined Sewer Overflow Plan Compliance:

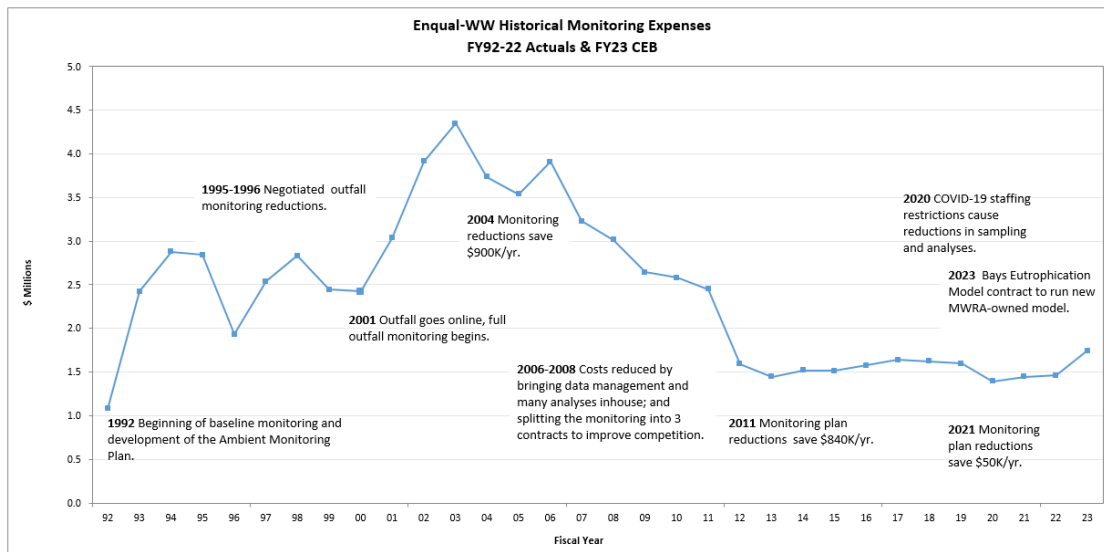
- Continued monitoring (using Covid-19 safety protocols) and data analyses required by the CSO Variances for the Charles and Alewife/Mystic Rivers and oversaw related work by AECOM on the CSO Water Quality Assessment.
- Assisted with public briefings, interagency meetings, and reports for variances.
- Continued to use the CSO public notification system implemented in July 2020 to make required notifications to regulatory agencies, boards of health, and subscribers. As of August 2022, notifications are being sent to over 150 external subscribers, including the required notifications to regulatory agencies and boards of health.
- Launched a blending notification web page and modified CSO and SSO notifications in accordance with the new Sewage Notification Law which requires reporting within two hours.

The FY23 Final Budget is \$6 million, an increase of \$573,281 or about 10% over the FY22 Budget. The FY23 Budget increase is due to a new Bays Eutrophication Model contract with a pre-bid estimate of \$200,000, and two extensions on the harbor and outfall monitoring contracts with pre-bid estimates of an additional \$167,000 over the FY22 budget.

- \$3.7 million for **Wages and Salaries**, an increase of \$100,000 or 3%, due to wage increases And the addition of a water sampling intern in Southborough to assist with USEPA-required UCMR5 sampling. The budget also includes \$84,000 for interns to assist with data analysis, water quality sampling, and technical support and \$40,000 for stand-by pay associated with wet weather and water quality monitoring programs.
- \$22,000 for **Overtime** to support wet weather and water quality monitoring programs, level funded with the FY22 budget.
- \$226,000 for **Maintenance**, an increase of \$87,000 or 64% from the FY22 Budget due to inclusion of funds for renovation of the Rte. 12 sampling shed at the Wachusett Reservoir (\$100K).
- \$17,000 for **Training and Meetings** to cover staff participation in professional conferences and technical and software training, which is level funded with the FY22 Budget.
- \$1.7 million for **Professional Services**, an increase of \$367,000 or 26% from the FY22 Budget due to the new Bays Eutrophication Model contract’s pre-bid estimate of \$200K. Harbor and Outfall Monitoring contracts extended one year through 2024 were estimated to increase by \$167K. The FY23 budget also includes contracts for the following activities which are co-funded through cost-sharing or cost-reduction agreements:
 - UMass Amherst: special study to investigate strategies to control algae and cyanobacteria at Wachusett and Quabbin reservoirs commenced in FY22 (\$100,000).
 - University of Maine’s buoy off Cape Ann: instruments measuring algae, chlorophyll and other water-quality indicators (\$85,000).
 - The Center for Coastal Studies: monitors water quality in Cape Cod Bay (\$140,000).

The FY23 Budget reflects approximately \$840,000 in annual savings due to the reduction in scope of HOM monitoring that took place in 2011 through 2013. Additional reductions were implemented starting in FY21,

resulting in about \$50,000 in annual savings (see figure below). These changes were based on favorable findings of many years of monitoring data and regulatory approval.



- \$127,000 for **Other Materials** an increase of \$11,000 or 9% from the FY22 Budget, due to the planned replacement of an Abraxis test strip reader. The budget includes \$65,000 for lab and testing supplies for the CMS program and \$30,000 for the replacement of benchtop equipment and online analyzers.
- \$91,000 for **Other Services**, an increase of \$8,000 or 11% from the FY22 Budget, due to the increase in shipping for the UCMR5 sampling program. The budget includes charges for Verizon.



Norumbega Covered Storage Tank and Norumbega Open Reservoir (now a backup supply)

LABORATORY SERVICES

The core function of the **Department of Laboratory Services** is to provide high quality and responsive laboratory services to MWRA’s water and wastewater treatment programs, including the Watershed Division of the Department of Conservation and Recreation (DCR) and the MWRA member water and wastewater communities. This involves timely and cost-effective laboratory tests to meet the strict testing guidelines required by all regulatory programs and permits, including the Safe Drinking Water Act (SDWA), Clean Water Act, and National Pollutant Discharge Elimination System (NPDES) permits.

The Department supports these functions at five locations: Chelsea, Southborough, Quabbin, the Central Laboratory at Deer Island, and Clinton. Testing supports drinking water transmission and treatment processes, wastewater operations and process control at Deer Island and Clinton, NPDES compliance, Massachusetts Bay outfall monitoring, Toxic Reduction and Control, and wastewater residuals. The Department also conducts the Boston Harbor monitoring program that involves regular sampling for nutrients, bacteria, and water quality parameters throughout Boston Harbor. Laboratory staff track and analyze results for submission to the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP).

Most MWRA laboratory testing is done in-house. Certain highly specialized or low volume tests are outsourced, such as tests for cryptosporidium, giardia and radioactivity.

FY23 Final Current Expense Budget LABORATORY SERVICES

LINE ITEM	FY20	FY21	FY22	FY23	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22	
WAGES & SALARIES	\$ 5,238,876	\$ 5,333,534	\$ 5,591,506	\$ 5,578,465	\$ (13,041)	-0.2%
OVERTIME	115,686	92,731	99,000	99,000	-	0.0%
FRINGE BENEFITS	1,966	976	1,100	1,482	382	34.7%
UTILITIES	39,230	46,182	27,695	39,627	11,932	43.1%
MAINTENANCE	275,679	241,131	338,625	306,217	(32,408)	-9.6%
TRAINING & MEETINGS	1,695	140	4,700	2,854	(1,846)	-39.3%
PROFESSIONAL SERVICES	293,813	809,825	543,461	172,441	(371,020)	-68.3%
OTHER MATERIALS	985,591	1,333,827	1,248,272	1,247,400	(872)	-0.1%
OTHER SERVICES	124,561	131,835	103,555	128,180	24,625	23.8%
TOTAL	\$ 7,077,097	\$ 7,990,181	\$ 7,957,914	\$ 7,575,666	\$ (382,248)	-4.8%

FY23 Goals and Initiatives:

The Laboratory Services Department has significant responsibility for the following MWRA goals included in MWRA’s FY21 - FY25 Five-Year Strategic Business Plan:

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.

- **Goal #3 – Technical Assistance for Water Communities:** Assist member communities to improve local water distribution systems through ongoing financial, technical, and operational support programs to maximize long-term water quality benefits.
 - PFAS testing: MWRA is developing the capability to meet the new MassDEP PFAS testing requirements for both fully and partially served communities.

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - CSO Assessment: Continue to perform weekend CSO receiving water sampling during/after significant wet weather events.
 - PFAS testing: MWRA is developing the capability to assess the PFAS inputs into the wastewater system and the subsequent impacts on effluent quality and fertilizer pellet marketability.
 - Decision support: Provide as-needed laboratory services to support assessment of regulatory and operational issues.
- **Goal #5 – Compliance with Regulatory Requirements:** Continue to initiative plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality. Special initiatives include:
 - Continue to work with researchers investigating the use of wastewater as an indicator of the presences of the Covid19 virus.

In addition, the Laboratory Services Department provides support functions for other MWRA Departments. FY22 Major Initiatives in support of those functions include:

- **NPDES Permits** – Provide laboratory data and consulting to wastewater operations and EnQual on Deer Island draft or final NPDES permits.
- **School Lead Testing Initiative** – This special project began in FY16 and is continuing into FY23. MWRA’s lab completed 1,416 lead and copper tests from 96 schools and childcare facilities in 34 communities during FY22. An additional 115 lead tests were completed in support of DPH investigations of exposed children in FY22. Since 2016, MWRA’s Laboratory has conducted over 40,000 tests from 538 schools and daycares in 44 communities.
- **Ethics Training** – Continue laboratory ethics and data integrity training to meet MassDEP laboratory certification and National Environmental Laboratory Accreditation Program (NELAP) requirements.
- **Laboratory Renovation Projects** – MWRA is planning for eventual replacement of the HVAC system and fume hoods at the Central Lab.
- **Key Department Performance Measurements and Accomplishments:**

Indicator	FY19 Actual	FY20 Actual	FY21 Actual	FY22 Actual	FY23 Goal
Total # of Tests Performed	270,194	261,011	268,686	275,619	272,000
Percent On-Time Results	93.9%	95.5%	95.5%	90.6%	95%
Average Turnaround Time (days)	6.19	5.78	5.48	7.89	9
Percent Quality Control Within Specifications	97.9%	97.7%	97.7%	98.1%	97%

Special Project: School Lead Project # Samples	1,498	442	968	1,416	As- needed
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FY22 Year-End Accomplishments:

- The Department of Laboratory Services (DLS) performed 275,619 tests during FY22 including 136,000 tests for the wastewater system and 135,000 tests for the water system.
- **CSO Assessment:** Performed CSO receiving water sampling in the Charles and Mystic Rivers during/after significant wet weather events to document the recovery of the rivers after rain events. MWRA will use this information as part of the court-ordered CSO Assessment.
- **Pandemic Management:** Assisted with implementation of MWRA’s Pandemic Emergency Action Plan to meet requirements of America’s Water Infrastructure Act (AWIA). Issued regular internal reports on the status and prevailing guidance regarding the COVID19 pandemic in Massachusetts. Also worked with the current vendor, Biobot Analytics, to monitor and report the presence of the virus in MWRA’s wastewater.
- **Decision support:** Provided testing and analytical services to support assessment of numerous issues including School Lead testing, the next DITP NPDES Permit, the new Clinton NPDES Permit, testing for algae blooms in the Emergency Distribution Reservoirs, and red tide testing in Massachusetts Bay.
- **Staff Turnover:** This is both an accomplishment and a challenge. Due to retirements (and one lateral transfer within MWRA), the department turned over five out of eight lab supervisor positions in FY22. We are able to fill all of these internally, but this created vacancies at lower graded positions that have been difficult to fill.

Budget Highlights:

The FY23 Budget is \$7.6 million, a decrease of \$382,000 or -4.8% compared to the FY22 Final Budget.

- \$5.6 million for **Wages and Salaries**, a decrease of \$13,000 or -0.2% compared to the FY22 Budget primarily due to backfilling of vacant positions.
- \$99,000 for **Overtime**, level funded with the FY22 Budget based on recent history, to cover work associated with peak periods, emergencies, and special initiatives.
- \$40,000 for **Utilities**, an increase of \$12,000 or 43% compared to the FY22 Budget based on historical spending levels. The budget covers the purchase of gases and cryogenic liquids used for various laboratory instruments.
- \$306,000 for **Ongoing Maintenance**, a decrease of \$32,000 or -9.6% compared with the FY22 Budget. This budget includes Lab equipment maintenance, repairs, and calibration for major lab instruments and once a year preventive maintenance for all ovens, water baths, incubators, refrigerators, freezers, chillers, meters, sensors, microscopes, thermometers, and balances. The budget for FY23 is based on historical spending levels.



- \$2,800 for **Training and Meetings** to fund attendance at the Lab Accreditation/National Environmental Monitoring Conference and the Association of Public Health Laboratories (APHL) annual meeting. Also included are several new conferences and seminars to keep staff technically knowledgeable. The budget for FY23 is based on historical spending levels and reflects that many meetings are still being held virtually.
- \$172,000 for **Professional Services**, a decrease of \$371,000 or 68% compared to the FY22 Budget due to MA DPH having taken over the cost for COVID19 testing in MWRA's wastewater during the continuing pandemic. Funding in this line item supports laboratory and testing analysis services the department uses to contract out a variety of complex and/or low volume tests. Outside laboratories are used for emergencies, second opinions, capacity constraints, and unavailability of specialized equipment or economic justification.
- \$1.2 million for **Other Materials**, level funded with the FY22 budget. This budget line includes funding for laboratory supplies and laboratory instrument replacements.
- \$128,000 for **Other Services**, an increase of \$24,000 or 24% compared to the FY22 budget. This covers courier service for shipping samples between laboratories, required permit fees for MassDEP and NELAP certification, removal of hazardous waste, boat dockage for two boats, and boat rental service on an as-needed basis.



Boston Harbor Sampling

PLANNING

The **Planning Department** provides regulatory, public policy, and public health advocacy for MWRA’s drinking water and wastewater programs. It provides decision support on planning, policy and operations matters, using a range of technical and analytical tools. Staff administers financial assistance programs to improve the infrastructure of member communities and to promote water conservation. The Department integrates staff efforts and coordinates MWRA activities related to system and capital planning, infrastructure renewal, and watershed management (in conjunction with the Commonwealth’s Department of Conservation and Recreation; DCR); strategic business planning; agency-wide performance measurement; and industry research.

FY23 Final Current Expense Budget PLANNING

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 2,908,242	\$ 2,383,676	\$ 2,568,086	\$ 2,790,215	\$ 222,129	8.6%
OVERTIME	236	-	-	-	-	-
FRINGE BENEFITS	-	-	-	-	-	-
ONGOING MAINTENANCE	137,770	-	-	-	-	-
TRAINING & MEETINGS	4,991	5,325	9,000	9,000	-	0.0%
PROFESSIONAL SERVICES	12,377	800	1,000	1,000	-	0.0%
OTHER MATERIALS	162,298	169,552	187,750	239,715	51,965	27.7%
OTHER SERVICES	143,843	95,287	129,050	152,097	23,047	17.9%
TOTAL	\$ 3,369,757	\$ 2,654,640	\$ 2,894,886	\$ 3,192,027	\$ 297,141	10.3%

The department previously had two units, the **Planning Unit** and the **Meter Data Unit**. As of FY21, the Meter Data Unit shifted to the Field Operations/Operations Support Department, so the budget no longer rolls up into the Planning Department.

FY23 Final Current Expense Budget PLANNING by Program

PROGRAM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
PLANNING	\$ 2,407,463	\$ 2,654,640	\$ 2,894,886	\$ 3,192,027	\$ 297,141	10.3%
METER DATA	962,294	-	-	-	-	-
TOTAL	\$ 3,369,757	\$ 2,654,640	\$ 2,894,886	\$ 3,192,027	\$ 297,141	10.3%

The functions of the **Planning Department** are:

- **Mapping, Modeling, and Data Analysis** – Technical staff develops and maintains the Geographic Information Systems (GIS) for the water and wastewater systems, including integration of field and engineering records into GIS for access by planning, engineering, and operations staff. Provides demand analysis and forecasting of water and wastewater flows for master planning and system operations; models reservoir operations and performs drought forecasting and planning; evaluates system expansion requests; and develops and maintains water and wastewater system models in support of master planning, system operations, and optimization. Staff assists in developing agency wide summaries of energy and greenhouse gas emission efficiency improvements.

- **System Planning and Renewal** – In coordination with colleagues across MWRA, staff with expertise in engineering and planning are responsible for water and wastewater system master planning, infrastructure needs assessment, and capital project development. Key work includes:
 - Reviews water and wastewater system expansion requests, water supply agreements, and emergency water withdrawal requests;
 - Assists with project siting decisions, environmental reviews, and permitting, including assessing impacts on MWRA facilities from other agencies' projects;
 - Develops strategies for reducing long-term emergency risks; and
 - Prepares plans for mitigating the risk of a range of hazards (i.e. climate change and sea level rise) on MWRA facilities and systems.

- **Regulatory and Policy Matters** – Staff work with various regulatory entities to advocate for cost-effective rule setting that protects the environment and promotes public health. Senior staff members also actively work with industry associations and other groups with agendas consistent with MWRA's to advance regulations that make environmental and economic sense. Senior staff conduct strategic policy research on a broad range of topics. Staff also conduct public health research and reports on potable water quality through production of the annual regulatory-required Consumer Confidence Report (CCR). Staff also coordinates with DCR on watershed protection initiatives. In conjunction with the Office of the Executive Director and Public Affairs, this unit serves as the Operations Division's lead on regulatory and policy matters potentially affecting MWRA's water and wastewater systems.

- **Community Support Program** – This unit oversees and manages MWRA's financial assistance and technical community support programs. Staff are responsible for the development, implementation, and reporting on Inflow/Infiltration (I/I) reduction policy; oversight of and reporting on MWRA leak detection and demand management programs; and reporting on the portions of MWRA's NPDES permit related to demand management and flow limitation activities. Staff administers community assistance programs including sewer Inflow/Infiltration financial and technical assistance, water pipeline rehabilitation financial assistance, lead service line replacement funding, water distribution systems technical assistance, water leak detection technical assistance, and water conservation programs.

FY23 Goals and Initiatives:

- I. **Drinking Water Quality and System Performance** – The Planning Department's purview and function supports all the goals associated with this strategic priority. FY23 priorities include:
 - Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on operational, planning, environmental, and regulatory issues.
 - Continue coordination with member communities for distribution of grants and loans for local sewer, water, and lead service line removal projects.
 - Conduct training and technical assistance to support communities in compliance with the revised Lead and Copper Rule. Continue outreach and coordination to schools and childcare facilities on lead testing and remediation. Work collaboratively with MA Department of Public Health on testing of water in homes with children who have elevated blood lead levels and other priority initiatives.
 - Continue to advocate for responsible and reasonable revised drinking water regulations.

- Distribute the federally required annual water quality report, the Consumer Confidence Report (CCR), to all households.

II. Wastewater Quality and System Performance – The Planning Department’s purview and function supports all the goals associated with this strategic priority. FY23 priorities include:

- Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on operational, planning, environmental, and regulatory issues
- Update selected record plans and real estate records.
- Comply with I/I mapping and planning requirements in state environmental regulations and NPDES permits; interact with regulators after submitting full I/I control plan for MWRA collection system.
- Continue coordination with member communities for distribution of grants and loans for local sewer, water, and lead service line removal projects.

III. Infrastructure Management and Resilience - Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support service levels. FY23 priorities include:

- Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on planning, regulatory, and infrastructure issues.
- Update the water distribution system model.
- Begin preparation of Water and Wastewater Master Plans.

V. Environmental Sustainability – The Planning Department’s purview and function supports all the goals associated with this strategic priority by directing and managing MWRA’s planning processes including water system expansion planning, and climate change adaptation and mitigation efforts. FY22 priorities include:

- Update reports on greenhouse gas tracking and energy efficiency efforts and develop a sustainability section on MWRA’s web page.
- Work with state and regional organizations and academic institutions to identify how MWRA can use existing long-term environmental data sets to help assess and project impacts of climate change.
- Continue to assist communities seeking admission to the MWRA’s water system or approval of emergency withdrawals.
- Begin research and work on a long term greenhouse gas reduction plan.

FY22 Year-End Accomplishments:

- **Local Water System Assistance Program** - Through June 2022, distributed \$32.1 million in Local Water System Assistance Program interest-free loans, plus an additional \$6.3 million under the Lead Service Line Replacement Loan Program in FY22. In total, MWRA has distributed \$528.7 million in loans to fund 585 local projects with participation from 43 of the 47 eligible water communities. Since 1998, MWRA has replaced or cleaned and lined 593 miles of local water main (about 8% of the regional system) via projects funded by MWRA’s financial assistance. In addition, MWRA has loaned \$31.3 million via 34 distributions to 14 communities for Lead Water Service Line Replacement projects.
- **Community Leak Detection** - Through June 2022, assisted eight (8) municipalities in the MWRA’s service area with leak detection (via task-order contracts) in their systems in FY22.

- **Lead Reduction Assistance** - Continued outreach to communities on sampling in schools for lead in conjunction with third round of DEP's Technical Assistance program. Continued laboratory assistance to MDPH for water sampling for schools and day care centers.
- **Regulatory Input** - Planning Department staff have continued to be active in state and federal review of the Lead and Copper Rule as well as other proposed rule changes. Provided community updates on the revised LCR.
- **Sewer Grant/Loan Program** – Through June 2022, distributed \$31.3 million in grants and interest-free loans to member sewer communities for Infiltration/Inflow reduction and sewer system rehabilitation projects in FY22. In total, MWRA has distributed \$509.8 million in grants and loans to fund 646 local projects with participation from all 43-member sewer communities.
- **Emergency Planning** - Provided substantial information to the State Auditor's Office on emergency planning. Participated in a major staff training exercise related to potential railroad spills at Wachusett Reservoir and in developing and running an exercise of a radiological spill at Wachusett Reservoir.
- **Computer Modeling** - Provided computer modeling support for major capital programs including operational planning for pipeline shutdowns and metro tunnels emergency planning on the water side; and ongoing support for wastewater projects including the CSO evaluation. Assisted in project to update the water distribution system model.
- **Greenhouse Gas Reduction** - Continued coordination with local and regional climate change adaptation planning efforts. Completed and posted an update to MWRA's greenhouse gas inventory
- **Climate Change Adaptation** - Coordinated the design, procurement and installation training for flood protection equipment to be installed at key MWRA wastewater facilities. Participated in Metro Mayors' Climate Change Coalition Task Force and continued to monitor new research related to the effects of climate change in the service area. Co-chaired and participated in multi-agency Mystic River Regional Infrastructure exercise.
- **Mystic River** - Staff continued to represent MWRA on the Mystic River Steering Committee (facilitated by EPA and Mystic River Watershed Association staff). Key objectives are improved water quality and access to the River and improved open space opportunities are key objectives.

Budget Highlights:

- The FY23 Final Budget is \$3.2 million, an increase of \$297,000 or 10.3% as compared to the FY22 Budget, the increase driven primarily by Wages & Salary increases.
- \$2.8 million for **Wages and Salaries**, an increase of \$222,000 or 8.6% as compared to the FY22 Budget. The FY23 Budget funds 24 filled positions, one more than FY22 adding to the Budget. Wage increases also reflect contractual increases associated with collective bargaining agreements. Wages and Salaries includes \$5,000 for summer interns to assist with analyses in the areas of climate change, benchmarking, public health, and other projects in the spring of 2023.
- **Ongoing Maintenance** is not funded in FY23 due to the transfer of the Meter Data Unit in FY21.
- \$9,000 for **Training and Meetings**, which is level funded with the FY22 Budget. The budget covers participation in training and conferences primarily focused on water quality regulations and geographic information systems.
- \$1,000 for **Professional Services** costs associated with the translation of the CCR.
- \$240,000 for **Other Materials** which includes funding of \$181,000 for postage and mailing of the CCR, \$15,000 for water conservation kits, and \$5,000 for mapping supplies. The increase of \$52,000 is primarily due to expected price increases for distributing the CCR.
- \$152,000 for **Other Services** which includes \$112,000 for printing the CCR; \$7,500 for costs associated with community lead service line reduction initiatives; \$10,000 for printing water conservation and other informational brochures; and \$1,300 for Memberships and Dues for department employees.



Law Division
Budget

LAW DIVISION

Law

Legal Reviews
Litigation
Court Order Compliance
Environmental Regulation

The Law Division provides legal counsel to the Board of Directors, the Executive Director, and staff on compliance with federal and state laws, regulations, court cases, and administrative orders. Staff also handle and provide assistance with respect to litigation matters, real estate matters, labor/employment issues, procurement, and construction issues. The General Counsel interprets the MWRA Enabling Act and provides advice on conflict of interest and Code of Conduct issues. Division attorneys monitor the work of outside counsel when it is necessary to retain such services.

Law Division staff, though usually representing MWRA in a defensive posture, also work with Operations Division staff to effectuate cost recovery claims for design errors and omissions and construction defects. In addition, the Law Division assists in the early resolution of contractor and vendor claims prior to litigation so as to resolve them as favorably and early as possible thereby reducing or eliminating litigation costs and interest payable.

FY23 Final Current Expense Budget						
LAW DIVISION						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 1,534,345	\$ 1,496,428	\$ 1,533,795	\$ 1,624,126	\$ 90,331	5.9%
OVERTIME	10	-	-	-	-	-
TRAINING & MEETINGS	670	440	4,000	4,000	-	0.0%
PROFESSIONAL SERVICES	138,294	128,446	350,000	350,000	-	0.0%
OTHER MATERIALS	4,090	1,206	3,500	3,500	-	0.0%
OTHER SERVICES	29,419	38,268	35,711	46,023	10,312	28.9%
TOTAL	\$ 1,706,828	\$ 1,664,788	\$ 1,927,006	\$ 2,027,649	\$ 100,643	5.2%

FY23 Goals and Initiatives:

For FY23, the Law Division has identified the following goals and initiatives:

- Provide exemplary legal representation of MWRA.
- Provide timely and cost effective resolution of legal disputes involving MWRA through litigation, administrative proceedings, mediation, arbitration, or other alternative means of dispute resolution.

- Provide high quality legal services to support the business and operational needs of MWRA in several areas of the law including employment, labor, construction, contracts, procurement, environmental, energy, real estate, tort, regulatory compliance and ethics/conflict of interest.
- Provide legal advice on legislation and regulatory issues.

FY22 Year-End Accomplishments:

Negotiated a settlement agreement to resolve a lawsuit alleging serious personal injuries arising out of a slip-and-fall at MWRA’s Chelsea facility.

Resolved an equity action after property owners restored MWRA real property that had been altered while performing home improvements on abutting land.

Negotiated a settlement with an insurer in subrogation action for damages arising out of a motor vehicle accident between the plaintiff’s insured and an MWRA vehicle.

Negotiated a settlement to resolve a lawsuit alleging employment related claims.

Following demand to cease and desist and issuance of Administrative Order, filed an equity action arising out of construction activities in close proximity to the Sudbury Aqueduct.

Obtained two arbitration awards in MWRA’s favor upholding disciplinary action taken by the Authority.

Received a dismissal from the MCAD for lack of probable cause of a charge of discrimination on the basis of religion.

Received a favorable decision from the Department of Unemployment Assistance Board of Review in an appeal related to unemployment benefits.

Negotiated a settlement of a grievance alleging employee was unfairly denied overtime.

Negotiated a settlement of a grievance alleging two employees were unfairly denied out-of-title compensation.

Negotiated a settlement of an unfair labor practice charge brought by two unions alleging that MWRA failed to bargain in good faith on employee contribution rates under the Massachusetts Paid Family and Medical Leave law.

Assisted with negotiations of successor collective bargaining agreements for all bargaining units, as well as negotiations regarding a COVID-19 vaccination requirement and a new telework policy.

Assisted with the acquisition of land located at 167-175 School Street and 2, 4 & 5 Mack’s Court, Waltham for the Tunnel Redundancy Program.

Drafted memorandum of agreement with Town of Lexington relating to cost sharing on MWRA Contract 6522 “Construction Package 1 – Section 63 Northern Extra High Redundancy Pipeline”

Drafted memorandum of agreement with the MBTA relating to construction of and payment for ADA complaint bus stop.

Drafted comments and request for conditions for filing with the Surface Transportation Board relating to the application of CSX for acquisition of control of Pan Am. Assisted in negotiating and drafting agreement with CSX relating to improvements, operating conditions and protective measures and actions for the Worcester Main line.

Finalized conveyance agreement and drafted legislation and conveyance deed for land located at 2 Cleverly Court, Quincy.

Assisted with finalizing legal documents and advancing payment transfers to DCR for: Wachusett Watershed Fee Acquisition W-001229; Wachusett Watershed Preservation Restriction Acquisition W-001223; Quabbin Watershed Preservation Restriction W-001227; and Wachusett Watershed Fee Acquisition W-001217.

Assisted in preparing and recording documents for: orders of conditions, Mystic Reservation in Medford and Hatch Shell Area and Lexington Street, Waltham; certificate of compliance for MWRA Contract #7505, Southern Extra High Section 111, Dedham South; notice of Restriction for property at 340 Marginal Street, Chelsea; AUL for property at Marginal Street, Chelsea; and an order of taking, deed and plan of land for property acquisition of 167-175 School Street and 2, 4 & 5 Mack's Court, Waltham.

Assisted in expanding Real Property/GIS interactive database, including refining and charting coding, adding and editing taking documents and undertaking quality control to ensure consistency and accuracy in the designation of property interests held and conveyed by MWRA.

Assisted in updating and finalizing various policies.

Assisted in preparing and filing court reports in the Boston Harbor case, including the Performance Assessment Report and Interim Update. Drafted court filings and assisted in securing court approval of three-year extension related to performance assessment of the CSO Long Term Control Plan.

Negotiated resolution of disputed issues and payment of additional contributions in aid of construction, and negotiated and assisted in drafting terms of final tariff addendum and agreement filed with the Department of Public Utilities relating to the Harbor Electric Energy Corporation Cross-Harbor Cable for Deer Island.

Negotiated, drafted and finalized Amendment No. 3 to a Memorandum of Understanding with the Boston Water and Sewer Commission regarding the operation and maintenance of the Union Park Pump Station.

Assisted in preparing and filing application packages for MWRA's Loring Road and CVA Fish Hatchery hydropower facilities under the Energy Policy Act Section 242 Federal Hydropower Incentive funding program.

Drafted Memorandum of Agreement with Town of Ludlow regarding construction and ownership of an antenna tower at Nash Hill Reservoir for communication equipment.

Drafted Memorandum of Agreement with City of Chelsea regarding traffic signalization project.

Provided advice and counsel relating to claims and issues on various matters, including claims arising out of MWRA’s construction projects, employment and labor-related matters, real property matters, and legislation.

Budget Highlights:

The FY23 Budget is \$2.0 million, an increase of \$101,000 or 5.2%, as compared to the FY22 Budget.

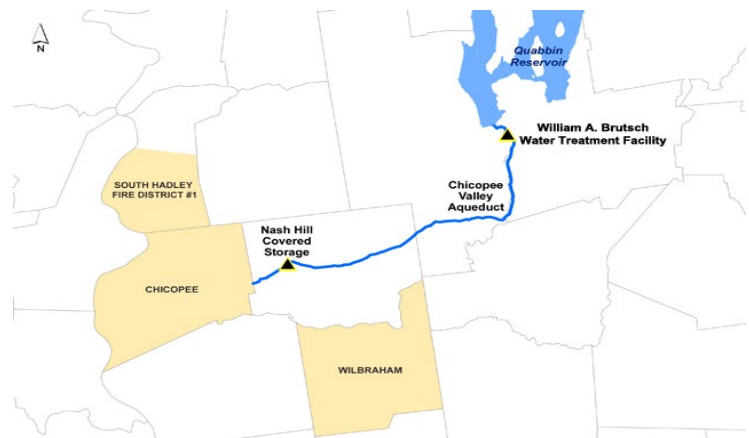
\$1.6 million for **Wages and Salaries**, an increase of \$90,000 or 5.2%, as compared to the FY22 Budget primarily due to 0.4 increase in FTEs and wage increases associated with collective bargaining agreements. The FY23 Final Budget includes funding for 12.0 FTEs, 0.4 FTEs above the FY22 Budget.

LAW DEPARTMENT	FY22 FTEs	FY23 FTEs
LAW	11.6	12.0
TOTAL	11.6	12.0

- \$350,000 for **Professional Services**, matching FY22’s funding level.



Brutsch Water Treatment Facility



CVA System Map



Administration Division Budget

ADMINISTRATION DIVISION

Administration

Director's Office
Facilities Management
Fleet Services
Human Resources
Management Information Systems
Procurement
Occupational Health and Safety

The **Administration Division** is responsible for managing the support service functions of the Authority. Its departments support daily operations and maintenance and ensure the implementation of the Authority's long-term goals and strategies.

FY23 Final Current Expense Budget						
ADMINISTRATION						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 13,981,327	\$ 14,378,032	\$ 15,716,211	\$ 15,551,193	\$ (165,018)	-1.0%
OVERTIME	125,391	91,930	132,682	136,683	4,001	3.0%
FRINGE BENEFITS	20,744,462	21,595,954	23,134,741	23,843,626	708,885	3.1%
WORKERS' COMPENSATION	1,862,942	1,842,853	2,614,159	2,519,751	(94,408)	-3.6%
UTILITIES	87,090	85,718	98,543	90,849	(7,694)	-7.8%
MAINTENANCE	4,664,005	5,052,546	5,640,958	5,928,748	287,790	5.1%
TRAINING & MEETINGS	87,393	71,392	236,108	241,542	5,434	2.3%
PROFESSIONAL SERVICES	1,397,821	1,649,057	2,697,520	1,748,128	(949,392)	-35.2%
OTHER MATERIALS	1,279,646	1,644,447	3,457,541	1,422,757	(2,034,784)	-58.9%
OTHER SERVICES	3,194,225	3,557,071	3,835,532	3,962,356	126,824	3.3%
TOTAL	\$ 47,424,302	\$ 49,969,000	\$ 57,563,995	\$ 55,445,633	\$ (2,118,362)	-3.7%

The Administration Division is comprised of seven departments: Director's Office (which includes Real Property); Facilities Management; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Occupational Health and Safety.

FY23 Final Current Expense Budget ADMINISTRATION by Department						
DEPARTMENT	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
ADMIN DIRECTOR'S OFFICE	386,889	399,332	396,572	395,558	(1,014)	-0.3%
HUMAN RESOURCES	24,667,030	25,948,781	28,287,741	28,916,872	629,131	2.2%
MIS	12,224,603	13,218,935	15,766,104	15,433,656	(332,448)	-2.1%
FACILITIES MANAGEMENT	2,513,349	2,710,650	5,029,596	2,760,164	(2,269,432)	-45.1%
FLEET SERVICES	1,836,318	1,876,433	2,171,963	2,195,140	23,177	1.1%
PROCUREMENT	4,754,986	4,972,572	4,600,226	4,375,879	(224,347)	-4.9%
REAL PROPERTY / ENVIR MGMT	-	323	-	-	-	-
OCCUPAT HEALTH AND SAFETY	1,041,127	841,974	1,311,793	1,368,364	56,571	4.3%
TOTAL	\$ 47,424,302	\$ 49,969,000	\$ 57,563,995	\$ 55,445,633	\$ (2,118,362)	-3.7%

FY23 Goals and Initiatives:

Consistent with MWRA's Board approved FY21 - FY25 Five-Year Strategic Business Plan, the Administration Division's FY23 goals are as follows:

IV. Finance and Management

- **Goal # 12 – Ensure Cost-Effective Operational and Resource Management:**
 - o Long-Term Planning for consolidation of CNY workspace at Chelsea and Deer Island with goal to relocate by May, 2023
 - o Provide Real Estate Support to Tunnel Redundancy Project's property acquisition needs
 - o Assure a safe and well-maintained working environment for all MWRA staff at CNY and appropriate space for staff by coordinating workspace planning, design, and furniture acquisitions.
 - o Maintain and expand MWRA-wide recycling efforts.
 - o Work with staff MWRA-wide to improve specifications development and documentation.
 - o Transition from paper to electronic processes.

- **Goal #13 – Maintain an Excellent Workforce:**
 - o Attract and retain a qualified high-performance workforce, hire and promote qualified minority, female, and veteran employees, and offer a competitive total compensation package (salary and benefits) to all employees.
 - o Continue to expand on MWRA's in-house job shadowing and career development training programs in anticipation of critical retirements over the next several years.
 - o Continue to provide training to ensure employee safety. Continue to transition to virtual trainings to the extent possible.
 - o Provide effective training necessary for employees to obtain and maintain required licenses and certifications to ensure a highly skilled workforce.
 - o Continue MWRA's efforts to develop new recruitment and retention strategies to foster diversity, including traditionally underrepresented categories, people with disabilities and veterans.
 - o Negotiate successor collective bargaining agreements with the five unions.

- **Goal #14 – Leverage Information Technology to Improve Organizational Effectiveness:**
 - Deliver Information Technology (IT) services and solutions efficiently and effectively.
 - Continue to provide IT resources to support remote work and meetings.
 - Provide IT solutions to streamline work processes while ensuring the security and integrity of MWRA data by leveraging the use of existing or emerging technologies.
 - Maintain current technology hardware, software, and network infrastructure.
 - Maintain a secure technology environment.

V. Environmental Sustainability

- **Goal #15 – Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets:**
 - Integrate more alternative fueled vehicles into the Authority’s fleet. Continue to install idle reduction devices in all Authority vehicles to comply with state and federal regulations and also purchase more fuel efficient vehicles.

FY22 Year-End Accomplishments:

- Continued to fill positions with qualified applicants using electronic processes and virtual interviews.
- Participated in the Diversity, Equity, and Inclusion (DEI) Workgroup to promote diversity and completed the procurement process to provide DEI training to all employees.
- Developed negotiated and implemented a new Telework Policy.
- Settled the contracts for all five bargaining units.
- Continued to support the agency’s efforts in implementing succession planning activities due to an increase in retirements anticipated over the next several years.
- Continued to offer supervisory, professional, and career development training programs necessary to support succession planning initiatives.
- Developed additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- Reduced future MWRA exposure on Workers’ Compensation cases through aggressive claims management.
- Completed the procurement process for dental insurance.
- Continued efforts to promote a safe and inclusive work environment through an online Harassment Prevention Training program.
- Worked with various vendors to provide training for the Nut Island HVA and Odor Control Project.

- Continued work to bring back in-person training to better meet the educational needs of staff, while maintaining applicable safety standards.
- Worked with MIS to begin implementation of a new Learning Management System in conjunction with the MIS department that will provide better tracking ability, course scheduling, and course delivery.
- Completed preliminary review and analysis of compensation for titles in all bargaining units to ensure compliance with the Massachusetts Equal Pay Act.
- Spec'd and purchased 5 additional electric vehicles for the Authority.
- Installed additional electric vehicle charging stations at Chelsea, Deer Island, CWTP, Southboro, and Clinton Treatment Facility.
- Fuel Management System: Completed the fuel management system installation at Chelsea and Deer Island. Continue to work with MIS and Engineering staff on the purchase and implementation of a new fuel management system at Southboro headquarters, Lonergan Intake, and the Weston facility.
- Recycled 12.14 tons of batteries, 14.62 tons of paper and 220.39 tons of scrap metal, generating \$74,045 in revenue.

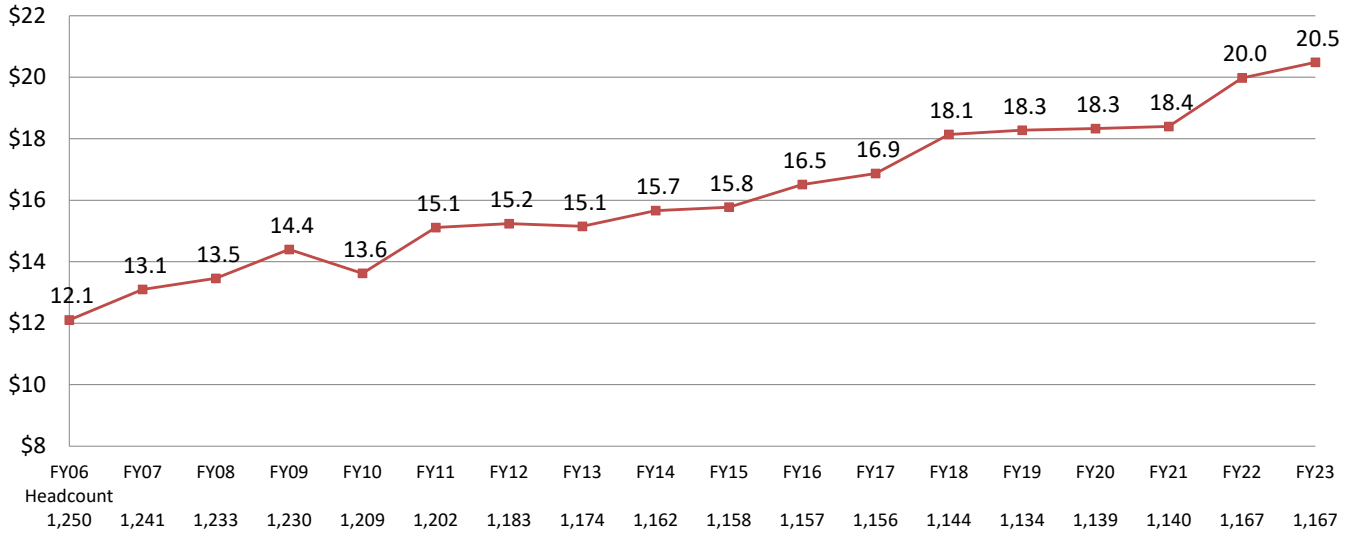
Budget Highlights:

The FY23 Final Budget is \$55.4 million, a decrease of \$2.1 million or 3.7% as compared to the FY22 Budget.

- \$15.6 million for **Wages and Salaries**, a decrease of \$165,000 or 1.0% as compared to the FY22 Budget. The decrease is primarily due to retirements and backfilling at a lower wage rate, partially offset by wage increases associated with collective bargaining agreements. The FY23 Final Budget funds 149.7 FTEs, matching the FY22 Budget.
- \$137,000 for **Overtime**, \$4,000 or 3% above the FY22 Budget.
- \$23.8 million for **Fringe Benefits**, an increase of \$709,000 or 3.1% as compared to the FY22 Budget, reflecting the continuing rise in health insurance costs.

FTEs		
ADMINISTRATION by Department		
DEPARTMENT	FY22 FTEs	FY23 FTEs
ADMIN DIR OFFICE	3.0	3.0
HUMAN RESOURCES	16.8	16.8
MIS	57.0	57.0
FACILITIES MGMT	7.0	7.0
FLEET SERVICES	12.0	12.0
OH&S	10.0	10.0
PROCUREMENT	43.9	43.9
TOTAL	149.7	149.7

**Health Insurance Spending
(in millions)**



- \$2.5 million for **Workers' Compensation**, \$94,000 below the FY22 Budget or 3.6%. Actual spending for Worker's Compensation can vary as evidenced below. The Workers' Compensation budget is based on the average of the last three years of actual spending excluding reserve adjustments.

	FY17 Actual	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Actual	FY22 Final	FY23 Final	3 Year Average*
Worker's Compensation								
Compensation Payments	1,279,047	1,660,365	1,826,485	1,533,072	999,514	1,673,307	1,677,953	1,673,307
Medical Payments	567,864	916,385	814,826	589,357	641,740	773,523	667,624	773,523
Other	206,935	185,027	149,771	167,190	201,599	167,329	174,174	167,329
Total Worker's Comp.	\$2,053,846	\$2,761,777	\$2,791,083	\$2,289,618	\$2,478,551	\$2,614,159	\$2,519,751	\$2,519,751

- \$91,000 for **Utilities**, a decrease of \$8,000 or 7.8%, as compared to the FY22 Budget, to reflect a drop in expected usage for the CNY Headquarters due to expiration of CNY lease.
- \$5.9 million for **Maintenance**, an increase of \$288,000 or 5.1% as compared to the FY22 Budget, due to number of software licenses coming off multi-year maintenance and support agreements, and equipment on extended service agreements. In FY23, spending on computer licenses totals \$4.0 million, an increase of \$439,000 over FY22 Budget.
- \$242,000 for **Training and Meetings**, a change of \$5,000 or 2.3% as compared to the FY22 Budget.
- \$1.7 million for **Professional Services**, a decrease of \$949,000 or 35.2% as compared to the FY22 Budget. The largest component of this line item is \$1.0 million for computer consultants which dropped \$849,000 over the prior year's budget. Drop reflects telework stabilization and completion of some computer projects resulting in a drop in need for computer consultants.

- \$1.7 million for **Other Materials**, a decrease of \$2.0 million or 58.9% as compared to the FY22 Budget. In FY22 this expense included \$2.1 million in projected relocation and reconfiguration expenses relating to the expiration of the Charlestown lease and relocation of staff to other facilities. This expense has since been transferred to the Capital Budget.
- \$4.0 million for **Other Services**, an increase of \$127,000 or 3.3% as compared to the FY22 Budget, primarily due to a \$102,000 for record center scanning and \$76,000 additional spending on telecommunications. Included in the Other Services funding is \$2.1 million for Space/Lease Rentals for the Charlestown Navy Yard Headquarters and new Walpole Record Center, \$1.3 million for Telecommunications expenses for all facilities, and MIS and security data lines.



Fog creeping in over Sudbury Dam

ADMINISTRATION DIVISION DIRECTOR'S OFFICE

The **Administration Division Director's Office** is responsible for the centralized support functions of procurement, human resources, management information systems, fleet services, facilities management, and real property. Additionally, the Director's Office ensures compliance with applicable statutes, regulations, Authority policies and procedures, and contract terms.

FY23 Final Current Expense Budget							
ADMINISTRATION DIVISION DIRECTOR'S OFFICE							
LINE ITEM	FY20	FY21	FY22	FY23	Change		
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22		
WAGES & SALARIES	\$ 382,119	\$ 384,018	\$ 381,350	\$ 380,336	\$ (1,014)	-0.3%	
OVERTIME	-	-	-	-	-	-	
PROFESSIONAL SERVICES	4,500	15,000	15,000	15,000	-	0.0%	
OTHER MATERIALS	20	-	-	-	-	-	
OTHER SERVICES	250	314	222	222	-	0.0%	
TOTAL	\$ 386,889	\$ 399,332	\$ 396,572	\$ 395,558	\$ (1,014)	-0.3%	

The Administration Director's Office core functions are to:

- Manage and coordinate the Authority's support service functions.
- Guide and coordinate division activities to support MWRA's goals and objectives.
- Continuously improve processes and performance for greater efficiency.

FY23 Goals:

- Long-Term Planning for consolidation of CNY workspace at Chelsea and Deer Island with goal to relocate by May, 2023
- Provide real estate services to Tunnel Redundancy Project's property acquisition needs.
- Provide real estate services (appraisal, negotiation, survey review and/or planning) for: Siphon Structure Rehabilitation Project, Phase 1(41 siphon structures in need of repair with varying real estate acquisition needs.)
- Manage six (6) permit agreements (three at Turkey Hill, two at Walnut Hill, one at Fells Tower.)
- Provide real estate support to Legal, Operations and Public Affairs for issuance of 8M permits to public and private entities requesting use of MWRA controlled land
- Provide real property support to fulfill Public Records Requests
- Manage the Real Estate Mapping project with GIS Department
- Manage lease and financial obligations for Walpole Records Center and temporary expansion space

FY22 Year-End Accomplishments:

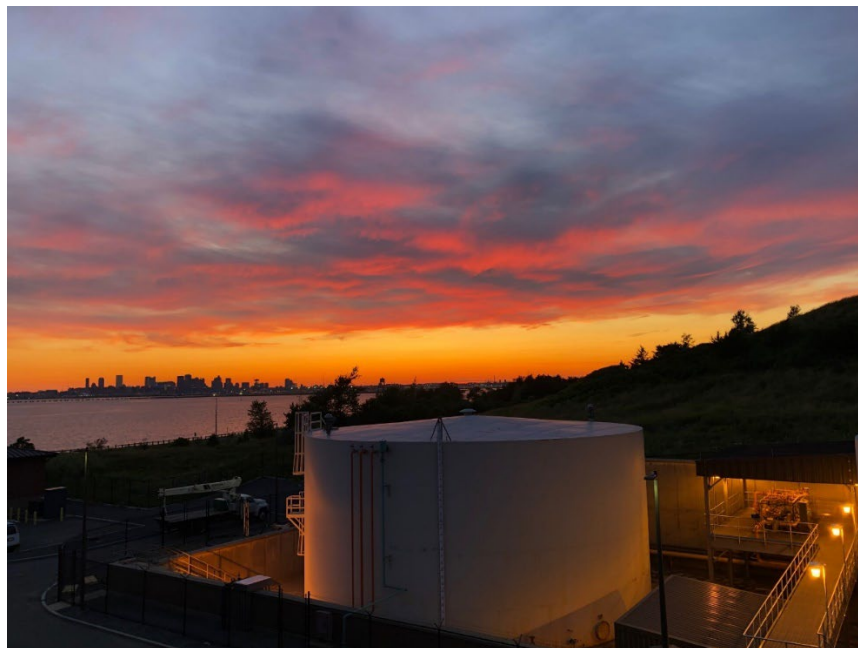
- Managed communications, rent/utility/real estate tax payments for Walpole Records Center.
- Responded to queries/issues related to Chelsea Lease terms and provided real estate support and title research for Traffic Signalization Project at Griffin Way/Eastern Avenue Intersection.

- Provided real estate services to Tunnel Redundancy Project (title research, appraisal, planning) for acquisition of fee interest for property at 163-175 School Street, Waltham. Property was acquired for a new shaft site along the current design of the tunnel alignment
- Provided real estate services and support (title research, survey review and/or planning, document drafting) for: Contract 7117, Section 89 Waterline easement and re-alignment @ 2 Hill Street, Woburn, Montvale Land LLC, developer; Sudbury Aqueduct encroachment issues located at Grant Street, Newton, culminating in delivery of Cease and Desist Order to property owner; impending conveyance of vacant land at Cleverly Court, Quincy from MWRA to City of Quincy
- Managed seven (7) permit agreements (four at Turkey Hill; two at Walnut Hill; one at Fells Tower, including permit agreement renewal negotiation and processing modification requests. FY 2022 revenues for all towers were \$498,803, half of which went to the host communities.
- Provided real estate support to Operations and Public Affairs for issuance of 8M permits to 1) private entities requesting use of MWRA controlled land and 2) cities and towns applying to the Aqueduct Trails Program. Annual revenue from long term 8m permit totals \$84, 069.
- Managed with GIS Department Real Estate Mapping project to transfer MWRA’s real property takings to a user-friendly GIS-map based interface. Continued updating and editing records adding 165 mapped areas to the system.

Budget Highlights:

The FY23 Budget is \$396,000, an increase of \$1,000 or 0.3% as compared to the FY22 Budget.

- \$380,000 for **Wages and Salaries**, a decrease of \$1,000 or 0.3% as compared to the FY22 Budget, primarily due to backfilling at a lower wage rate, partially offset by wage increases associated with collective bargaining agreements. The FY23 Budget supports three FTEs, matching the FY22 Budget.



Deer Island Treatment Plant Thermal Power Plant

FACILITIES MANAGEMENT

The **Facilities Management Department** provides a range of support services to MWRA staff located at the MWRA Headquarters in the Charlestown Navy Yard (CNY).

Facilities Management is responsible for coordinating site management activities at CNY. Staff institute maintenance procedures, respond to facilities requests from MWRA staff, coordinate workspace planning, provide office furnishings, and develop and implement appropriate measures to ensure the safety of MWRA staff and protect and preserve MWRA assets.

In addition, staff provides administrative and office support services that facilitate the efficient use of MWRA resources. These responsibilities include providing and managing the motor pools at both the Chelsea Facility and CNY, general office equipment repairs, transportation, mail, and courier services. Staff coordinates MWRA parking programs and corporate Massachusetts Bay Transportation Authority (MBTA) pass programs.

FY23 Final Current Expense Budget							
FACILITIES MANAGEMENT							
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22		
WAGES & SALARIES	\$ 471,901	\$ 462,502	\$ 552,918	\$ 459,720	\$ (93,198)	-16.9%	
OVERTIME	6,623	5,483	40,000	40,000	-	0.0%	
FRINGE BENEFITS	-	-	-	-	-	-	
UTILITIES	84,972	83,028	96,043	88,349	(7,694)	-8.0%	
MAINTENANCE	10,996	5,602	18,600	18,600	-	0.0%	
PROFESSIONAL SERVICES	-	38,230	4,000	4,000	-	0.0%	
OTHER MATERIALS	15,019	90,012	2,167,250	67,251	(2,099,999)	-96.9%	
OTHER SERVICES	1,923,838	2,025,793	2,150,785	2,082,244	(68,541)	-3.2%	
TOTAL	\$ 2,513,349	\$ 2,710,650	\$ 5,029,596	\$ 2,760,164	\$ (2,269,432)	-45.1%	

FY23 Goals and Initiatives:

IV. Finance and Management

- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - o Assure a safe and well-maintained working environment for all MWRA staff and appropriate space for staff by coordinating workspace planning, design, and furniture acquisitions.
 - o Facilitate relocation of staff from CNY.
 - o Manage the lease for the CNY and Records Center in Walpole.

FY22 Year-End Accomplishments:

- Implemented facility improvements as provided in our current lease agreement for CNY headquarters.
- In conjunction with MIS, continued to look at ways to maximize efficiency of day-to-day office equipment such as printers, copiers, and facsimile machines.

Budget Highlights:

The FY23 Final Budget is \$2.8 million, a decrease of \$2.3 million as compared to the FY22 Budget.

- \$460,000 for **Wages and Salaries**, a decrease of \$93,000 or 16.9% as compared to the FY22 Budget, primarily for backfilling positions a lower salaries partially offset by wage increases associated with collective bargaining agreements. The FY23 Budget funds seven FTEs, the same as the FY22 Budget.
- \$88,000 for **Utilities**, \$8,000 below the FY22 Budget.
- \$67,000 for **Other Materials**, \$2.1 million below the FY22 Budget, The FY22 Budget included \$2.1 million in projected relocation and reconfiguration expenses relating to the MWRA departure from Charlestown space and that staff being relocated to other facilities. Funding for this exercise has been transferred to the capital budget.
- \$2.1 million for **Other Services**, \$69,000 or 3.2% below the FY22 Budget. The main item under this line item is the lease for CNY Headquarters building at \$1.9 million. The lease includes base rent for the facility, real estate taxes, common area maintenance and operating costs. The decrease reflects the departure from Charlestown facility.



FLEET SERVICES

The **Fleet Services Department** manages and maintains MWRA's motor vehicle and equipment fleet. The goal of the Fleet Services Department is to maintain MWRA's vehicle and equipment fleet to minimize downtime and extend the life of the assets. Fleet Services also manages the Chelsea and Deer island fuel facility, the gas card program and the development and processing of specifications for new vehicles and equipment.

FY23 Final Current Expense Budget							
FLEET SERVICES							
LINE ITEM	FY20	FY21	FY22	FY23	Change		
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22		
WAGES & SALARIES	\$ 915,419	\$ 859,786	\$ 917,375	\$ 912,476	\$ (4,899)	-0.5%	
OVERTIME	9,754	16,410	11,000	15,000	4,000	36.4%	
FRINGE BENEFITS	143	351	250	250	-	0.0%	
UTILITIES	2,117	2,690	2,500	2,500	-	0.0%	
MAINTENANCE	544,426	528,192	682,500	664,500	(18,000)	-2.6%	
TRAINING & MEETINGS	-	116	4,000	4,000	-	0.0%	
OTHER MATERIALS	363,123	467,276	552,924	595,000	42,076	7.6%	
OTHER SERVICES	1,336	1,612	1,414	1,414	-	0.0%	
TOTAL	\$ 1,836,318	\$ 1,876,433	\$ 2,171,963	\$ 2,195,140	\$ 23,177	1.1%	

FY23 Goals and Initiatives:

IV. Finance and Management

- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - Continue to cost effectively maintain the Authority's fleet of vehicles and equipment.
- **Goal #13 – Maintain a Safe Workforce:**
 - Continue to Purchase vehicles with additional safety lighting to enhance driver/vehicle visibility and added blue tooth technology to all vehicles.
 - Purchase vehicles with current driver safety technology, including collision avoidance and lane departure warning.

V. Environmental Sustainability

- **Goal #15 – Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets:**
 - Integrate more alternative fueled vehicles into the Authority's fleet. Continue to install idle reduction devices in all Authority vehicles to comply with state and federal regulations and also purchase more fuel efficient vehicles.
 - Oversee the installation of additional electric vehicle charging stations at MWRA facilities.

FY22 Year-End Accomplishments:

- Developed specifications for new replacement vehicles and equipment. The majority of the vehicles and equipment will utilize alternative fuel, consistent with the Authority's goal of purchasing environmentally friendly products.

- Completed the fuel management system installation at Chelsea and Deer Island. Continue to work with MIS and Engineering staff on the purchase and implementation of a new fuel management system at Southboro headquarters, Lonergan Intake, and the Weston facility.
- Spec'd and purchased 5 additional electric vehicles for the Authority.
- Installed additional electric vehicle charging stations at Chelsea and Deer Island.
- Electric charging stations installed at CWTP, Southboro, and Clinton Treatment Facility.

Budget Highlights:

The FY23 Budget is \$2.2 million, an increase of \$23,000 or 1.1% as compared to the FY22 Budget.

- \$912,000 for **Wages & Salaries**, a decrease of \$5,000 or 0.5% as compared to the FY22 Budget, primarily for wage increases associated with collective bargaining agreements offset by retirements and backfilling at a lower rate. The FY23 Budget funds 12 FTEs, the same as the FY22 Budget.
- \$665,000 for **Ongoing Maintenance**, 2.6% or \$18,000 below the FY22 Budget.
- \$595,000 for **Other Materials**, \$42,000 or 7.6% above the FY22 Budget reflecting higher projected fuel prices for vehicles. The FY23 Budget funds vehicle/equipment fueling which is based on historical fuel usage and current pricing. Fleet Services procures bulk fuels from state contracts while continuing to meet all governmental alternative fuel directives. It should be noted that the volatility of fuel pricing could impact this line item.



New Chevy Volt at Charging Station

HUMAN RESOURCES

The **Human Resources Department** is responsible for the overall management of MWRA employees. The Department enables employees to contribute successfully to MWRA’s goals and objectives through effective recruitment, labor management, training, and employee benefits management.

FY23 Final Current Expense Budget							
HUMAN RESOURCES							
LINE ITEM	FY20	FY21	FY22	FY23	Change		
	Actuals	Actuals	Final Budget	Final Budget	FY23 vs. FY22		
WAGES & SALARIES	\$ 1,586,251	\$ 1,652,825	\$ 1,738,421	\$ 1,836,731	\$ 98,310	5.7%	
OVERTIME	132	-	-	-	-	-	
FRINGE BENEFITS	20,742,800	21,594,466	23,133,716	23,842,601	708,885	3.1%	
WORKERS' COMPENSATION	1,862,942	1,842,853	2,614,159	2,519,751	(94,408)	-3.6%	
MAINTENANCE	99	96	-	-	-	-	
TRAINING & MEETINGS	5,564	-	3,963	3,963	-	0.0%	
PROFESSIONAL SERVICES	451,820	820,786	740,790	640,790	(100,000)	-13.5%	
OTHER MATERIALS	6,042	12,274	19,550	19,650	100	0.5%	
OTHER SERVICES	11,380	25,481	37,142	53,386	16,244	43.7%	
TOTAL	\$ 24,667,030	\$ 25,948,781	\$ 28,287,741	\$ 28,916,872	\$ 629,131	2.2%	

The Human Resources Department is comprised of 3 units:

- The **Employment, Compensation, Benefits and HRIS Unit** coordinates and oversees all external recruitment and selection activities including hiring, lateral transfers, and promotions to meet the business needs of MWRA; develops and coordinates MWRA compensation and benefits strategies and programs; and ensures the proper processing and recording of personnel actions. The compensation unit also ensures that all MWRA employees possess the necessary licenses and certifications required for their positions. This unit is also responsible for managing workers’ compensation claims.
- The **Labor Relations Unit** is responsible for fulfilling MWRA's collective bargaining and contract administration obligations under Massachusetts' public sector collective bargaining law.
- The **Training Unit** develops, coordinates, delivers, and evaluates MWRA technical and professional development training programs and other programs designed to improve employee knowledge, skills, productivity, and the quality of workplace interaction and safety.

In addition, the Human Resources Department includes the Centralized Fringe Benefits cost center, which carries the budget for fringe benefits for all MWRA employees as well as for mandatory payments for unemployment expenses and Medicare.

**FY23 Final Current Expense Budget
HUMAN RESOURCES by Unit**

UNIT	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
EMPLOYEE/COMP/BEN	\$ 1,012,272	\$ 1,600,197	\$ 1,187,967	\$ 1,235,969	\$ 48,002	4.0%
LABOR RELATIONS	408,605	352,570	558,451	525,712	(32,739)	-5.9%
TRAINING	596,166	495,623	711,448	710,839	(609)	-0.1%
CENTRALIZED FRINGE BENEFITS	22,649,987	23,500,391	25,829,875	26,444,352	614,477	2.4%
TOTAL	\$ 24,667,030	\$ 25,948,781	\$ 28,287,741	\$ 28,916,872	\$ 629,131	2.2%

FY22 Year-End Accomplishments:

- Successfully monitored employees impacted by COVID-19 with the goal of preventing greater exposure within the Authority while supporting the needs of employees reporting illness for themselves or their families.
- Successfully tracked and managed the implementation of the MWRA COVID-19 vaccination mandate including the review and approval process for exemptions to the vaccine based on medical conditions or sincerely held religious beliefs.
- Working with the Law Division, developed and managed the leaves provided for under the Families First Coronavirus Response Act (federal) and Emergency Paid Sick Leave Law (MA). This program allowed for up to 10 days of paid time off under certain conditions and expanded the definition of FMLA to include oversight for children whose schools were fully remote.
- Continue to manage employee leaves for their own illness or birth/adoption under the Massachusetts Paid Family Medical Leave law.
- Continued to fill positions with qualified applicants using electronic processes and virtual interviews.
- Participated in the Diversity, Equity, and Inclusion (DEI) Workgroup to promote diversity and completed the procurement process to provide DEI training to all employees.
- Developed negotiated and implemented a new Telework Policy.
- Settled the contracts for all five bargaining units.
- Reviewed employee requests for accommodations for employees at higher risk due to the Coronavirus.
- Continued to support the agency's efforts in implementing succession planning activities due to an increase in retirements anticipated over the next several years.
- Continued to offer supervisory, professional, and career development training programs necessary to support succession planning initiatives.

- Developed additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- Reduced future MWRA exposure on Workers' Compensation cases through aggressive claims management.
- Completed the procurement process for dental insurance.
- Investigated complaints of violations of MWRA policies and Code of Conduct as necessary.
- Successfully maintained harmonious relationships with the unions while negotiating new/revised work rules, benefits and other conditions relating to employment during the COVID-19 pandemic.
- Offered a variety of professional and technical training to MWRA employees including Confined Space Entry, Hoisting License Mandatory Refresher Training, Wastewater & Water Operator Exam Prep, OSHA 40-Hour Hazardous Waste Operations and Response (HAZWOPER) training, OSHA 10-Hour Construction Safety, OSHA 8-Hour Annual Refresher, created learning paths on LinkedIn Learning specific to MWRA skills needs, Supervisory Development, RCRA/DOT Safety, Work-zone Safety, Lockout/Tagout, Electrical Safety, Electric and Plumbing Code Review classes, Keolis & MBTA Track Safety, and a number of training contact hours (TCH) classes for Water and Wastewater License holders.
- Continued efforts to promote a safe and inclusive work environment through an online Harassment Prevention Training program.
- Worked with various vendors to provide training for the Nut Island HVA and Odor Control Project.
- Continued work to bring back in-person training to better meet the educational needs of staff, while maintaining applicable safety standards.
- Worked with MIS to begin implementation of a new Learning Management System in conjunction with the MIS department that will provide better tracking ability, course scheduling, and course delivery.
- Held an in-person ceremony and distributed Service Award certificates and plaques to employees meeting service milestones.
- Completed preliminary review and analysis of compensation for titles in all bargaining units to ensure compliance with the Massachusetts Equal Pay Act.

Budget Highlights:

The FY23 Budget is \$28.9 million, an increase of \$629,000 or 2.2% as compared to the FY22 Budget.

- \$1.8 million for **Wages and Salaries**, an increase of \$98,000 or 5.7%, as compared to the FY22 Budget,

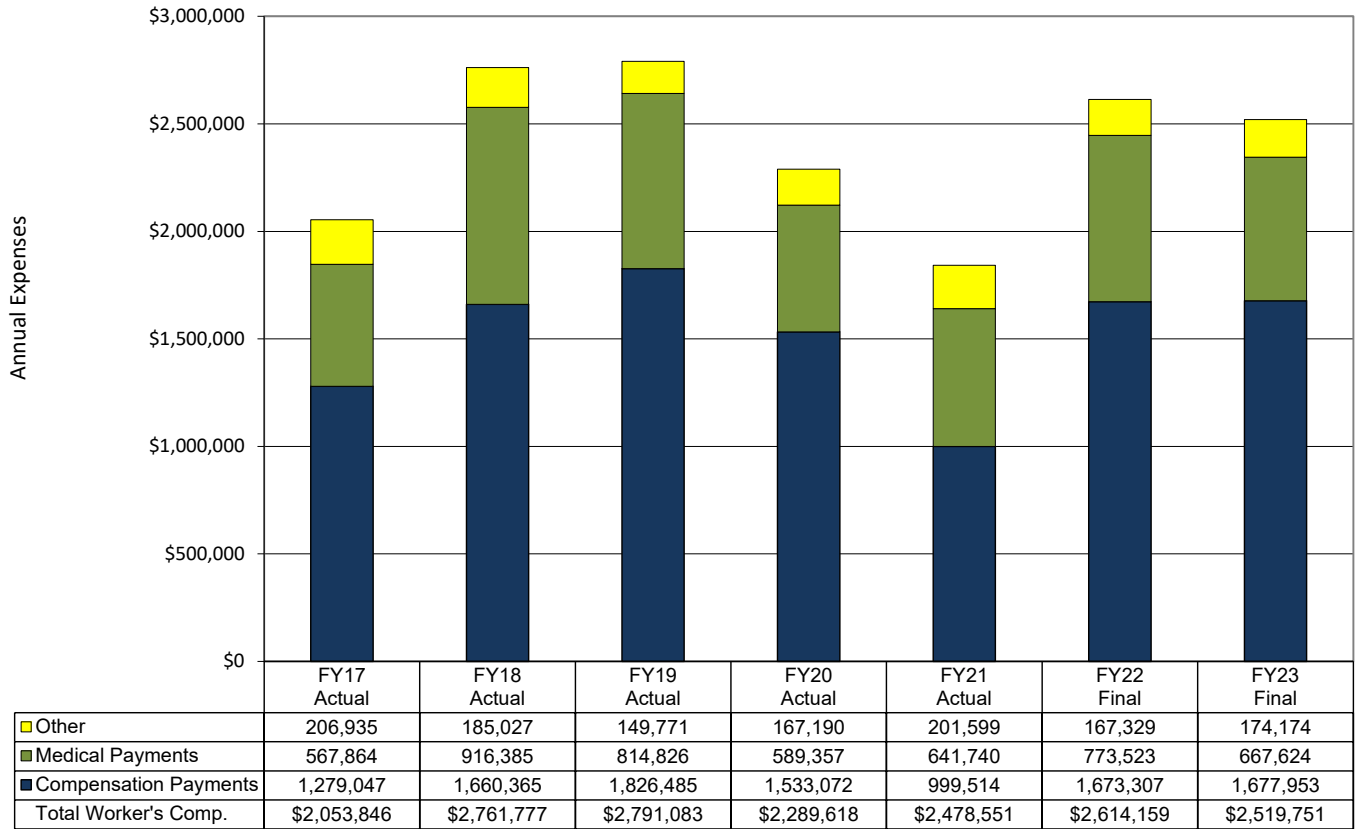
the increase reflect the collective bargaining agreements. The FY23 Budget includes funding for 16.8 FTEs, the same as the FY22 Budget.

- \$23.8 million for **Fringe Benefits**, an increase of \$709,000 or 3.1%, as compared to the FY22 Budget mainly for increases in health insurance costs. The FY23 Budget includes \$20.5 million for health insurance, \$1.6 million for Medicare, \$1.1 million for dental insurance, \$458,000 for the Massachusetts Paid Family and Medical Leave (PFML) law, \$140,000 for unemployment insurance, and \$55,000 for tuition reimbursement.

Human Resources Fringe Benefits				
Line Item	FY21 Actuals	FY22 Budget	FY23 Budget	Difference
Health Insurance	\$ 18,398,183	\$ 19,746,494	\$ 20,484,396	\$ 737,902
Dental Insurance	1,153,001	1,164,150	1,115,162	(48,988)
Unemployment Insuranc	134,988	130,000	140,000	10,000
PFML	404,159	448,962	458,403	9,441
Medicare	1,472,760	1,589,110	1,589,640	530
Tuition Reimbursement	31,376	55,000	55,000	-
Total Fringe Benefits	\$21,594,467	\$23,133,716	\$23,842,601	\$708,885

- \$2.5 million for **Workers' Compensation**, a decrease of \$94,000 or 3.6%, as compared to the FY22 Budget, based on historical spending. The Workers' Compensation expenses can be difficult to predict and the budget is based on an average of the prior three years of expenditures excluding reserve adjustments. Below is a graph showing actual expenditures beginning in FY17 and budgets for fiscal years FY22 and FY23. The Human Resources Department is responsible for the management of this program and the coordination with the third-party administrator and legal counsel.

Worker's Compensation Expenses
FY17 - FY21 Actual & FY22 & FY23 CEB



\$641,000 for **Professional Services**, a decrease of \$100,000 or 13.5% as compared to the FY22 Budget. The major budgeted items for FY23 include \$364,000 for Professional Development and Technical Training, \$135,000 for Workers' Compensation Claims Administration and Legal Services, \$47,000 for Arbitrators and Arbitration Expenses, \$35,000 for Medical Evaluation Services, and \$27,000 for the Employee Assistance Program. The \$100,000 for Pay Equity Consultant included in the FY22 Budget has been excluded from the FY23 Budget.

MANAGEMENT INFORMATION SYSTEM

The **MIS Department** provides MWRA with the secure information processing services necessary to carry out the Authority’s mission. Applications in use range from financial to operational, and enhance MWRA’s ability to access data and improve internal controls, reporting, and management performance. In addition to computing and telephone systems, the department also provides library and records management services. The MIS department supports all MWRA staff, including those at the Charlestown Navy Yard (CNY), Chelsea Facility, Deer Island Wastewater Treatment Plant, Southborough Facility, Carroll Water Treatment Plant, and other remote sites.

FY23 Final Current Expense Budget						
MANAGEMENT INFORMATION SYSTEM						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 5,683,586	\$ 6,004,560	\$ 6,721,617	\$ 6,694,777	\$ (26,840)	-0.4%
OVERTIME	2,764	947	12,000	12,000	-	0.0%
FRINGE BENEFITS	60	-	-	-	-	-
MAINTENANCE	3,615,304	4,012,048	4,939,858	5,245,648	305,790	6.2%
TRAINING & MEETINGS	75,834	71,276	215,894	221,328	5,434	2.5%
PROFESSIONAL SERVICES	941,501	775,041	1,937,730	1,088,338	(849,392)	-43.8%
OTHER MATERIALS	757,161	970,910	542,617	597,657	55,040	10.1%
OTHER SERVICES	1,148,393	1,384,153	1,396,388	1,573,908	177,520	12.7%
TOTAL	\$ 12,224,603	\$ 13,218,935	\$ 15,766,104	\$ 15,433,656	\$ (332,448)	-2.1%

FY23 Goals and Initiatives:

IV. Finance and Management

- **Goal #13 – Leverage Information Technology to Improve Organizational Effectiveness:**
 - o Deliver Information Technology (IT) services and solutions efficiently and effectively.
 - o Provide IT solutions to streamline work processes by leveraging the use of existing or emerging technologies.
 - o Obtain feedback from users on satisfaction levels and desired new services and implement changes accordingly.
 - o Maintain current technology hardware, software, and network infrastructures.
 - o Maintain a secure technological environment by ensuring the confidentiality, availability, and integrity of MWRA data.
 - o Enhance Information Technology workforce capabilities through new certifications and license requirements.

The MIS Department divides the IT services that it provides into 4 programs. A description of each program and the specific initiatives in each are detailed below:

Information Technology Management Program

This program is intended to improve the Information Technology (IT) organization and the oversight processes for selecting, implementing and operating IT solutions throughout the MWRA.

Complete the transition of application and operational responsibilities to the appropriate MIS teams, matching the new organizational structure for the department.

- ***Project Portfolio Management:*** Continue the adoption of the IT project management solution and possibly integrate them with the ECM Management Dashboard and the development of an executive dashboard.

Application Improvement Program Initiatives

This program, along with associated projects, continue MWRA's efforts to update and enhance a wide range of applications to improve efficiencies of business processes and effectiveness of the staff while ensuring the availability and integrity of the MWRA's data resources.

Administration and Finance Initiatives

- ***Electronic Document Management:*** The MWRA has procured a Content Management System that will support e-Construction processes as well as design (e-Engineering) processes including corresponding Procurement and Contract Management processes (e-Procurement) and corresponding Document and Records Management processes. The content management system will improve communication and make design and construction management practices more efficient, replace the legacy document/records management system and provide the infrastructure for expansion and integrations with other systems. Configuration of this system is underway.
- ***Archiving & Purge and e-Discovery:*** Leveraging existing vendor relationships and institutional knowledge gained by its use, staff are implementing the archiving features within existing backup technology. This solution will eliminate the need for personal folders (PST) and streamline the e-discovery process.
- ***Website Replacement/Upgrade:*** The current website www.mwra.com and Intranet (Pipeline) infrastructure includes nonstandard MWRA IT components impacting support and maintenance. This project will replace the existing websites leveraging current technologies, adoption of standards, and enhance the user/visitor experience.
- ***Enterprise Resource Planning (ERP) System Upgrades:*** The current software version of the ERP system is approaching end of support by the vendor. An independent assessment of the existing ERP system was conducted Q1 FY20 to assist staff in selecting the most cost effective and efficient approach to addressing this. The assessment recommended that MWRA upgrade the ERP system to the latest supported on-premise version of the software. However during the initial RFQ/P process it was identified that the MWRA requirements could only be met with a migration to the Software as a Service option. A new RFP/Q is underway and this initiative will be accomplished over multiple fiscal years.

- **Lawson Contracts Management:** Develop a reporting mechanism for archived contracts from the legacy system.

Compliance Management Initiatives

- **Oracle Discoverer Migration to SAP Business Objects (BO):** Following a successful proof of concept, the remaining 600-700 Oracle Discoverer Workbooks are to be migrated to SAP Business Objects.
- **Laboratory Information Management (LIMS):** Upgrade current Laboratory Information Management system to latest stable version available.

System Integration and Data Warehousing Initiatives

- **ESRI GIS Infrastructure:** Procurement is underway for services to upgrade the existing GIS environment along with implementation of recommended best practices.
- **Enterprise Data Management:** Develop an Authority-wide data architecture that maximizes benefits from data capture and ongoing maintenance. Implement Authority-wide data modeling and management, to standardize data access across multiple systems for a consistent view of the Authority across all business units.

Operations Management Initiatives

- **Maximo/Lawson Interface Enhancements:** The MWRA utilizes a custom interface to synchronize the Maximo Enterprise Asset Management (EAM) and Infor/Lawson Enterprise Resource Planning (ERP) systems. The interface has eighteen “touch points” where Infor/Lawson is the system of record for the majority of the data. The Maximo Integration Framework (MIF) is the primary controlling element for data flow between the two systems with supporting functions coded in Infor/Lawson. The objective of this project is to build on the existing interface by streamlining process flows, enhancing functionality, and adding data validation for optimal performance and transaction integrity.
- **WQRS/AQUARIUS:** WQRS/AQUARIUS application upgrade and enhancements will continue in FY23 and will wrap up by Q1 FY23.
- **OMMS Application refresh:** MWRA’s existing OMMS application is built using 20 year old technology. Redesign of the application is underway and completion is anticipated in Q2 FY23.
- **Upgrade of TISCOR (Inspect ‘N’ Track) application:** Existing MWRA’s TISCOR (Inspect ‘N’ Track) application is on unsupported hardware and OS. The project is currently underway and is estimated to finish Q2 FY23.

Information Security Program Initiatives

This program focuses on the strength, resiliency, and sustainability of MWRA’s cyber security practices for its data and computing-related assets. The program also monitors for and protects against penetrations, intrusions, and malicious actions from both internal and external threats. The projects associated with this

program continue to assess, implement, and improve MWRA's information security protections, including recommendations to improve each IT system's security profile. The following are the FY23 projects under this program:

- ***American Water Infrastructure Act (AWIA):*** Congress imposed new requirements for assessing and responding to water system vulnerabilities in the AWIA. AWIA requires that community drinking water systems develop or update risk assessments and emergency response plans and certify to EPA that they have been completed or updated by specific deadlines. Under AWIA, systems must now recertify that they have reviewed and updated their Risk and Resiliency Assessments (RRA) every five years. The initial assessment was completed in March 2020 and responses to the assessment will continue in FY23.
- ***Managed Security Services Provider:*** The existing Managed Security Services contract and associated security infrastructure components expires in December of 2022. This initiative is for the next managed security services contract..
- ***Load Balancer Appliance Replacement:*** The current appliance (Netscaler) used for load balancing secure access to MWRA network resources is reaching End of Life (EOL). A replacement must be procured and implemented to ensure the MWRA has continued protection.
- ***Multi-Factor Authentication:*** Multi-factor authentication (MFA) is a security enhancement that requires you to present two credentials for authentication. MFA is also a recommended best practice and supports the NIST Cybersecurity framework. MFA was implemented for all remote users in FY22. Implementation of two factor authentication technologies will continue for key IT services.
- ***Wireless Network Expansion:*** As MWRA becomes a more mobile workforce, the wireless infrastructure will be expanded to support staff as they move throughout facilities and use new collaboration spaces..

Technology Infrastructure Improvement Program

The MWRA IT department currently operates 1,060 desktops, 392 laptops, 400+virtual servers, 183 tablets, 286 Smartphones, 19 wide area network circuits and almost 4 petabytes (PB) of data. This program will assess and implement consolidated and optimized versions of these core IT infrastructure elements as utility-like services and commodities. Furthermore, it will look to improve and optimize data management practices including: storage, backup, and archive and purge processes and technologies. The following projects are currently under way:

- ***Disaster Recovery:*** Build out of a Disaster Recovery site providing the ability to restore business data and applications should the Chelsea Data Center, servers or infrastructure get damaged or destroyed.
- ***Telephone System Replacement:*** The current telephone system, Mitel PBXs, has exceeded end of life and is unsupported by the vendor. Much of the current hardware cannot be replaced unless using refurbished equipment, as it is no longer being manufactured. MWRA is not able to upgrade the software or purchase new features because the software is no longer supported. Design and configuration of the new telephone system has completed and rollout will continue in FY23.

- ***Edge & Core Switch Hardware Refresh:*** The current hardware is approaching end of life and will require replacement in order to maintain support. This initiative is being rolled out in multiple phases. Procurements for the initial phase have been awarded; however the processor chip shortage is impacting delivery lead times. Chelsea switches have been received, installation of these switches will coincide with facility updates. The hardware for remaining sites is expected in FY23.
- ***Instrumentation and Controls of IT:*** Plan for the implementation of additional tools to monitor and alert on the infrastructure and application health.
- ***Cabling:*** Replacement of older cabling in six facilities to support the telephone system replacement is in progress.
- ***Network Convergence:*** Explore new technologies for future implementation considerations including new networking technologies for upcoming network upgrade, web and mobile platforms for business and information services.
- ***Future Workplace:*** Explore new technologies and hardware platforms to improve efficiencies in business process supporting the future workplace initiative with the goal of providing a single streamlined user experience regardless of location, support for remote work, shared work, and collaboration spaces.
- ***SAN Storage:*** Implement recommended IT infrastructure changes that include enhancements to capacity and performance of networking and communications, storage, backups, server consolidation, disaster recovery, and integration approach and tools.
- ***Digital Message Boards:*** In response to COVID-19, the MWRA implemented a pilot digital message board in the Chelsea Maintenance facility to support timely and effective communication to all MWRA staff. This initiative will continue at eight additional MWRA facility locations.
- ***Deer Island Cabling and Switch Replacement:*** In addition to edge switch replacements on Deer Island, network cabling is also in need of an upgrade. Design specifications are being developed.
- ***Conference Room Media Upgrades:*** In support of the MWRA space planning efforts and the use of Webex for video conferences, additional media capabilities will be added to some conference rooms.

FY22 Year-End Accomplishments:

- ***MIS Reorganization:*** MIS has completed the organizational transformation recommended in the 5-year Strategic Plan. The transition of responsibilities for all applications will continue during FY23.
- ***Visitor Management:*** Staff evaluated applications to track MWRA visitors at security guard managed facilities to support ongoing visitor management. An application was selected and implementation is underway.

- **Lawson Contracts Management:** All open contracts have been migrated to the Lawson ERP Contract application
- **Electronic Document Management:** Vendor was selected and the project began in the spring. Infrastructure is being designed and built out to allow software installation and configuration. Data migration analysis for the unsupported InfoStar records management system is underway as well as the configuration design for selected engineering and design processes.
- **PIMS/WebSMR CROMERR:** The application was put into production in FY22.
- **PIMS PowerBuilder Upgrade:** MWRA started a new initiative in FY21 to upgrade existing PIMS application client layer built based on PowerBuilder technology. The current PIMS client PowerBuilder version is unsupported and does not support Windows 2019. This project was completed in FY22.
- **HOML Upgrade:** Update and re-platform the Harbor Outfall Monitoring and Loading application onto the latest stable version of IBM Websphere running on Windows 2019. This project was completed in FY22.
- **Web Filter Technology Refresh:** The web filtering and security gateway solution was replaced in FY22.
- **Single Sign-on:** Single Sign-on is categorized as Identify and Access Management technologies which are typically implemented for access to on-premise and cloud-based software solutions. This initiative streamlines the authentication process for staff to access these applications and will support upcoming MWRA upgrades and improvements like Webex, the new phone system and Infor CloudSuite.
- **Instrumentation and Controls of IT:** Traditional antivirus solution has been replaced with Endpoint Detection and Response services utilizing CrowdStrike.
- **Cabling:** Network cabling was upgraded at all sites except DITP.
- **Digital Message Boards:** Digital signage has been added at two locations on DITP and one at CWTP.
- **COVID Vaccination Attestation Applications:** Deployment of a custom web application that allows MWRA employees to submit vaccination status.
- **Learning Management System:** A Learning Management System (LMS) was procured from Infor/Lawson that will be used to manage all training including on-line training developed in house and from 3rd Parties including LinkedIn Learning. Installation and configuration was completed in FY22.

Budget Highlights:

The FY23 Budget is \$15.4 million, a decrease of \$332,000 million or 2.1% as compared to the FY22 Budget.

- \$6.7 million for Wages and Salaries, a decrease of \$27,000 or 0.4% as compared to the FY22 Budget. The drop in Wages and Salaries reflects backfilling positions at lower wage rate partially offset by wage

increases associated with collective bargaining agreements in addition to salary adjustments associated with position changes/upgrades within the department. The FY23 Budget includes funding for 57 FTEs.

- \$5.2 million for **Ongoing Maintenance**, an increase of \$306,000 or 6.2%, as compared to the FY22 Budget. The includes \$4.1 million for computer licenses and upgrades for Lawson and Maximo of \$540,000 and \$407,000, respectively.
- \$1.1 million for **Professional Services**, a decrease of \$849,000 or 43.8% as compared to the FY22 Budget. Professional services to augment MIS staff are needed for upgrades that include Portia, MHC, Ivanti, Maximo, Canto Cumulus, Oracle, OSIsoft, and Aruba wireless. Custom Development projects include Complaints Database, technical reference model, cloud security, and cyber security assessments. The largest component of this line item is \$1.0 million for computer consultants which dropped \$849,000 over the prior year's budget. Drop reflects telework stabilization and less need for computer consultants as projects are completed.
- \$598,000 for **Other Materials**, an increase of \$55,000 or 10.1%, as compared to the FY22 Budget. The majority of these fund are to replace aging servers, printers, plotters and mobile devices. Equipment to enhance wireless connectivity at various MWRA sites will also be purchased.
- \$1.6 million for **Other Services**, an increase of \$178,000 or 12.7%, as compared to the FY22 Budget. Funding of \$1.3 million is for facility and security data lines, and network upgrades. Remaining funds are for the lease of Automated Vehicle Location (AVL) services.

PROCUREMENT

The **Procurement Department** provides timely and high quality services to all MWRA Divisions to enable MWRA programs to meet their public, production and schedule responsibilities. The Procurement Department is responsible for procuring materials, equipment, supplies, construction, professional, and non-professional services in a timely, efficient, and openly competitive process in accordance with MWRA applicable law and policies and procedures, including those related to meeting affirmative action goals. The Department also maintains a centralized, efficient, and cost-effective management of spare parts and operating supplies inventory.

FY23 Final Current Expense Budget						
PROCUREMENT						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 4,058,008	\$ 4,320,117	\$ 4,349,288	\$ 4,156,941	\$ (192,347)	-4.4%
OVERTIME	20,058	20,565	23,471	23,471	-	0.0%
FRINGE BENEFITS	519	572	300	300	-	0.0%
MAINTENANCE	491,411	493,492	-	-	-	-
TRAINING & MEETINGS	5,850	-	10,751	10,751	-	0.0%
OTHER MATERIALS	116,803	68,232	144,000	112,000	(32,000)	-22.2%
OTHER SERVICES	62,337	69,594	72,416	72,416	-	0.0%
TOTAL	\$ 4,754,986	\$ 4,972,572	\$ 4,600,226	\$ 4,375,879	\$ (224,347)	-4.9%

The **Procurement Department** includes three operational units. The **Purchasing Unit** operates a competitive purchasing system for the procurement of materials, goods, and non-professional services in accordance with MWRA policies and procedures. The **Contract Management Unit** reviews, drafts, and negotiates contracts, amendments, and change orders for all professional, non-professional, and construction services contracts. Staff directs the bid, review, and selection process, and maintains a contracts database. The **Materials Management Unit** manages an Authority-wide inventory control and management system for better control, storage, distribution, and accounting of MWRA's inventory. The unit manages three regional warehouses/distribution centers that support all MWRA activities.

FY23 Goals & Initiatives:

IV. Finance & Management

- **Goal #11 - Ensure Financial Sustainability, Integrity, and Transparency:**
 - o Continue to conduct strategic energy procurements for both the purchase of energy and sale of energy credits generated from MWRA energy production.
- **Goal #12 – Promote Effective Business Operations and Resource Management:**
 - o Maintain and expand recycling program in order to contain MWRA operating costs by removing recyclable materials from the waste stream.
 - o Review and update policies and procedures for procurement of professional services, non-professional services and goods and materials.
 - o Provide training to MWRA staff on various procurement policies and procedures including purchasing of goods and materials and consultant selection committee service.
 - o Update construction contract documents.

FY22 Year-End Accomplishments:

- Awarded the following Major Capital Improvement Program Contracts and Other Contracts necessary for Operations and Maintenance through Q4, FY22:
 - FIRE ALARM SYSTEMS SERVICES CENTRAL & WESTERN, MA
 - SOMERVILLE MWRA 205 TIDE GATE REPLACEMENT
 - JJCWTP SCADA IMPROVEMENTS
 - OVERHEAD DOOR MAINTENANCE VARIOUS FACILITIES
 - FIRE PROTECTION SPRINKLER SYSTEM SERVICE
 - WACHUSETT DAM LGH WINDOW & DOOR REPLACEMENT, CLINTON
 - BOILER & WATER HEATER SERVICE VARIOUS LOCATIONS
 - MARLBOROUGH EMERGENCY PUMP STATION CONNECTION
 - PRISON POINT CSO FACILITY IMPROVEMENTS
 - REHAB OF SECTION 23, 24, 47 WATER MAINS BOSTON & NEWTON
 - ROOF REPLACEMENT - SPRING, LEXINGTON, BELMONT PUMP STATIONS
 - ELEVATOR MAINTENANCE & REPAIR SERVICES VARIOUS FACILITIES
 - WACHUSETT DAM BASTION IMPROVEMENTS
 - INFLUENT SCREW PUMP REPLACEMENT, PHASE 1
 - CARROLL WTP CHEMICAL FEED SYSTEM IMPROVEMENTS
 - DITP ODOR CONTROL DAMPERS REPLACEMENT
 - HULTMAN AQUEDUCT TREE CLEARING
 - SECTION 4 WALNUT STREET BRIDGE PIPE RES & REPLACEMENT
 - WIND TURBINE MAINTENANCE
 - HVAC SYSTEM MAINTENANCE
 - AIR COMPRESSOR MAINTENANCE & REPAIR SERVICES VARIOUS LOCATIONS
 - NEH PRESSURE ZONE IMPROVEMENTS - SECTION 63
 - CATHODIC PROTECTION SYSTEM TESTING
 - PURCHASE & SUPPLY OF ELECTRIC POWER
 - NEH PRESSURE ZONE IMPROVEMENTS
 - QUABBIN ADMINISTRATION COMPLEX WATER SUPPLY CONSTRUCTION
 - SOUTHBOROUGH HQ ELECTRICAL SYSTEM UPGRADES
 - KEY PROJECT WORK CREWS FOR DEER ISLAND AND NUT ISLAND
 - PHASE 11 MANHOLE REHABILITATION
 - SECTION 101 WALTHAM PIPELINE EXTENSION
 - DITP PERSONNEL FLOAT REHABILITATION
 - MWRA OFFICE CONSOLIDATION
 - REMOTE HEADWORKS SHAFT ACCESS IMPROVEMENTS
 - 6,721 PURCHASE ORDERS IN FY22 FOR A TOTAL OF \$ 61,905,404
 - ONLINE VEHICLE AND EQUIPMENT AUCTIONS RESULTED IN REVENUE OF \$575,794
 - RECYCLED 12.14 TONS OF BATTERIES, 14.62 TONS OF PAPER AND 220.39 TONS OF SCRAP METAL, GENERATING \$74,045 IN REVENUE.

Budget Highlights:

The FY23 Budget is \$4.4 million, a decrease of \$224,000 or 4.9% as compared to the FY22 Budget.

- \$4.2 million for **Wages and Salaries**, a decrease of \$192,000 or 4.4% as compared to the FY22 Budget. The drop in Wages and Salaries reflects backfilling positions at lower wage rate partially offset by wage increases associated with collective bargaining agreements. The FY23 Budget funds 43.9 FTEs, matching the FY22 Budget.

OCCUPATIONAL HEALTH AND SAFETY

The **Occupational Health and Safety** Department manages MWRA's compliance with Massachusetts Department of Labor Standards (state) and federal rules and regulations and provides programs, guidance and recommendations in areas of employee safety and health. The department oversees a program for regulatory compliance with state standards and works closely with other authority safety and health staff to communicate, implement, monitor and track safety and health regulatory compliance. OHS leads the agency's activities in a proactive way to minimize health issues and prevent situations that could create workers' compensation cases.

FY23 Final Current Expense Budget						
OCCUPATIONAL HEALTH AND SAFETY						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 884,044	\$ 694,224	\$ 1,055,242	\$ 1,110,213	\$ 54,971	5.2%
OVERTIME	86,060	48,526	46,210	46,210	-	0.0%
FRINGE BENEFITS	940	565	475	475	-	0.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
MAINTENANCE	1,770	13,116	-	-	-	-
TRAINING & MEETINGS	145	-	1,500	1,500	-	0.0%
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	21,478	35,420	31,200	31,200	-	0.0%
OTHER SERVICES	46,690	50,123	177,166	178,766	1,600	0.9%
TOTAL	\$ 1,041,127	\$ 841,974	\$ 1,311,793	\$ 1,368,364	\$ 56,571	4.3%

FY23 Goals and Initiatives:

V. Diversity, Equity, Inclusion & Workforce Development

- **Goal #16 – Ensure a safe and healthful work place for all employees, contractors, and visitors free of recognized hazards:**
 - o Continue to find cost effective measures to provide the Authority with appropriate safety equipment.
 - o Review, update, and develop safety programs for the Authority to comply with DLS standards and newly adopted Massachusetts State Plan approved by OSHA. Communicate the new programs to the workforce to ensure compliance to safety and health requirements.
 - o Conduct facility (50+) worksite safety assessments and inspections (i.e., self-audits) across the Authority. During this FY, the goal is to complete at a minimum 85% of facilities identified for inspection. The self-audits will be utilized to ensure that the workplace conditions conform to DLS standards and do not present known hazards to the workforce.
 - o Continue to review training needs of the workforce, in conjunction with the training department, to identify any possible gaps within current training offerings or new training requirements due to DLS standards.

FY22 Year-End Accomplishments:

- Collaborated with training department to identify safety-training deficiencies, establishing a training

matrix as a training baseline with new learning management system.

- Assessed potential hazards and controls through workplace inspections, walk-throughs, and surveillance/observations of work practices.
- Investigated incidents involving the safety and health of employees, visitors, vendors and contractors.
- Maintained and evaluated injury and illness records in accordance with OSHA standards.
- Utilized safety audit software to assist in performing safety inspections of MWRA facilities.

Budget Highlights:

The FY23 Budget is \$1.4 million which is \$57,000 or 4.3% above the FY22 Budget. The Occupational Health and Safety department was established in FY20 when it was spun out of Operations.

- \$1.1 million for **Wages & Salaries**, an increase of \$55,000 or 5.2% over FY22 primarily due to wage increases associated with collective bargaining agreements. OHS is staffed by 10 FTE's in FY23, matching the FY22 Budget.
- \$46,000 for **Overtime**, to respond to as need incidents.
- \$31,000 for **Other Materials**, matching the FY22 Budget.
- \$179,000 for **Other Services**, an increase of \$2,000 or 0.9% for services to maintain Authority wide safety equipment like winches, fire extinguishers, respirators, AEDs, and first aid cabinets.



Finance Division
Budget

FINANCE DIVISION

Finance

Director's Office
Rates and Budget
Treasury
Controller
Risk Management

The **Finance Division** is responsible for managing the finance functions of the Authority. It performs a multitude of functions that support the daily operations and ensure the implementation of the Authority's long term goals and strategies. The Finance Division also ensures that a variety of fiscal management systems are in place to monitor and control the Current Expense Budget (CEB) and Capital Improvement Program (CIP).

FY23 Final Current Expense Budget FINANCE DIVISION						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 3,483,848	\$ 3,681,936	\$ 3,955,030	\$ 5,317,532	\$ 1,362,502	34.4%
OVERTIME	183	-	-	-	-	-
TRAINING & MEETINGS	984	1,225	3,000	3,000	-	0.0%
PROFESSIONAL SERVICES	480,441	639,442	658,885	704,505	45,620	6.9%
OTHER MATERIALS	5,341	12,547	11,100	11,300	200	1.8%
OTHER SERVICES	4,242	5,321	7,274	8,646	1,372	18.9%
TOTAL	\$ 3,975,039	\$ 4,340,471	\$ 4,635,289	\$ 6,044,983	\$ 1,409,694	30.4%

The Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management.

FY23 Final Current Expense Budget FINANCE by Department						
DEPARTMENT	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
DIR OFFICE (FINANCE)	\$ 257,190	\$ 271,549	\$ 273,406	\$ 277,905	\$ 4,499	1.6%
CONTROLLER	1,514,349	1,505,617	1,680,141	1,615,208	(64,933)	-3.9%
RATES AND BUDGET	688,915	854,805	953,408	1,779,195	825,787	86.6%
TREASURY	948,029	1,129,135	1,163,742	1,787,635	623,893	53.6%
RISK MANAGEMENT	566,556	579,365	564,592	585,040	20,448	3.6%
TOTAL	\$ 3,975,039	\$ 4,340,471	\$ 4,635,289	\$ 6,044,983	\$ 1,409,694	30.4%

FY23 Goals & Initiatives:

The Finance Division supports the fourth key strategic priority set forth in the Authority's FY21 - FY25 Strategic Business Plan.

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Develop and implement long-term strategies to ensure assessment increases to MWRA's Continue assessment and evaluation of sustainable cost savings opportunities throughout the organization.
 - Continue to implement MWRA's approach to sustainable rate increases while accounting for the pandemic's effects on its communities' revenue.
 - Manage debt and investment portfolios to maximize prudent savings/returns in compliance with all applicable rules and regulations.
 - Continue diversification strategy to insulate against overexposure and promote resiliency to changing market conditions.
 - Maintain a system of internal controls to best protect the organization's resources.
 - Continue to employ budget and expense control practices to manage expenses.
 - Identify and pursue optimization in all aspects of MWRA financial operations.
 - Continue to conduct strategic energy procurements.
 - Continue to fund the pension fund at the annual required contribution level and to fund Other Post-Employment Benefits at a level that has a meaningful impact on the unfunded liability while being sustainable.

FY22 Year-End Accomplishments:

- Developed the FY23 Budget consistent with the FY22 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates helping to minimize debt service expenses.
- Prepared submission of MWRA's Comprehensive Annual Financial Report (CAFR) to the Government Finance Officers Association
- Held Budget Briefings with the MWRA Advisory Board to communicate FY23 departmental budgets and initiatives and how they relate to the MWRA's Master Plan.

Budget Highlights:

The FY23 Budget for the Finance Division is \$6.0 million, an increase of \$1.4 million or 30.4% as compared to the FY22 Budget.

- \$5.3 million for **Wages and Salaries**, an increase of \$1.4 million or 34.4% as compared to the FY22 Budget, the increase reflects a reorganization where fifteen (15) finance related positions were transferred from Operations to Finance, seven (7) positions to Treasury and (8) positions to Rates and Budget. Wage increases associated with collective bargaining agreements also contributed to the budget increase. The FY23 Budget funds fifty-two (52) FTEs, fifteen (15) more than the FY22 Budget.

FTEs FINANCE by Department		
DEPARTMENT	FY22 FTEs	FY23 FTEs
DIR OFFICE (FINANCE)	2.0	2.0
CONTROLLER	16.0	16.0
RATES AND BUDGET	8.0	16.0
TREASURY	7.0	14.0
RISK MANAGEMENT	4.0	4.0
TOTAL	37.0	52.0

FINANCE DIVISION DIRECTOR'S OFFICE

The **Finance Division Director's Office** oversees a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The Director's Office is responsible for the centralized financial functions of rates development, revenue collection, budgeting, capital financing, debt and investment management, accounting, payroll and accounts payable processing, and risk management. Additionally, the Director's Office ensures that transactions comply with all rules, regulations, Authority policies and procedures, and contract terms. The Director's Office manages the development and implementation of policies to uphold the efficient utilization of resources and control of all monies. The Director's Office provides advice and analysis to the Executive Director and the Board of Directors on all financial issues.

The Division's continuing challenge in FY22 will be maintaining an agency-wide focus on balancing competing needs to minimize assessment increases while ensuring the provision of critical MWRA services.

FY23 Final Current Expense Budget							
FINANCE DIVISION DIRECTOR'S OFFICE							
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22		
WAGES & SALARIES	\$ 250,054	\$ 259,296	\$ 258,554	\$ 263,053	\$ 4,499	1.7%	
OVERTIME	-	-	-	-	-	-	
TRAINING & MEETINGS	984	1,225	3,000	3,000	-	0.0%	
OTHER MATERIALS	4,574	10,714	10,100	10,100	-	0.0%	
OTHER SERVICES	1,578	314	1,752	1,752	-	0.0%	
TOTAL	\$ 257,190	\$ 271,549	\$ 273,406	\$ 277,905	\$ 4,499	1.6%	

FY23 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Manage and coordinate the Authority's finance functions.
 - Identify and pursue optimization in all aspects of MWRA's financial operations.
 - Continue to fund the Pension Fund at the annual required contribution level and to fund Other Post-Employment Benefits at a level that has a meaningful impact on the unfunded liability while being sustainable.
 - Guide and coordinate division activities to support MWRA's goals and objectives.
 - Continuously improve processes and performance for greater efficiency.
 - Develop and implement long-term strategies to ensure sustainable and predictable assessments and charges to our communities at both the water and wastewater utility level.

Budget Highlights:

The FY23 Budget is \$278,000, in increase of \$4,500 or 1.6% as compared to the FY22 Budget.

- \$263,000 for **Wages and Salaries**, an increase of \$4,500 or 1.7% as compared to the FY22 Budget, reflecting collective bargaining agreements. The FY23 Final Budget funds two FTEs, the same as in FY22.

RATES & BUDGET

The **Rates & Budget Department** provides the financial analysis that allows MWRA to translate its goals, and legal and financial commitments into cost-effective annual and multi-year programs and budgets. Department staff works closely with divisional staff to coordinate development of the long-term Capital Improvement Program (CIP) and monitor the progress of capital projects compared to projected schedules and budgeted spending. Staff also coordinates the development of MWRA’s annual Current Expense Budget (CEB) and monitors spending compared to the budget throughout the year. The Budget Department also manages the annual process of establishing water and sewer assessments to be paid by MWRA’s member communities and develops planning estimates of rate projections.

FY23 Final Current Expense Budget RATES AND BUDGET

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 688,388	\$ 854,110	\$ 952,371	\$ 1,777,846	\$ 825,475	86.7%
TRAINING & MEETINGS	-	-	-	-	-	-
OTHER MATERIALS	263	381	500	500	-	0.0%
OTHER SERVICES	264	314	537	849	312	58.1%
TOTAL	\$ 688,915	\$ 854,805	\$ 953,408	\$ 1,779,195	\$ 825,787	86.6%

FY23 Goals and Initiatives:

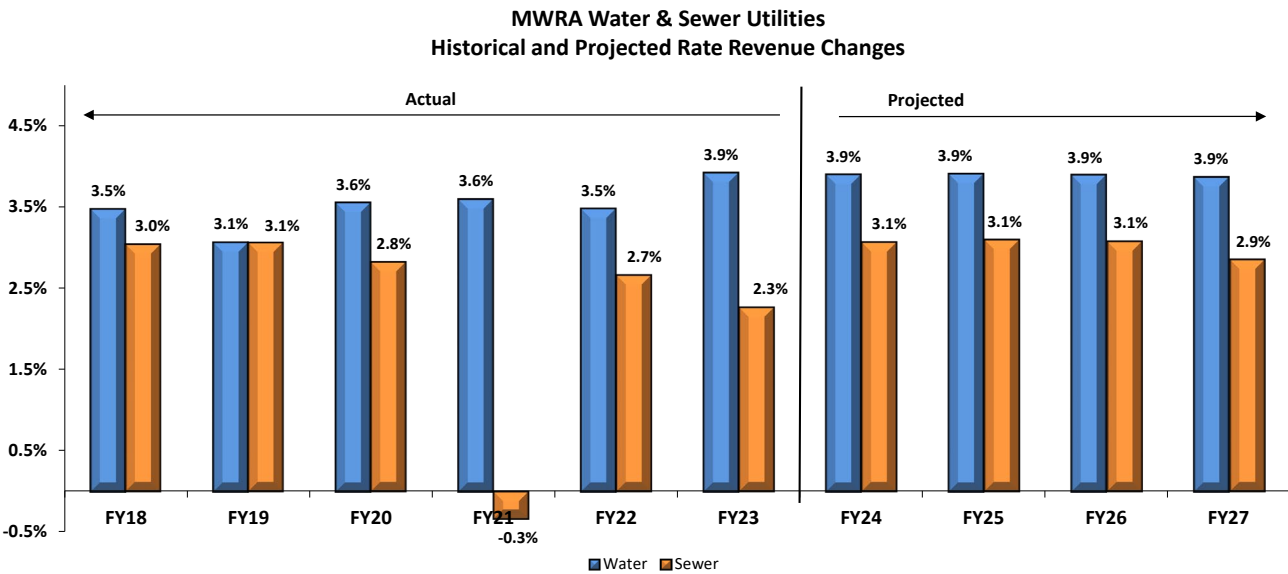
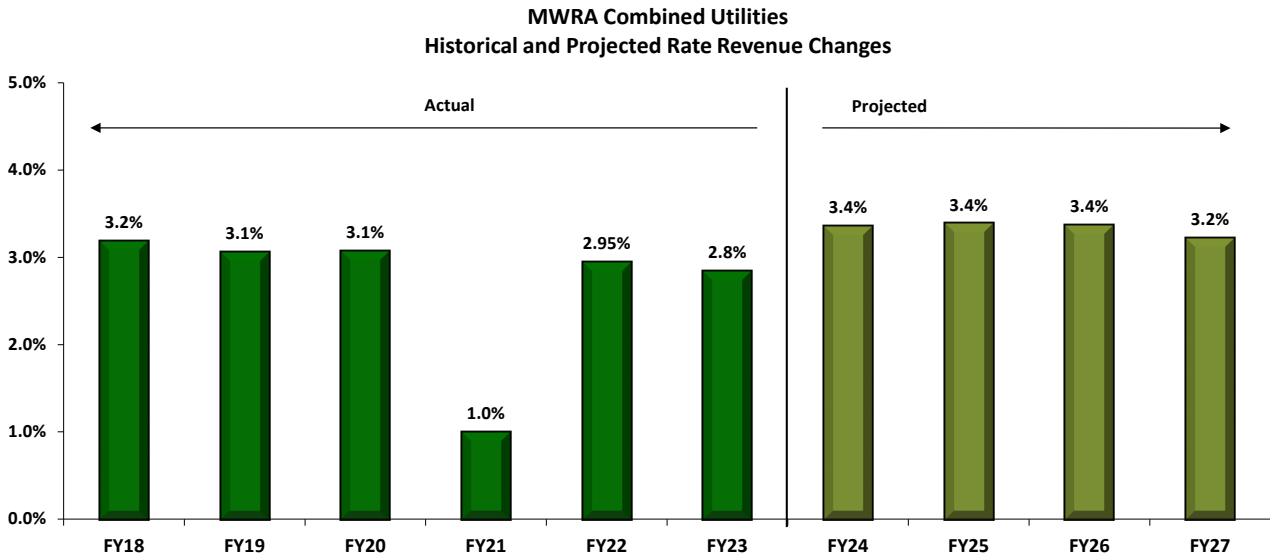
IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Continue long-term strategic budgeting practices to ensure predictable and sustainable sewer and water assessments and charges to our member communities at both the combined and the water and wastewater utility level.
 - Continue to employ budget and expense control practices to manage expenses.
 - Continue to enhance processes and the management of resources to deliver the final CIP and CEB timely and accurately.
 - Adhere to all MWRA policies, procedures, and administrative practices as well as all relevant statutory and regulatory authority, accounting, and budgeting principles.
 - Provide financial analysis as required, including system expansion opportunities.
 - Start the process of evaluating and selecting software applications to replace the CEB and CIP programs.
 - Improve the quality and presentation of budget documents and regularly required reports while working to develop new reports that will aid the Authority’s Board of Directors, Management, and the MWRA Advisory Board.

FY22 Year-End Accomplishments:

- Developed the FY23 Current Expense Budget below the FY22 planning estimates for combined water and sewer assessment increases.
- Developed the FY23 Capital Improvement Budget to fit within the five-year spending cap for the FY19-23 period.

- Communicated Final FY23 Assessments to the service area communities, staying within the 2.85% projected assessment changes that are in the MWRA’s multi-year planning model.
- Held Budget Briefings with the MWRA Advisory Board to communicate FY23 departmental budgets and initiatives and how they relate to the MWRA’s Master Plan.



Budget Highlights:

The FY23 Budget is \$1.8 million, an increase of \$826,000 or 86.6% as compared to the FY22 Budget.

- \$1.8 million for **Wages and Salaries**, an increase of \$825,000 or 86.7% as compared to the FY22 Budget, the increase reflects the transfer of eight (8) finance related positions from Operations in addition to wage increases associated with collective bargaining agreements. The FY23 Budget funds sixteen FTEs, eight more than the FY22 Budget.

TREASURY

The **Treasury Department** secures funds for ongoing operations and capital programs in addition to processing cash disbursements. Department staff collects revenue, disburses funds, and manages grant and loan programs in addition to debt issuance and investments.

FY23 Final Current Expense Budget							
TREASURY							
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22		
WAGES & SALARIES	\$ 666,094	\$ 706,826	\$ 725,245	\$ 1,323,318	\$ 598,073	82.5%	
TRAINING & MEETINGS	-	-	-	-	-	-	
PROFESSIONAL SERVICES	279,911	419,111	436,385	462,005	25,620	5.9%	
OTHER MATERIALS	277	921	300	500	200	66.7%	
OTHER SERVICES	1,747	2,277	1,812	1,812	-	0.0%	
TOTAL	\$ 948,029	\$ 1,129,135	\$ 1,163,742	\$ 1,787,635	\$ 623,893	53.6%	

FY23 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Manage debt and investment portfolio to maximize savings/returns in compliance with all applicable rules and regulations while maintaining compliance with the General Revenue Bond Resolution requirements regarding security and liquidity and contributing to the achievement of sustainable and predictable assessment increases.
 - Continue diversification strategy to insulate against overexposure and promote resiliency to changing market conditions.

FY22 Year-End Accomplishments:

- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. The credit report from Moody's noted that for the rates management and Compliance and Capital Planning key ratings indicators, MWRA was assigned the highest Aaa rating. These high credit ratings enable MWRA to borrow at very advantageous interest rates minimizing debt service expense.
- Completed a \$748.0 million refunding and new money Green Bond transaction on December 22, 2021. The overall transaction carried an All-in True Interest Cost of 2.56% with an average life of 12.2 years. This is the third lowest All-In True Interest Costs MWRA has observed, which is particularly notable since 92% of the bonds were federally taxable, which typically carries a higher interest cost. The refunding bonds were 3.7 times oversubscribed, and the new money bonds were 2.0 times oversubscribed. The strong investor demand allowed MWRA to lower interests costs over the course of the day. The strong investor demand was driven by 18 new investors to MWRA, which was in part due to the Environmental, Social and Governance (ESG) nature of the Green Bonds. The refunded resulted in \$65.9 million in present value savings and \$82.0 million in gross debt service savings between FY22 and FY44.

- As of the 2021 bond transaction, MWRA had issued a total of \$2.4 billion in green bonds. At the time, MWRA was the fifth largest tax-exempt green bond issuer in the United States and the largest in Massachusetts.
- Executed an \$11.4 million and a \$30.7 million defeasance of outstanding senior principal in September 2021 and June 2022 respectively. These defeasances reduced the debt service requirement between FY23 and FY26 by a total of \$48.8 million reducing the rate of increase to the Rate Revenue Requirement in those years. The transactions also resulted in \$1.3 million in interest savings by paying bonds on their call dates.

Budget Highlights:

The FY23 Final Budget is \$1.8 million, an increase of \$624,000 or 53.6% as compared to the FY22 Budget.

- \$1.3 million for **Wages and Salaries**, an increase of \$598,000 or 82.5% as compared to the FY22 Budget, this increase is driven by the transfer of seven (7) finance related positions from Operations in addition to wage increases associated with collective bargaining agreements. The FY23 Budget funds fourteen FTEs, seven more than the FY22 Budget.
- \$462,000 for **Professional Services**, \$26,000 or 5.9% above FY22 Budget. These funds are used for banking, financial advisory, bond and disclosure council services.

CONTROLLER

The **Controller Department** consists of the Accounting, Accounts Payable, Accounts Receivable, and Payroll units. The department has the responsibility for ensuring integrity within the financial accounting system and integration among the four functions. The department is also responsible for the appropriate treatment, classification, and reporting of the MWRA's assets, liabilities, revenues and expenditures in accordance with accounting principles generally accepted in the United States of America.

FY23 Final Current Expense Budget CONTROLLER

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 1,378,361	\$ 1,350,541	\$ 1,514,268	\$ 1,448,335	\$ (65,933)	-4.4%
OVERTIME	183	-	-	-	-	-
TRAINING & MEETINGS	-	-	-	-	-	-
PROFESSIONAL SERVICES	135,240	152,268	162,500	162,500	-	0.0%
OTHER MATERIALS	26	531	200	200	-	0.0%
OTHER SERVICES	539	2,277	3,173	4,173	1,000	31.5%
TOTAL	\$ 1,514,349	\$ 1,505,617	\$ 1,680,141	\$ 1,615,208	\$ (64,933)	-3.9%

FY23 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Implement process efficiencies in all department units.
 - Enhance controls to safeguard Authority assets and ensure accurate and timely reporting.
 - Continue to support management initiatives with underlying documentation and detail.
 - Implement any new or changed GASB standards as appropriate.
 - Manage the certification of Financial Statements by Independent Auditors.

FY22 Year-End Accomplishments:

- Successfully completed certified financial statement audit with no audit findings.
- Awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association (GFOA) for the MWRA's FY21 Annual Comprehensive Financial Report. The FY22 Comprehensive Annual Financial Report will be submitted to the GFOA for review.
- Reviewed over two dozen contractor financial statements to support Procurement Department analysis of contractor's financial capacity to successfully perform under the terms of the MWRA contract.
- Implemented pandemic planning protocols to ensure that employees and vendors are paid timely and accurately, without interruption, while teleworking.

Budget Highlights:

The FY23 Budget is \$1.6 million, a decrease of \$65,000 or 3.9% as compared to the FY22 Budget.

- \$1.4 million for **Wages and Salaries**, a decrease of \$66,000 or 4.4%, as compared to the FY22 Budget, the decrease reflects retirements and backfilling at a lower wage rate partially offset by wage increases associated with collective bargaining agreements. The FY23 Budget funds 16 FTEs, the same as the FY22 Budget.

RISK MANAGEMENT

The **Risk Management Department** is responsible for all MWRA insurance programs and risk management functions. Department staff manages all administrative functions relating to the initial reporting, processing, and resolution of construction contract claims and self-insured auto, general liability, and property damage claims. Department staff members are responsible for the annual procurement, renewals, and maintenance of all Authority-wide insurance policies and programs and for managing all aspects of MWRA’s contractor/vendor insurance certificate program. Department staff serves as liaisons to insurance industry participants including brokers, insurers, insurance consultants, and attorneys as well as providing support to all MWRA departments.

FY23 Final Current Expense Budget RISK MANAGEMENT

LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 500,950	\$ 511,163	\$ 504,592	\$ 504,980	\$ 388	0.1%
PROFESSIONAL SERVICES	65,290	68,063	60,000	80,000	20,000	33.3%
OTHER MATERIALS	201	-	-	-	-	-
OTHER SERVICES	115	139	-	60	60	-
TOTAL	\$ 566,556	\$ 579,365	\$ 564,592	\$ 585,040	\$ 20,448	3.6%

FY23 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Secure the timely, cost effective renewal of Authority-wide insurance policies and contracts.
 - Minimize MWRA’s exposure to financial loss stemming from contractor and vendor activities by reviewing risk exposures and establishing contract insurance requirements and monitoring contractors/vendors for compliance.
 - Process self-insured automobile, general liability, property damage, and construction contract claims in an efficient and timely manner.
 - Provide support to all MWRA Departments on all insurance, claims, litigation and risk management issues.

FY22 Year-End Accomplishments:

- Successfully procured MWRA’s Insurance Program through a competitive bid process for all lines of coverage.
- Staff renewed MWRA’s license to operate as a self-insured entity for workers’ compensation claims by completing the annual application process with the Division of Insurance.
- Received, investigated and processed 82 self-insured Automobile (44), General Liability (27) and Property Damage (11) claims.
- Performed 96 Project/Contract Insurance Reviews and 72 Risk Assessments in support of construction, professional services and purchase order contracts.

- Received, analyzed and processed 15 Construction Contract Claims (Claimed value \$3M) in support of issuance of Engineer’s Decisions by MWRA.
- Provided timely support to MWRA managers on all insurance, claims, litigation and risk management issues.

Budget Highlights:

The FY23 Final Budget is \$585,000, an increase \$20,000 or 3.6% as compared to the FY22 Budget.

- \$505,000 for **Wages & Salaries**, level funded with FY22 Budget. The FY23 Budget funds four FTEs, the same as the FY22 Budget.



Quabbin Reservoir



Appendices

APPENDIX A

DIRECT EXPENSES BUDGET LINE ITEM DESCRIPTIONS

MWRA's direct expenses budget funds the annual expenses of its operating and support divisions. Though the direct expenses budget is approximately 31% of MWRA's total budget, it is these expenses which directly support the provision of water and sewer services to MWRA's customers. The direct expense budget includes the annual costs of operating the water and sewer systems, and funds the policy direction, administrative, financial, and legal support services for MWRA's ongoing operations. The direct expenses budget also includes the personnel costs for management and oversight of MWRA's extensive capital programs.

There are 11 line items in the division budgets. The line items are:

Wages and Salaries - This line item includes funds for regular pay, shift differential, holiday pay, and standby pay for MWRA staff, as well as funds for interns and temporary staff.

Overtime - This line item includes funds for overtime related to operations, maintenance, emergencies, and training.

Fringe Benefits - This line item includes funds for health and dental insurance, unemployment compensation, Medicare, overtime meals, and tuition reimbursement.

Workers' Compensation - This line item includes funds for compensation payments, medical payments, and settlements of compensation claims.

Chemicals - This line item includes funds for the chemicals used in water and wastewater treatment, such as sodium hypochlorite, soda ash, sodium bisulfite, and hydrofluosilicic acid.

Utilities - This line item includes funds for electricity, diesel fuel, natural gas and other utilities such as water and sewer services paid by MWRA to the towns in which it operates facilities.

Maintenance - This line item includes funds to purchase materials and services for the maintenance of MWRA's plants and machinery, water and sewer pipelines, grounds, and buildings.

Training and Meetings - This line item covers the costs of staff training, meetings, and professional seminars.

Professional Services - This line item funds outside consultants supporting MWRA activities, including engineering and construction services, laboratory and testing contracts, computer system consultants, and legal and audit services.

Other Materials - This line item includes funds for office materials, equipment, postage, laboratory supplies, MWRA vehicles, work clothes, and computer hardware and software.

Other Services - This line item includes funds for space leasing, health and safety initiatives, removal of grit and screenings from the sewerage system, and the contracted operation of MWRA's residuals processing plant.

FY23 Final Current Expense Budget MWRA Direct Expenses by Line Item						
LINE ITEM	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
WAGES & SALARIES	\$ 107,776,261	\$ 109,857,067	\$ 116,680,342	\$ 118,980,689	\$ 2,300,347	2.0%
OVERTIME	4,484,055	4,415,142	5,156,681	5,337,896	181,215	3.5%
FRINGE BENEFITS	20,846,345	21,694,636	23,253,137	23,961,641	708,504	3.0%
WORKERS' COMPENSATION	1,862,942	1,842,853	2,614,159	2,519,751	(94,408)	-3.6%
CHEMICALS	10,998,339	11,652,053	12,202,286	14,994,036	2,791,750	22.9%
UTILITIES	23,151,712	21,887,023	24,749,865	30,896,365	6,146,500	24.8%
MAINTENANCE	29,737,299	30,660,795	32,442,381	33,241,022	798,641	2.5%
TRAINING & MEETINGS	288,045	150,787	473,993	492,197	18,204	3.8%
PROFESSIONAL SERVICES	6,588,621	7,377,648	8,773,258	8,197,575	(575,683)	-6.6%
OTHER MATERIALS	5,697,624	6,272,620	8,334,774	6,728,862	(1,605,912)	-19.3%
OTHER SERVICES	24,306,370	23,656,946	25,129,236	28,372,238	3,243,002	12.9%
TOTAL	\$ 235,737,613	\$ 239,467,570	\$ 259,810,112	\$ 273,722,272	\$ 13,912,160	5.4%

FY23 Final Current Expense Budget MWRA Direct Expenses by Division						
DIVISION	FY20 Actuals	FY21 Actuals	FY22 Final Budget	FY23 Final Budget	Change FY23 vs. FY22	
EXECUTIVE	\$ 1,363,852	\$ 1,370,838	\$ 1,540,191	\$ 1,501,738	\$ (38,453)	-2.5%
EMERGENCY PREPAREDNESS	2,736,453	3,249,245	3,108,835	4,030,437	921,602	29.6%
ADMINISTRATION	47,424,302	49,969,000	57,563,995	55,445,633	(2,118,362)	-3.7%
FINANCE	3,975,039	4,340,471	4,635,289	6,044,983	1,409,694	30.4%
LAW	1,706,828	1,664,788	1,927,006	2,027,649	100,643	5.2%
AFFIRMATIVE ACTION	542,914	657,791	709,745	699,994	(9,751)	-1.4%
INTERNAL AUDIT	638,264	637,784	749,677	794,394	44,717	6.0%
PUBLIC AFFAIRS	927,210	1,000,722	1,224,225	1,254,603	30,378	2.5%
OPERATIONS/PLANNING	176,422,751	176,576,931	188,351,149	201,922,841	13,571,692	7.2%
TOTAL	\$ 235,737,613	\$ 239,467,570	\$ 259,810,112	\$ 273,722,272	\$ 13,912,160	5.4%

Performance measures for all MWRA Divisions and Departments are published monthly in the MWRA “Yellow Notebook” and quarterly in the MWRA “Orange Notebook.” In addition, monthly financial staff summaries are presented to the Board of Directors reviewing monthly budget performance and explaining variances. All documents are available on-line at mwra.com.

**APPENDIX B
BUDGET PROCESS AND TIMETABLE**

MWRA operates on a fiscal year that starts July 1. The budget development process begins in August and, as described below, continues through a series of interactive reviews and revisions until June, when the Board of Directors approves the final budget. Throughout the formal budget process, MWRA staff maintains an ongoing dialogue with the Board of Directors and Advisory Board to discuss issues, the status of budget development, and other concerns.

	Current Expense Budget (CEB)	Capital Improvement Program (CIP)
Date	Activity	Activity
Aug-21	Prepare budget guidelines and materials	Update database with current awards, change orders, and annual estimated inflation factor
Sep-21		Kick-off meeting
Sep-21	Kick-off meeting - Release database files to all departments	
Oct-21		Project Managers update project schedules and costs
Oct-21		Proposed CIP finalized
Nov-21	Budget staff prepare capital financing requirements and indirect expenses	Review of Proposed CIP with senior management
Nov-21	Update CEB impacts from CIP	
Nov-21		Proposed CIP Staff Summary and Board of Directors presentation
Dec-21	Proposed CEB, Rate Revenue Requirement and planning projections	
Dec-21	Review of Proposed CEB with Senior Management	
Dec-21		Present Proposed CIP at Board Of Directors Meeting
Dec-21		Advisory Board Review and Comments begins
Jan-22	Proposed CEB Staff Summary and Board of Directors presentation	
Feb-22	Present Proposed CEB at Board of Directors Meeting	
Feb-22	Advisory Board Review and Comments begins	
Mar-22	Spring Revisit - Distribute Proposed FY19 database files to all departments	
Apr-22	Update Proposed CEB	Update Proposed CIP
Apr-22	Public hearings	Public hearings
Apr-22	Receive Advisory Board Comments	Receive Advisory Board Comments
May-22	Prepare MWRA's response to Advisory Board Comments	Prepare MWRA's response to Advisory Board Comments
May-22	Prepare Draft Final CEB presentation for Board of Directors	Prepare Draft Final CIP presentation for Board of Directors
May-22	Presentation - Draft Final CEB to Board of Directors	Presentation - Draft Final CIP to Board of Directors
Jun-22	Draft Final CEB Staff Summary	Draft Final CIP Staff Summary
Jun-22	Board of Directors Meeting - Vote on Final CEB	Board of Directors Meeting - Vote on Final CIP

APPENDIX C

MASSACHUSETTS WATER RESOURCES AUTHORITY BUDGET AND ASSESSMENT POLICIES AND PROCEDURES

(Revised August 2003 to incorporate changes to capital budget section of Management Policies adopted by the Board of Directors June 11, 2003)

These policies and procedures govern certain budget, assessment, and rates management practices at the Massachusetts Water Resources Authority (MWRA). Policies and procedures may be amended from time to time, provided that changes in provisions governing reporting to or approvals by the Board of Directors or the Advisory Board must be approved by the Board of Directors. If any sections of these policies and procedures are at variance with requirements of MWRA's financing agreements, the latter shall govern.

ASSESSMENT POLICIES AND PROCEDURES

Basis of MWRA Assessments

MWRA is required by its Enabling Act to establish assessments which, with other revenues, provide sufficient funds each year to pay all current expenses, debt service, and obligations to the Commonwealth; to pay all costs of maintenance, replacement, improvements, extension, and enlargement of the sewer and waterworks systems; to create and maintain reserve funds; and to provide amounts required by financing agreements. These assessments are adopted by MWRA based on the rate revenue requirements set forth in the Current Expense Budget.

Costs Recovered

MWRA capitalizes certain of its asset costs in accordance with its capitalization policy. Capital expenditures are planned as set forth in the Capital Improvement Program and are recovered through assessments in accordance with MWRA financing agreements. The Current Expense Budget provides detailed information on capital and debt costs, additions to reserves, and all operations and maintenance costs to be recovered with current revenue.

Sources of Current Revenue

MWRA recovers most of its current expenses from users of the services it provides. In addition to rate revenue requirements, budgeted current revenue includes anticipated fines, fees, investment income on certain fund balances, and payments for contracted services. MWRA is committed to seeking additional sources of current revenue.

Coverage Requirements

MWRA's financing agreements include coverage requirements which provide that each year revenue less operating expenses (net revenue) must be more than the amount required for debt

service payments on outstanding bonds. The primary bond coverage requirement is that net revenue must be 120 percent of required debt service fund deposits for bonds outstanding excluding subordinated bonds. The secondary coverage requirement is that net revenue must be 110 percent of required debt service fund deposits for all bonds outstanding, including subordinated bonds. Revenue must be raised annually to meet the primary and secondary bond coverage requirements and may be used for additions to reserves or for payment of obligations to the Commonwealth. Amounts remaining after these uses are used to pay capital costs in order to reduce the need for future borrowing or to reduce current debt service costs. In addition, MWRA has a supplemental bond coverage requirement that amounts contained in its Community Obligation and Revenue Enhancement (CORE) Fund shall equal 10 percent of required debt service fund deposits for bonds outstanding, excluding subordinated bonds. Amounts required to be on deposit in the CORE Fund are recovered through assessments as necessary.

Basis of Budgeting

The Authority is required by the Enabling Act to establish user rates for its water and sewer services which provide sufficient funds to recover the costs of operations (excluding depreciation), debt service, maintenance, replacements, improvements to its facilities, and appropriate reserves. MWRA budgets on the accrual basis, its financial statements are reported on the accrual basis of accounting and the economic measurement focus as specified by the Governmental Accounting Standards Board's (GASB) requirements for an enterprise fund.

The MWRA distinguishes operating revenues and expenses from nonoperation items. Operating revenues and expenses generally result from providing water and sewer services to its member communities. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses. All operating revenues are pledged for repayment of outstanding debt service.

In addition, MWRA applies the provisions of GASB Statement No. 62, Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements, to provide a better matching of revenues and expenses. The effect of this policy has been to defer certain outflows of resources, which will be recovered through future revenues in accordance with MWRA's rate model, and to record deferred inflows of resources for revenue collected through current rates for costs expected to be incurred in the future.

Budget Surpluses

In any year in which current revenue exceeds both current expenses on a budget basis and amounts required to meet bond coverage tests, the amount of over-recovery is deposited first to reserve funds, if any, which are below the level specified in any financing agreements, and second into MWRA's rate stabilization fund or bond redemption fund. Amounts deposited in these funds are used to offset rate requirements in subsequent years and such, to provide rate relief for our communities. With Board approval, surplus funds can also be used for targeted defeasance in future years and/or to reduce future liabilities, as part of a multi-year rate strategy. MWRA consults with the Advisory Board regarding the yearly use of these funds.

Budgeting and Assessment Objectives

MWRA follows conservative budgeting practices, and has the following objectives in developing budgets and community assessments:

1. To minimize total costs, consistent with MWRA's statutory responsibilities to provide effective, environmentally sound wholesale water delivery and wastewater collection and treatment services;
2. To minimize the cost of debt;
3. To avoid single year assessment spikes by prudent management of cost and assessment increases, and
4. To support inter-generational equity by avoiding unfair assessment burdens on either current or future ratepayers.

Allocation of Costs and Revenue to Systems

Most of MWRA's current expenses are directly attributable to either water or sewerage service costs or to investment in either the water or sewerage systems. Expenses which support both systems (indirect system costs) are allocated to the water or sewer system based on generally accepted cost allocation principles. Investment, contract, and other income offsets water and sewerage expenses on either a direct or allocated, indirect basis. The resulting net cost of water and sewerage services is the amount to be recovered through water and sewer assessments.

Allocation of Rate Revenue Requirements to User Assessments

Users of MWRA wholesale water and sewerage services are assessed for those services according to MWRA's water and sewer assessment methodologies. Assessments for water services are computed by MWRA based on metered water use for the preceding calendar year. The total assessment is allocated based on each community's share of water delivered in the immediately preceding calendar year.

Assessments for sewer services are computed on the basis of a combination of metered wastewater flow and loads, and population.

- Operations and Maintenance (O&M) costs are allocated based on total annual metered wastewater flow, and total annual average strength, septage, and high strength flow loads.
- Capital (or debt service) costs are allocated based on a combination of metered wastewater flow and loads, and population. One-quarter of capital costs are allocated based on maximum month flow, and total annual average strength, septage, and high strength flow loads. The

remaining three-quarters of capital costs are allocated based on population. Half of the population allocation is based on census population and half is based on contributing population.

Schedule and Procedure for Adoption of Assessments

During the preparation of the proposed Current Expense Budget, required water and sewer rate revenue is determined, and a preliminary calculation of the allocation of costs to user-specific assessments is made. This information is provided to MWRA customers to assist them in their own fiscal planning. As provided in the Enabling Act, the proposed Current Expense Budget and preliminary assessments undergo statutory review, including public hearings and review by MWRA's Advisory Board. Further refinements of projected expenses and revenues also occur during this period. If review and analysis of the proposed Current Expense Budget results in lower projected expenses or higher projected revenue, some or all of such savings from preliminary estimates of assessments can be included in the adopted budget as additions to the rate stabilization fund and used to reduce rate revenue requirements in subsequent years. Alternatively, some or all of such savings can be used to reduce final assessments to customers below preliminary estimates.

The Current Expense Budget and final water and sewer assessments are adopted in June for the fiscal year beginning in July. The budget adopted in June may differ from the proposed budget as a result of review and further refinement of the proposed budget, although final assessments adopted by MWRA must be sufficient to recover water and sewer rate revenue requirements specified in the adopted budget. Final water and sewer rate requirements and their allocation to users may thus change from preliminary estimates. In addition, any individual community's final assessment may be higher or lower than the preliminary estimate, both because of changes in the factors which affect the allocation of assessments among wholesale customers, and because of differences between MWRA's proposed and final budgets as approved by the Board of Directors.

Review and Dispute Resolution Process

MWRA annually determines preliminary and final assessments for water and sewer services in February and June prior to the beginning of the new fiscal year. These assessments must satisfy the requirement that MWRA fully recover its water and sewer costs by apportioning total costs as assessments among its wholesale water and sewer customers pursuant to its water and sewer rate methodologies and to certain specified data including:

- Calendar year metered water volume and metered wastewater flow obtained from MWRA's water and wastewater metering systems;
- Federal and state community census statistics, and sewer population estimates and other information supplied on Customer Service Update forms and Municipal Discharge Permits; and
- High strength user monitoring data and estimates of community septage volumes as obtained by MWRA's Toxic Reduction and Control Department.

The review and dispute resolution process provides MWRA's wholesale customers with the opportunity to review and comment on the reasonableness of the data used to calculate preliminary water and sewer assessments. During the year, MWRA provides its customers with monthly summaries of water and wastewater flow data distributed, at a minimum, on a bimonthly basis. Because annual metered water and wastewater flows are major components for establishing water and sewer charges for each community, customers are strongly encouraged to review this data closely upon receipt and raise questions with MWRA staff concerning the data. MWRA expects that prompt customer review and comment on meter data will result in the resolution of most water and wastewater metering questions and assure the most consistency between preliminary assessments in February and final assessments announced in June. Community contributions of high strength flow and septage, and population data are made available with the release of preliminary assessments in February.

If after an initial review a community believes that specific data used to calculate assessments should be reevaluated, a community may submit a written objection to the Executive Director with a copy to the Rates Manager or their designee. The objection must be signed by the local official on record with MWRA as responsible for water or sewer services in the city, town, or district. The objection should state the community's concern with the data used to calculate community assessments, and should also include information and technical data to support the community's objection.

In order for any data adjustments to be incorporated into the allocation of final fiscal year assessments, all objections to data used to calculate preliminary assessments must be received no later than the date of the final public hearing on the proposed budget and preliminary assessments, held pursuant to Section 10 of the MWRA Enabling Act. MWRA staff will review and evaluate the merits of all written objections. Customers are notified in writing of the results of this review prior to the release of final assessments.

Adjustments to preliminary data, if any, are not retroactive beyond the applicable calendar year for proposed assessments. Final fiscal year assessments are calculated incorporating adjustments, if any, resulting from the review and objection process, and final rate revenue requirements as adopted by the Board of Directors.

Written objection(s) may also be submitted following the adoption of final fiscal year assessments, but no later than the end of the fiscal year for which the assessments are applicable. Objections submitted in this manner must also be directed to the Executive Director with a copy to the Rates Manager or their designee.

Following MWRA staff review, adjustments to assessments resulting from the challenge of rate basis data that are submitted following the adoption of final fiscal year assessments will be applied to the subsequent year's assessments. Customers are notified in writing of the results of this review and any assessment adjustments prior to the release of the subsequent year's assessments.

Water and Sewer Assessment Payment Schedule

MWRA adopts a schedule of assessments and a schedule of payments annually. Any adjustments for prior years resulting from the review and objection process are apportioned to each of the scheduled payment amounts. No interest is paid or billed by MWRA for previous year's adjustments.

Assessments are payable to MWRA in ten equal installments due on the first day of August, September, October, November, December, February, March, April, May, and June.

Interest Charge on Delinquent Payments

For payments received after a payment due date MWRA levies an interest charge of one percent per month or 0.033 percent per day. Interest charges do not accrue until 30 days after the bills are mailed to MWRA's customer communities. Interest charges are added to subsequent regular billings.

Retail Rates

MWRA assessments are for MWRA's provision of wholesale services. Local bodies which receive wholesale services in turn provide retail services to their users at the local level.

MWRA encourages its customers to establish retail rates which:

1. Recover the full cost of providing local water and/or sewerage services, including both direct costs and an allocation or estimate of indirect costs,
2. Charge users of local water and/or sewerage services in a manner which demonstrates to customers that increased use of services results in increased user costs,
3. Comply with MWRA policies directed to conservation of water; elimination of infiltration and inflow of surface water and ground water into the sewage collection, treatment, and disposal system; and removal or pretreatment of industrial wastes, and
4. To the extent consistent with #1 and #2, provide assistance to low income users through lifeline rates.

CAPITALIZATION POLICY

It is the policy of the MWRA that capitalization of expenditures conforms to generally accepted accounting principles. Under such guidelines, MWRA has adopted the provisions of the Financial Accounting Standards Board's Statement No. 71, "Accounting for the Effects of Certain Types of Regulation," which is intended to assure that utility revenues are appropriately matched with incurred costs. Capital expenditures create assets or extend their useful lives. Assets are valued at their cost and provide benefits over an extended period of time. Sources of funds for capital expenditures include grants, proceeds of MWRA borrowing, loans, and current revenue.

Asset value created by MWRA is of two kinds. One is the value of tangible assets either created or increased through MWRA capital investments. Such assets include land, buildings, plant, equipment, and the system infrastructure for water and wastewater. The cost of such fixed asset investment includes not only purchase, rehabilitation, and construction cost, but also ancillary expenses necessary to make productive use of the asset. Ancillary costs can include, but are not limited to, costs for planning studies, professional fees, transportation charges, site preparation expenditures, and legal fees and claims directly attributable to the asset.

The second kind of asset value created by MWRA investment is the value of intangible assets. While such investment does not result in tangible MWRA assets, it does create a benefit to MWRA and its users over several years. Such assets include the cost of MWRA efforts to establish baseline leak detection information for the water systems of MWRA customers. The cost of providing water consumption-limiting devices to households is another example.

Expenditures for tangible assets are included in the Capital Improvement Program and Budget if the expected cost of the individual asset or capital project is \$100,000 or more and if the expected useful life is more than one year. Expenditures for intangible assets are capitalized if the expected cost is \$100,000 or more and if the expected benefit period is three years or more. Annually recurring costs and expenditures for maintenance of assets are not capitalized, even though their cost may exceed \$100,000. Examples of such maintenance expenditures include replacement of vehicles or computers, replacement of inoperable valves or other equipment before the anticipated useful life has been reached, and pipeline or interceptor repairs that do not add significant life to the underlying asset.

RESERVES FUNDED FROM CURRENT REVENUE

Operating Reserve

The Operating Reserve has been established to provide a source of funds to be used to pay operating expenses of the sewer or water systems should there not be sufficient funds otherwise available for that purpose. Bond agreements specify that the fund level shall not be less than one-sixth of MWRA's annual operating expenses.

Insurance Reserve

The Insurance Reserve has been established to provide funds to restore, replace, or reconstruct lost or damaged property or facilities of the water or sewer system. It provides funds reserved against risks for which MWRA does not currently maintain insurance. This self-insurance reduces the cost MWRA might otherwise incur for purchased insurance policies. MWRA periodically evaluates the level of its insurance reserve and every three years a consulting engineer or an insurance consultant recommends an appropriate insurance reserve fund requirement. The current funding level of \$14.0 million has been determined to be adequate based on a FY17 Insurance Reserve Fund review performed by an outside insurance consultant who estimated an acceptable fund level in the range of \$12 to \$16 million. The next Insurance Reserve Fund review is expected in February 2020.

Renewal and Replacement Reserve

The Renewal and Replacement Reserve has been established to pay the costs of emergency repairs or capital improvements to the system when funds are not available in either the Construction Fund or the Operating Fund. Amounts may not be withdrawn until MWRA has specified the project to which the amount will be applied, its estimated cost, and estimated completion date. It must also certify that such expenditures are reasonably required for the continued operation of the systems, or for maintenance of revenues, or that other provisions have not been made for funding such expenditures. The requirement of the Bond Resolution, every three years, MWRA receives recommendations from a Consulting Engineer as to the adequacy of the renewal and replacement reserve fund requirement. The Renewal and Replacement Reserve Fund requirement is presently established at \$35 million. The adequacy of the funding requirements for the Operating Reserve Fund and the Replacement Reserve Fund have been confirmed by the Consulting Engineer in its most recent triennial report dated October 2014, prepared and delivered in accordance with the General Resolution. The next Triennial Report is scheduled for October 2017. The Consulting Engineer also provides an opinion as to the adequacy of the Authority rates, rentals, and other charges.

CURRENT EXPENSE BUDGET MANAGEMENT POLICIES AND PROCEDURES

A. Budget Allocations

Budget Contingency Holdbacks

After the Board of Directors adopts the Current Expense Budget each year, the Executive Director, the Chief Operating Officer, or a division director may reserve between two percent and four percent of a division's approved budget as a budget contingency to be expended only upon approval of the Executive Director. The contingency holdback may be from any line item or cost center or combinations thereof, and any amount reserved as a budget contingency is not to be included in the monthly budget allocation process described below. The Administration, Finance, and Audit Committee will be notified of all budget contingency holdback amounts.

Monthly Allocation of the Annual Current Expense Budget

Initial monthly allocations are made for purposes of adopting and filing an operating budget in accordance with MWRA's financing agreements. Before the end of the first reporting period of the fiscal year, divisions, with the assistance of the Rates and Budget Department, allocate the approved budget, less any holdbacks, by month. The allocations set forth planned expenditures and accruals for each of the 12 months of the year to be compared to actual expenditures and accruals as reported in MWRA's monthly variance reports.

B. Budget Variance Monitoring and Analysis

At the close of each monthly accounting period, the Controller Department prepares MWRA financial statements. The Rates and Budget Department then prepares monthly variance reports that compare budgeted to actual revenues and expenses.

Variance Analysis

Division directors and staff review variance reports and explain variances between budgeted and actual expenditures as requested by the Rates and Budget Department. Variance explanations are prepared as needed, usually at the first quarter of the year, and following monthly for the rest of the year. At least twice each year MWRA staff prepares forecasts of year-end expenditures and revenue. Barring extraordinary circumstances, division directors are responsible for controlling spending within the overall division budget. The Rates and Budget Department reviews all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA's budget.

Variance explanations are submitted to the Rates and Budget Department in accordance with the schedule developed by the Rates and Budget Department. Each month the Rates and Budget Department prepares a summary of budget variances for inclusion in the Management Indicators Report (Yellow Notebook). The Rates and Budget Department also prepares a monthly staff summary (except for July and August) to the Board of Directors describing major budget variances and a quarterly budget variance report for inclusion in the Board of Directors Report on Key

Indicators of MWRA Performance (Orange Notebook). At least twice a year, the Rates and Budget Department prepares a staff summary to the Board of Directors on year-end projections of revenue and expenses.

C. Budget Amendments

An amendment to an MWRA Current Expense Budget is defined as follows:

A proposed change in an adopted budget or a proposed budget transmitted to the MWRA Advisory Board in accordance with Section 8(b) of Chapter 372 of the Acts of 1984 which meets any of the following criteria:

1. Any increase in total current expenses.
2. An increase of five percent or more in total division expenses.
3. An increase in any expense line item (subsidiary account) of 15 percent or more if that line item is at least 2.5 percent of total current expenses.
4. An addition or deletion of a specific new program or initiative, the cost of which is greater than one percent of total current expenses, unless the addition or deletion has been specifically recommended by the Advisory Board.

The Executive Director, with the concurrence of the Chairman of the Board of Directors and the Chairman of the Administration, Finance, & Audit Committee of the Board of Directors, submits proposed amendments to the Advisory Board for comment and recommendation. At the end of the Advisory Board 30-day review period, the Board of Directors may take action on the amendment.

CAPITAL BUDGET MANAGEMENT POLICIES AND PROCEDURES

General Guidelines

The Authority shall periodically adopt and revise capital facility programs for the Waterworks and Sewer Systems and capital budgets based on these programs. The Authority shall consult in the preparation of its capital facility programs for the Sewer and Waterworks Systems with the Authority's Advisory Board and the Executive Office of Environmental Affairs, and may consult with other agencies of federal, state and local government concerned with the programs of the Authority. Proposed capital facility programs and capital expenditure budgets for said systems shall be submitted to the Advisory Board for such consultation no less than sixty days prior to adoption or revision by the Authority. The Authority shall prepare a written response to reports submitted to it by the Advisory Board, which response shall state the basis for any substantial divergence between the actions of the Authority and the recommendations contained in such reports of the Advisory Board. The Authority shall capitalize expenditures in accordance with generally accepted accounting principles. Capital expenditures will be planned in accordance with Authority financing agreements and policies for amortization of capital costs.

Capital Budget Contingency

A contingency for each fiscal year is incorporated into the Capital Improvement Program for the purpose of providing for unanticipated or unpredictable expenditures under the CIP spending cap.

Capital Budget Monitoring and Reporting

The Authority continually monitors the progress of capital projects for purposes of managerial control and decision-making and for financial planning and management. Two capital budget variance analysis reports are provided to the Board of Directors, one for the first six months of a year and one at year-end. The reports include a comparison between planned project schedules to actual performance. The reports highlight any major changes, either in scope or budget, of any project. Based on these reports, staff may recommend to the Board of Directors revisions, if appropriate, to the annual and five-year caps based upon said changes. In addition, capital budget progress reports are provided to the Board of Directors on a regular basis, both as project specific updates and in Quarterly Orange Notebook reports that shall include discussions of project progress compared to schedules. Monthly Financial Summary reports shall include discussions of capital expenditures compared to budget.

Capital Budget Spending Cap

Beginning in June 2003, the Board of Directors established a five-year Capital Budget Spending cap and annual caps for each year within the cap period. Spending for any year in the cap period may vary within plus or minus 20% of the annual cap, as long as total spending for the five-year period does not exceed the five-year cap. Before the end of each five-year cap period, the Board will adopt a cap for the next five-year period and annual caps for each year in the period. The Board established the third five-year cap for the FY14-18 period at its June 2013 meeting.

Expenditures in Excess of the Spending Cap

In the event of unanticipated spending requirements, the Executive Director may recommend to the Board of Directors that annual expenditures exceed an annual cap by more than 20% or that five-year expenditures exceed the current five-year CIP spending cap. In such an event, a proposed plan to adjust the five-year cap or any of the annual caps will be presented to the Board. Any such proposed plan will be submitted to the MWRA Advisory Board for review and comment for a period of thirty days. At the end of the thirty-day period, the Board of Directors may take action on the proposed plan.

Debt Limit

The Authority's statutory debt limit is \$6,450,000,000. The current debt is well below the debt limit. The Authority's debt limit was most recently amended by Chapter 312 of the Acts of 2008 of the Commonwealth of Massachusetts.

APPENDIX D

MWRA Planning Estimates FY2023 to FY2032

COMBINED UTILITIES	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032
EXPENSES										
Direct Expenses	\$273,722	\$282,191	\$290,530	\$298,692	\$307,724	\$315,755	\$324,710	\$333,931	\$343,466	\$353,143
Indirect Expenses	60,496	62,163	64,794	67,684	71,073	74,455	78,450	74,887	58,459	62,413
Capital Financing (before offsets)	507,155	524,976	543,394	562,736	580,518	598,485	612,950	634,660	670,803	683,309
Sub-Total Expenses	\$841,373	\$869,330	\$898,718	\$929,112	\$959,315	\$988,695	\$1,016,109	\$1,043,479	\$1,072,728	\$1,098,865
Debt Service Assistance	(1,182)	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Expenses	\$840,191	\$869,330	\$898,718	\$929,112	\$959,315	\$988,695	\$1,016,109	\$1,043,479	\$1,072,728	\$1,098,865
REVENUE & INCOME										
Non-Member and Other Revenue	\$15,976	\$16,636	\$17,052	\$17,482	\$17,892	\$18,312	\$18,741	\$19,002	\$19,270	\$19,536
Interest Income	8,587	9,525	10,139	10,833	11,649	12,442	13,033	13,485	13,831	14,202
Rate Stabilization	980	1,105	917	809	780	782	740	140	12	0
Total Other Revenue	\$25,543	\$27,266	\$28,108	\$29,123	\$30,321	\$31,536	\$32,513	\$32,627	\$33,113	\$33,738
Total Rate Revenue	\$814,648	\$842,064	\$870,610	\$899,989	\$928,994	\$957,159	\$983,596	\$1,010,852	\$1,039,615	\$1,065,127
Rate Revenue Increase	2.8%	3.4%	3.4%	3.4%	3.2%	3.0%	2.8%	2.8%	2.8%	2.5%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$1,328	\$1,386	\$1,447	\$1,510	\$1,576	\$1,643	\$1,712	\$1,785	\$1,861	\$1,938
Based on water use of 90k gpy (weighted)	\$1,959	\$2,045	\$2,135	\$2,228	\$2,325	\$2,424	\$2,527	\$2,633	\$2,745	\$2,859
WASTEWATER UTILITY										
EXPENSES										
Direct Expenses	\$176,549	\$181,552	\$186,681	\$191,913	\$197,917	\$202,978	\$208,749	\$214,696	\$220,739	\$226,952
Indirect Expenses	22,384	23,027	24,085	25,311	26,866	28,320	30,214	27,319	16,300	18,104
Capital Financing (before offsets)	337,367	350,060	360,558	371,691	381,113	390,109	395,584	405,879	424,947	427,373
Sub-Total Wastewater Expenses	\$536,300	\$554,640	\$571,325	\$588,915	\$605,896	\$621,408	\$634,547	\$647,894	\$661,986	\$672,428
Debt Service Assistance	(1,077)	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Wastewater Expenses	\$535,223	\$554,640	\$571,325	\$588,915	\$605,896	\$621,408	\$634,547	\$647,894	\$661,986	\$672,428
REVENUE & INCOME										
Non-Member and Other Revenue	\$5,474	\$5,649	\$5,788	\$5,932	\$6,081	\$6,234	\$6,390	\$6,552	\$6,722	\$6,894
Interest Income	5,052	5,690	5,641	6,004	6,434	6,812	7,074	7,269	7,386	7,552
Rate Stabilization	980	800	575	425	350	300	200	140	12	0
Prior Year Utility Surplus/Deficit Transfer	(2,626)	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$8,880	\$12,139	\$12,004	\$12,361	\$12,866	\$13,346	\$13,664	\$13,962	\$14,120	\$14,446
Wastewater Rate Revenue	\$526,343	\$542,501	\$559,321	\$576,554	\$593,030	\$608,062	\$620,883	\$633,933	\$647,866	\$667,982
Rate Revenue Increase	2.3%	3.1%	3.1%	3.1%	2.9%	2.5%	2.1%	2.1%	2.2%	1.6%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$794	\$828	\$864	\$902	\$940	\$979	\$1,019	\$1,061	\$1,104	\$1,148
Based on water use of 90k gpy (weighted)	\$1,171	\$1,222	\$1,275	\$1,330	\$1,387	\$1,445	\$1,504	\$1,565	\$1,629	\$1,693
WATER UTILITY										
EXPENSES										
Direct Expenses	\$97,173	\$100,639	\$103,849	\$106,779	\$109,806	\$112,777	\$115,961	\$119,235	\$122,727	\$126,192
Indirect Expenses	38,112	39,136	40,708	42,373	44,208	46,135	48,236	47,568	42,158	44,310
Capital Financing (before offsets)	169,788	174,916	182,836	191,044	199,405	208,376	217,366	228,781	245,856	255,936
Sub-Total Water Expenses	\$305,073	\$314,691	\$327,393	\$340,197	\$353,420	\$367,287	\$381,563	\$395,584	\$410,742	\$426,437
Debt Service Assistance	(105)	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Water Expenses	\$304,968	\$314,691	\$327,393	\$340,197	\$353,420	\$367,287	\$381,563	\$395,584	\$410,742	\$426,437
REVENUE & INCOME										
Non-Member and Other Revenue	\$10,502	\$10,987	\$11,264	\$11,549	\$11,811	\$12,079	\$12,352	\$12,449	\$12,547	\$12,642
Interest Income	3,536	3,835	4,498	4,829	5,215	5,630	5,958	6,216	6,446	6,651
Rate Stabilization	0	305	342	384	430	482	540	0	0	0
Prior Year Utility Surplus/Deficit Transfer	2,626	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$16,663	\$15,127	\$16,105	\$16,762	\$17,455	\$18,191	\$18,849	\$18,665	\$18,993	\$19,292
Water Rate Revenue	\$288,305	\$299,563	\$311,289	\$323,435	\$335,964	\$349,097	\$362,713	\$376,919	\$391,749	\$407,145
Rate Revenue Increase	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$534	\$558	\$583	\$609	\$636	\$664	\$693	\$724	\$757	\$790
Based on water use of 90k gpy (weighted)	\$788	\$823	\$860	\$898	\$938	\$979	\$1,023	\$1,069	\$1,116	\$1,166

** Annual household charges are estimated for communities that receive full water and wastewater services from MWRA weighted by the number of households in each of these core communities. Based on community responses to the 2021 MWRA Advisory Board's Annual Water and Sewer Retail Rate Survey.

APPENDIX E
FY23 Current Expense Budget - Capital Financing Detail (as of 6/30/22)

	Outstanding as of 6/30/22	Total	Sewer	Water
SRF ¹				
1999E Sewer		307,533	307,533	-
1999E Water	3,967,482	-	-	-
1999F	105,050,000	22,448,863	22,448,863	-
2000E Sewer		3,104,260	3,104,260	-
2000E Water	32,693,020	-	-	-
2001C Water	27,043	-	-	-
2001D Sewer		31,277	31,277	-
2001D Water	332,678	-	-	-
2002H Sewer		4,915,623	4,915,623	-
2002H Water	46,790,000	-	-	-
2002I Sewer		103,296	103,296	-
2002I Water	1,141,980	-	-	-
2003A	101,618	-	-	-
2003C Sewer		1,344,577	1,344,577	-
2003C Water	19,632,966	956,515	-	956,515
2004C Sewer		523,983	523,983	-
2004C Water	5,754,535	-	-	-
2004D Sewer		2,680,922	2,680,922	-
2004D Water	34,525,000	731,020	-	731,020
2005C Sewer		413,393	413,393	-
2005C Water	3,306,709	67,720	-	67,720
2005D Sewer		3,030,035	3,030,035	-
2005D Water	38,471,359	795,013	-	795,013
2005E Sewer		24,961	24,961	-
2005E Water	115,907	5,479	-	5,479
2006C Sewer		478,244	478,244	-
2006D Sewer		2,794,495	2,794,495	-
2006D Water	42,219,950	1,594,297	-	1,594,297
2006E Sewer		22,883	22,883	-
2006E Water	156,317	10,281	-	10,281
2007C Sewer		195,256	195,256	-
2007C Water	1,965,433	164,112	-	164,112
2007D Sewer		1,142,608	1,142,608	-
2007E Sewer		2,728,403	2,728,403	-
2007E Water	41,633,944	1,251,600	-	1,251,600
2008G Sewer		379,046	379,046	-
2008G Water	2,106,602	81,362	-	81,362
2009C Sewer		3,242,822	3,242,822	-
2009C Water	56,549,924	1,873,219	-	1,873,219
2009D Sewer		638,342	638,342	-
2009D Water	6,191,779	85,062	-	85,062
2010 D Sewer		1,416,133	1,416,133	-
2010 D Water	28,298,662	1,428,079	-	1,428,079
2011A Sewer		306,158	306,158	-
2011A Water	5,373,797	360,889	-	360,889
2012C Sewer		515,884	515,884	-
2012C Water	6,256,507	255,025	-	255,025
2012D Sewer		2,748,342	2,748,342	-
2012D Water	31,261,137	533,079	-	533,079
2013B Sewer		2,118,711	2,118,711	-
2013B Water	22,639,405	534,277	-	534,277
2014C Sewer		283,689	283,689	-
2014C Water	6,957,232	385,534	-	385,534
2015A Sewer		2,649,289	2,649,289	-
2015A Water	47,866,007	980,479	-	980,479
2015B Sewer		212,727	212,727	-
2015B Water	3,415,302	151,625	-	151,625
2016A Sewer		2,130,821	2,130,821	-
2016A Water	42,093,035	848,623	-	848,623
2017A Sewer		542,107	542,107	-
2017A Water	26,470,021	1,538,770	-	1,538,770
2018E Sewer		1,077,753	1,077,753	-
2018E Water	43,799,520	2,021,792	-	2,021,792
2019D Sewer		2,031,129	2,031,129	-
2019D Water	\$ 48,197,434	1,222,252	-	1,222,252
2021A Sewer		1,558,342	1,558,342	-
2021A Water	\$ 48,398,341	1,567,143	-	1,567,143

APPENDIX E
FY23 Current Expense Budget - Capital Financing Detail (as of 6/30/22)

	Outstanding as of 6/30/22	Total	Sewer	Water
Pool 24 Sewer		5,428,720	5,428,720	-
Pool 24 Water		3,328,621	-	3,328,621
Total SRF Debt	\$ 822,006,189	\$ 96,342,495	\$ 73,570,627	\$ 22,771,868
MWRA Senior Debt				
2007B Refunding	647,950,000	79,692,375	66,941,595	12,750,780
2013A Refunding	50,185,000	31,127,250	17,431,260	13,695,990
2014F Refunding	17,370,000	1,655,500	513,205	1,142,295
2016B New	13,180,000	2,024,950	1,012,475	1,012,475
2016C Refunding	343,610,000	26,919,300	13,728,843	13,190,457
2016D Refunding	48,745,000	1,872,750	1,217,288	655,463
2017B New	60,470,000	3,023,500	1,511,750	1,511,750
2017C Refunding	206,380,000	40,159,500	18,071,775	22,087,725
2018B New	99,705,000	4,985,250	2,991,150	1,994,100
2018C Refunding	17,500,000	5,945,000	4,458,750	1,486,250
2019B New	118,765,000	5,938,250	4,225,750	1,712,500
2019E New	50,000,000	1,407,472	703,736	703,736
2019F Refunding	529,750,000	44,705,958	17,882,383	26,823,575
2020B New Money	154,675,000	9,172,750	6,775,250	2,397,500
2021B	60,635,000	8,261,750	5,879,500	2,382,250
2021C	687,395,000	24,085,634	12,431,474	11,654,160
FY23 New Money		11,000,000	9,437,500	1,562,500
FY 23 New Money		1,650,000	990,000	660,000
Defeasance Assumption	-	(1,457,250)	(811,858)	(645,393)
Utility Soothing			11,363,180	(11,363,180)
Total Senior	\$ 3,106,315,000	302,169,939	\$ 196,755,007	\$ 105,414,933
Subordinate Debt				
1999B	\$ 37,500,000	\$ 6,061,708	\$ 3,637,025	\$ 2,424,683
2008A Refunding	142,050,000	18,420,946	16,210,432	2,210,514
2008C Refunding	39,330,000	7,811,394	7,498,938	312,456
2008E Refunding	94,940,000	8,760,352	8,059,524	700,828
2012E Refunding	52,685,000	4,462,256	937,074	3,525,182
2012G Refunding	5,590,000	2,712,590	2,604,086	108,504
2014A Refunding	50,000,000	21,108,383	1,899,754	19,208,629
2014B Refunding	13,130,000	38,296	3,447	34,849
2018A Refunding	47,530,000	4,366,050	916,871	3,449,180
2018D Refunding	50,000,000	1,750,000	157,500	1,592,500
Total Subordinate Debt	\$ 532,755,000	75,491,975	\$ 41,924,651	\$ 33,567,324
Total SRF & MWRA Debt Service²	\$ 4,461,076,189	474,004,409	\$ 312,250,285	\$ 161,754,125
Other Capital				
Water Pipeline Commercial Paper	\$ 100,000,000	\$ 6,233,882	-	6,233,882
Current Revenue/Capital ³		\$ 18,200,000	17,838,206	361,794
Capital Lease		\$ 3,217,060	1,888,044	1,329,016
Debt Prepayment ⁴		\$ 5,500,000	5,390,667	109,333
Total Other Capital	\$ 100,000,000	\$ 33,150,942.00	\$ 25,116,916	\$ 8,034,026
Total Capital Financing (before Debt Service Offsets)	\$ 4,561,076,189	507,155,351.39	\$ 337,367,202	\$ 169,788,150
Debt Service Offsets				
Debt Service Assistance		(1,182,494)	\$ (1,077,185)	\$ (105,309)
Bond Redemption				
Total Debt Service Offsets		(1,182,494)	\$ (1,077,185)	\$ (105,309)
Total Capital Financing	\$ 4,561,076,189	505,972,857	\$ 336,290,017	\$ 169,682,841

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.

APPENDIX F

Advisory Boards and Committees

The Advisory Board

The Advisory Board is established by section 23 of the MWRA Enabling Act. The Advisory Board's primary purposes are as follows:

1. To appoints 3 members of the Board of Directors, with staggered 6-year terms.
2. To review and comment on the current expense and capital improvement budgets.
3. To approve expansion of the MWRA's service area, whether permanent or temporary.
4. To make recommendations to the governor and the legislature with respect to matters that affect the Authority.

The Authority's proposed annual current expenses budget and its capital improvement program budget must be submitted to the Advisory Board at least sixty days prior to the adoption of each budget by the Board of Directors. Amendments to the current expenses budget must be submitted to the Advisory Board at least thirty days prior to adoption, except in the event of emergencies. The Authority is required to provide a written response to any reports of the Advisory Board regarding its finances. The Advisory Board has provided the Authority with written comments to both the current expenses and the capital improvement budgets. The Advisory Board's budget for personnel and expenses is included in the Executive Division's budget.

Water Supply Citizens Advisory Committee to MWRA (WSCAC)

Originally formed in 1977 to review a proposed diversion of the Connecticut River for water supply to the metropolitan Boston area, WSCAC represents an unusual approach for engaging citizen participation in water resource policy decisions.

WSCAC advises the MWRA and the Department of Conservation and Recreation on water conservation and watershed protection strategies. The MWRA has implemented leak repair and demand management programs, avoiding the need for river diversion.

WSCAC's current focus is water quality - source protection and management of the watersheds, reservoirs and distribution system.

WSCAC worked with the New England Safe Drinking Water Task Force on the Safe Drinking Water Act reauthorization. WSCAC helped secure passage of state legislation - the Interbasin Transfer Act of 1983, the Water Management Act of 1985, and the Watershed Protection Act of 1992. State officials have tapped WSCAC for other statewide advisory groups.

The Wastewater Advisory Committee (WAC)

The MWRA Board of Directors created WAC in 1990 to offer independent recommendations on wastewater policies and programs. WAC's mission is to be an independent public forum for holistic discussion of wastewater issues. Membership is designed to reflect the knowledge and interest of major affected constituencies: engineering and construction, environmental advocacy, planning, academic research, and business.

WAC's contractual duties are as follows:

1. Provide independent advice to the MWRA Board and staff on wastewater programs and policies directly related to the MWRA
2. Review and comment to the Authority on wastewater reports and proposed documents; offer independent advice on current and proposed wastewater program and policy directions to further MWRA objectives
3. Reflect the knowledge and interest of major affected constituencies, including
 - a. Engineering
 - b. Construction
 - c. Business/industry
 - d. Planning
 - e. Academic research
 - f. Environmental advocacy
4. Advise MWRA on wastewater planning
5. Increase citizen participation and education by providing MWRA with assistance in outreach. Review programs and explain plans & policies to citizens
6. Attend Authority working groups related to wastewater programs and policy, including the Advisory Board and WSCAC
7. Propose to the Authority ways to continue effective and efficient long-term public involvement in wastewater programs.

WAC's focus for 2017-2018 includes:

- Protecting the ratepayer's massive investment in clean water remains one of WAC's primary interests, and it will continue to monitor maintenance as well as progress on the CSO project.
- WAC is interested in the possibilities of further energy efficiency and renewable energy production at all MWRA facilities.
- Other areas of interest:
 - Co-digestion as it expands across New England
 - Marketability of Bay State Fertilizer
 - Climate Change impacts
 - Regulatory changes that might affect MWRA

Appendix G

MWRA Capital Improvement Program Overview

In 1984, legislation was enacted to create the Massachusetts Water Resources Authority, an independent agency with the ability to raise its revenues from ratepayers, bond sales and grants. The primary mission was to modernize the area's water and sewer systems and clean up Boston Harbor. Since its establishment, the MWRA has invested over \$9.0 billion to improve the wastewater and waterworks systems serving its 61 customer communities with projected future spending of \$4.2 billion. The system serves 3.0 million people and more than 5,500 businesses.

Since 1985, MWRA has been subject to a Clean Water Act enforcement action to end years of wastewater pollution of Boston Harbor and its tributaries from the old Deer Island and Nut Island treatment plants and combined sewer overflows (CSOs). The enforcement case was initiated by the Conservation Law Foundation in 1983 and taken up by the U.S. Environmental Protection Agency in 1985. The Commonwealth of Massachusetts, the Boston Water and Sewer Commission, the City of Quincy and the Town of Winthrop are also parties to the case.

The Orders of the Court set forth the schedules of activities to be undertaken to achieve compliance with the law. Since 1985, MWRA has complied with 422 milestones which include the completion of extensive new wastewater treatment facilities at Deer Island in Boston and Nut Island in Quincy, a residuals facility in Quincy, and 35 CSO control projects in Boston, Cambridge, Chelsea, Brookline, and Somerville which comprise the long-term CSO control plan, the last of which were completed in December 2015.

As part of compliance with the Court's Orders, MWRA was required to file monthly compliance and progress reports on its ongoing activities through December 15, 2000 and quarterly compliance and progress reports through December 2016. MWRA was required to submit bi-annual compliance and progress reports through December 2020. Bi-annual reports were also submitted in 2021 prior to the approval of a 3-year extension to the court ordered Long Term Control Plan (December 2024). Under this extension period, annual updates will be submitted to the court.

During the same time, MWRA complied with regulatory mandates to improve waterworks facilities. The mandated waterworks projects included the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and several covered water storage facilities.

The mandated projects account for most of the Capital Improvement Program (CIP) spending. The five initiatives below account for over \$6.0 billion or nearly 70% of life spending to date:

- Boston Harbor Project - \$3.8 billion
- Combined Sewer Overflow - \$912 million
- MetroWest Tunnel - \$697 million
- Carroll Water Treatment Plant - \$428 million
- Covered Storage Facilities - \$239 million

As the MWRA reaches maturity as an agency, the infrastructure modernization and new facilities construction phase is nearing completion, and, barring new mandates, most of the Authority's future capital budget will be designated for Asset Protection, Water System Redundancy, Pipeline Replacement and Rehabilitation, and Business System Support.

Asset Protection focuses on the preservation of the Authority's operating facilities. Currently over \$2.3 billion in future spending is targeted for asset protection initiatives. Water System Redundancy aims to reduce the risks of service interruption and facilitate planned maintenance where major sections of the water delivery system assets can be taken off-line. Long-term water redundancy will be a critical future CIP initiative with estimated spending in excess of \$2.0 billion over the next 17 years. Pipeline Replacement and Rehabilitation focuses on the maintenance and replacement of water and sewer pipelines. Business System Support provides for the continuing improvement and modernization of technology and security systems.

The FY23 CIP Budget reaffirms MWRA's commitment to the community financial assistance programs on both the water and wastewater side.

Capital initiatives to date have been primarily funded through long-term borrowings, and the debt service on these outstanding bonds represents a significant and growing portion of the Authority's operating budget. As of June 30, 2022, MWRA's total debt was \$4.6 billion. The Authority's capital finance (including debt service) obligation as a percent of total expenses has increased from 36% in 1990 to 60.2% in the Final FY23 Current Expense Budget.

The MWRA's credit ratings of Aa1 from Moody's, AA+ from S&P, and AA+ from Fitch, reflect strong management of financial performance, application of operating surpluses to early debt defeasance, satisfactory debt service coverage ratios, well maintained facilities, comprehensive long-term planning of both operating and capital needs, and the strong credit quality of its member service communities.

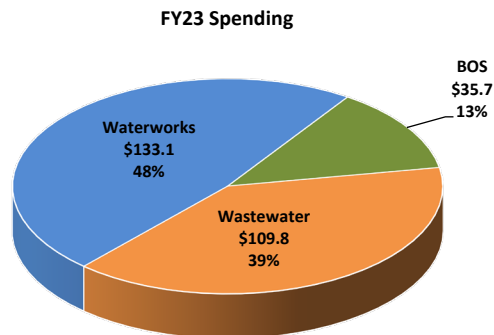
To arrive at the FY23 CIP, the Authority identified the needs of the capital programs taking into account the recommendations of the Master Plan. The long-term strategy for capital work is identified in the Authority's Master Plan which was published in 2006 and updated in 2013 as well as 2018. The Master Plan serves as a road map for inclusion of projects in the CIP in every budget cycle. Additionally, the Authority's 5-Year Strategic Plan for FY21-FY25 was released in early 2021.

The FY23 CIP represents an update to the FY22 CIP and was approved by the MWRA Board in June 2022. The spending projections are the result of prioritizing the projects, establishing realistic estimates based on the latest information, striking a balance between maintenance and infrastructure improvements, and ensuring that there is adequate support for MWRA's core operations to meet all regulatory operating permit requirements.

FY23 Final CIP

FY23 Capital Spending

The FY23 Final Capital Improvement Program projects \$278.5 million spending for FY23, of which \$109.8 million supports Wastewater System Improvements, \$133.1 million supports Waterworks System Improvements, and \$35.7 million is for Business and Operations Support. Capital spending continues to target asset protection to preserve the integrity of the Authorities operating assets and the initial funding in preparation for the next major redundancy initiative.



The FY23 Final CIP includes \$48.5 million for community assistance programs, which are a combination of loan and partial grant programs, with net expenditures of \$25.1 million for the local Infiltration/Inflow Program and net expenditures of \$23.4 million for the Local Water Pipeline Program.

The following table lists project contracts with projected FY23 spending greater than \$5.0 million, excluding local community assistance programs, totaling \$112.8 million and account for 40.5% of projected annual spending.

Project	Subphase	FY23 \$s in Millions
Corrosion & Odor Control	NI Odor Ctrl HVAC Improvements Construction Phase 2	\$16.1
DI Treatment Plant Asset Protection	Clarifier Rehabilitation Phase 2 - Construction	\$16.0
MWRA Facilities Management	Office Space Modifications	\$15.3
Metro Redundancy Interim Improvements	Waltham Water Pipeline Construction	\$14.5
New Connecting Mains-Shaft 7	CP3-Sect 23,24,47, Rehabilitation	\$12.2
Metro Redundancy Interim Improvements	WASM/SPSM West PRV Construction	\$7.9
NIH Redundancy & Storage	Section 89 & 29 Repl - Construction	\$7.6
Northern Extra High Service New Pipelines	CP-1 NEH Improvements	\$6.5
Central Monitoring System	CWTP SCADA Upgrade Construction	\$5.9
Facility Asset Protection	Ward St & Colum Pk Headworks Des/CA	\$5.6
Metro Redundancy Interim Improvements	WASM 3 CP-1	\$5.3
	Top Spending Subphases FY23	\$112.8
	% of FY23 Spending	40.5%
	Remaining FY23 Spending	\$165.7
	Total Projected FY23 Spending	\$278.5

Nut Island Odor Control and HVAC Improvements - Construction Phase 2 - \$16.1 million (\$60.6 million total construction cost). Improvements to the Nut Island Headworks odor control, HVAC and energy management systems. This contract began in February 2020. These are the long-term improvement projects that arose following the January 2016 fire, and the evaluation contract of the odor control, HVAC, and energy management completed in February 2017.

Clarifier Rehabilitation Phase 2 Construction - \$16.0 million (\$180.0 million total construction cost). This project will rehabilitate the sludge removal system in the primary tanks and the aeration/recirculation systems in the secondary tanks. The influent gates, effluent launders and aeration systems, and concrete corrosion in primary clarifiers will also be addressed and repaired. This contract is expected to be award in the fall of 2022.

MWRA Facilities Management Office Space Modifications - \$15.3 million (\$15.3 million total construction cost). Office space reconfiguration required as MWRA leaves Charlestown for space at DI and Chelsea facilities.

Waltham Water Pipeline Construction - \$14.5 million (\$27.6 million total construction cost). This contract will include installation of approximately 8,920 linear feet of new 36-inch diameter water main along Lexington Street in Waltham, from Meter 182 to a new meter near Totten Pond Road, including installation of valves, meters and other appurtenances, by-pass pumping, replacement of certain utilities, pavement restoration, traffic and environmental controls.

CP3 Sections 23, 24 and 47 Rehabilitation - \$12.2 million (\$24.2 million total construction cost). This contract includes cleaning and cement mortar lining approximately 4,500 linear feet of Section 23, which is a 36-inch diameter cast iron water main, 10,800 feet of 20-inch Section 24 and Section 47 cast iron water mains, and 500 feet of 20-inch steel water main along Section 24.

The construction work will also include installing, by open-cut, 3,600 feet of 36-inch ductile iron Section 23 water main, 6,400 feet of 24-inch ductile iron Section 24 water main, and new valves and appurtenances, and replacing the check valve assembly at Boston Meter 120. Additionally, the construction contract will include replacing approximately 2,400 linear feet of City of Newton 20-inch diameter, 140 year old cast iron water main on Ward Street between Manet Road and Waverly Avenue. This contract was awarded in October 2021.

Western Aqueduct Supply Mains (WASM)/Spot Pond Supply Mains (SPSM) West Pressure Reducing Valve Construction - \$7.9 million (\$11.6 million total construction cost). The project will allow the Low Service system to be utilized to increase the supply to the Gillis Pump Station in Stoneham to avoid the need to pump out of the Spot Pond Reservoir in an emergency. The Low Service pipelines would be operated at grade lines consistent with WASM 3 grade line to push additional flow to the Gillis Pump Station in an emergency. Some Low Service revenue meters may require pressure reducing valves to lower pressures to communities along the way. In addition, PRV's on WASM 3/4 would also require replacement to maximize the supply to the north. This contract began in June 2021.

Northern Intermediate High Redundancy Section 89 and 29 Replacement Construction - \$7.6 million (\$32.6 million total construction cost). This is a redundancy project for MWRA's Northern Intermediate High service area. Section 89 will be replaced now that the redundant pipeline is completed. This contract was awarded in May 2021.

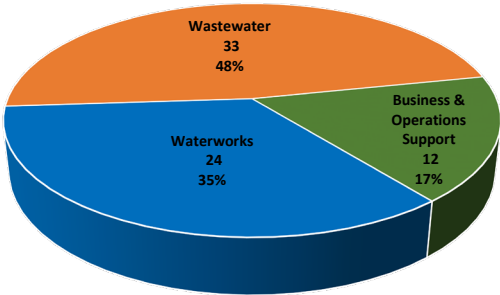
Major Planned Contract Awards for FY23:

In Fiscal Year 2023, 69 contracts totaling \$503.6 million are projected to be awarded. The largest ten projected contract awards total \$359.6 million and account for 71.5% of expected awards. Those planned awards are presented in the following table.

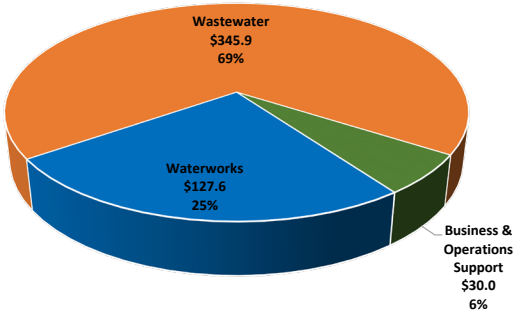
Project	Subphase	Notice to Proceed	Total Contract Amount \$s in Millions
DI Treatment Plant Asset Protection	Clarifier Rehab Phase 2 - Construction	Oct-22	\$180.0
Metro Redundacy Interim Improvements	WASM 3 Rehab CP-2	Jan-23	\$49.8
DI Treatment Plant Asset Protection	Fire Alarm System Replacement -	Mar-23	\$31.0
DI Treatment Plant Asset Protection	MCC & Switchgear Replacement	Oct-22	\$19.5
MWRA Facilities Management	Office Space Modifications	Aug-22	\$15.3
DI Treatment Plant Asset Protection	CHP Des/ESDC/REI	Jan-23	\$14.5
New Connecting Mains-Shaft 7	Sect 25 & 24 - Construction CP-2	Apr-23	\$14.2
Metro Tunnel Redundancy	Geotechnical Support Services	Dec-22	\$13.5
New Connecting Mains-Shaft 7	Section 75 Extension - Construction CP-1	May-23	\$12.1
Braintree-Weymouth Relief	B/W Improvements - Construction	Aug-22	\$10.0
Top 10 Planned Contract Awards			\$359.9
% of Total Planned Awards			71.5%
69 Planned Contract Awards			\$503.6

Of the 69 planned contract awards for FY23, 33 Wastewater 24 are for Waterworks, and 12 Business and Operation Services with associated dollar awards of \$345.9 million, \$127.6 million, and \$30.0 million, respectively. Deer Island’s Clarifier Rehabilitation Phase 2 Construction is the largest planned award at \$180.0 million with a targeted notice to proceed of October 2022.

FY23 Planned NTPs (#)



FY23 Planned NTPs (\$s in millions)



New Projects

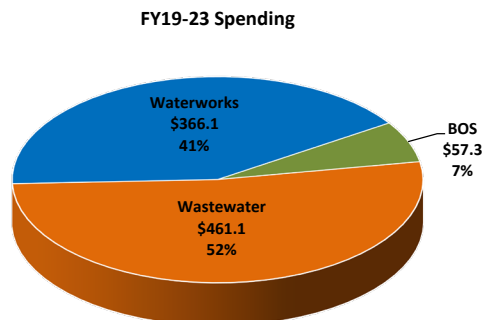
The FY23 budget cycle includes spending for 7 new projects totaling \$26.4 million with \$9.5 million designated for wastewater and \$16.9 million targeted for waterworks. Nearly all new project spending is expected in the FY24-28 timeframe. The two largest projects are Belle Island Sandcatcher and Carroll Water Treatment Plant Permanent Corrosion Control with projected spending of \$5.0 million and \$12.5 million, respectively. Some new project details and spending are presented in the table below. Additional new project details are available in Attachment C.

Project	Total Contract Amount	FY24-28 Spending
Belle Isle Sandcatcher Rehabilitation Design & Construction	\$5.0	\$4.9
Phase IV Fuel Oil Tank Replacement	\$1.5	\$1.5
Phase V Fuel Oil Tank Replacement	\$1.5	\$1.5
Somerville Marginal New Pipe Connection	\$1.3	\$1.3
Intermediate Pump Station Transformer Replacement	\$0.3	\$0.2
Total Wastewater	\$9.5	\$9.4
Interim Corrosion Control REI & Construction	\$4.4	\$4.4
Permanent Corrosion Control Design & REI & Construction	\$12.5	\$12.5
Total Waterworks	\$16.9	\$16.9
7 New Projects	\$26.4	\$26.3

Additional details on these new projects with cash flows and descriptions can be found in Appendix 3.

FY19-23 Expenditures & Five-Year Spending Cap

Spending during the FY19-23 timeframe is planned to be \$884.5 million, including local community spending of \$160.3 million for the I/I loan and grant program and \$68.4 million for the water pipeline loan program. Yearly projected expenditures for the FY19-23 Cap period by Division are shown below in millions:

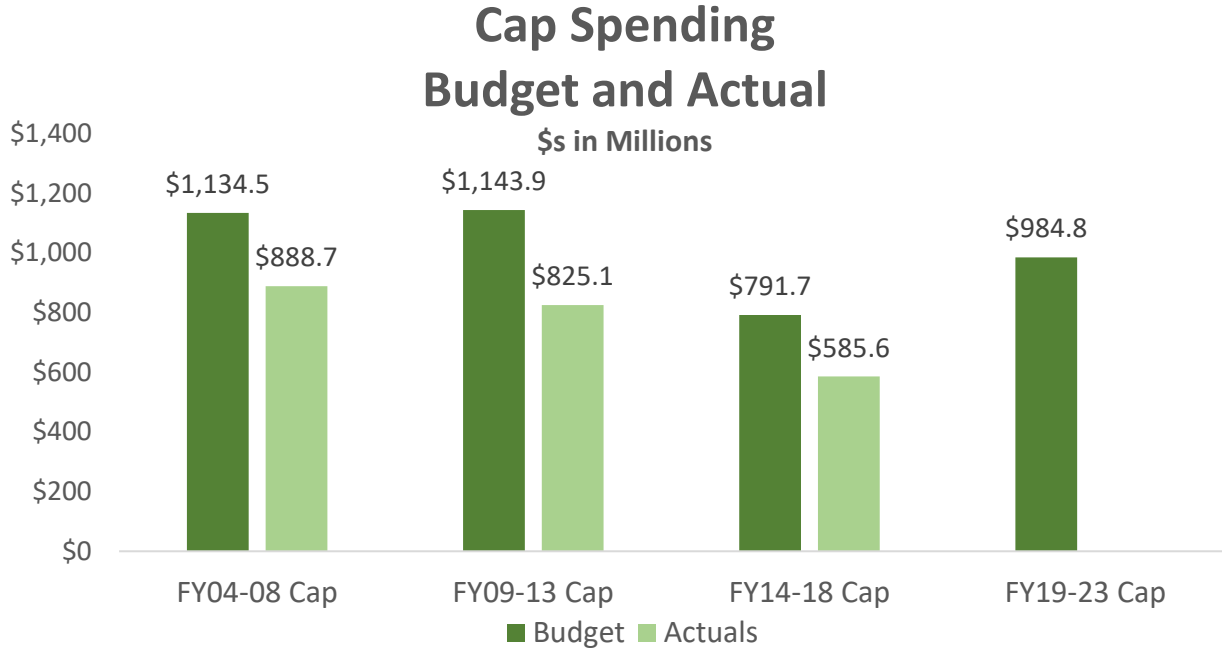


	FY19	FY20	FY21	FY22	FY23	Total FY19-23
Wastewater System Improvements	\$74.8	\$95.7	\$98.6	\$82.2	\$109.8	\$461.1
Waterworks System Improvements	\$65.6	\$50.9	\$45.6	\$70.8	\$133.1	\$366.1
Business & Operations Support	\$2.4	\$3.7	\$4.2	\$11.3	\$35.7	\$57.3
Total MWRA	\$142.9	\$150.4	\$148.4	\$164.4	\$278.5	\$884.5

FY19-23 Five-Year Spending Cap

The concept of a five-year spending Cap was first introduced at the Advisory Board’s recommendation in 2003 for the FY04-08 period. The Cap represents targeted spending levels to ensure adequate capital program funding and to serve as a guide for long-term planning estimates and community assessments. The graph below describes the history of the past three five-year caps and the Final FY19-23 Cap, both in terms of the Cap budget levels and actual spending.

The most recent Cap (FY19-23) of \$984.8 million is significantly higher than the prior Cap (FY14-18) of \$791.7 million for a variety of reasons including increased spending on asset protection and the initial phases of the long-term redundancy program.



Today, the Authority is better positioned to reinvest in rehabilitation and replacement of aging facilities as result of conservative fiscal management which includes judicious control of expenses, and the fact that MWRA has implemented the practice of utilizing available funds resulting from positive current expense budget variances for defeasances resulting in the

reduction of future fiscal years debt service expense. MWRA projects an overall reduction in outstanding principal of debt during the FY19-23 cap period.

The FY19-23 cap cash flow totals \$672.6 million, \$312.3 million below the approved Cap of \$984.8 million and \$74.7 million under the FY23 Proposed Cap calculation. Annual cash flows for the proposed Cap period are shown below in millions:

FY23 Draft Final		FY19	FY20	FY21	FY22	FY23	Total FY19-23
	Projected Expenditures	\$142.9	\$150.4	\$148.4	\$164.4	\$278.5	\$884.5
I/I Program	(39.6)	(33.7)	(31.3)	(30.6)	(25.1)	(160.3)	
Water Loan Program	(13.8)	(4.3)	(14.9)	(12.0)	(23.4)	(68.4)	
MWRA Spending	\$89.4	\$112.3	\$102.2	\$121.8	\$230.0	\$655.8	
Contingency	0.0	0.0	0.0	0.0	14.6	14.6	
Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	2.2	2.2	
Chicopee Valley Aqueduct Projects	(0.0)	0.0	0.0	0.0	0.0	(0.0)	
FY23 Draft Final FY19-23 Spending	\$89.4	\$112.3	\$102.2	\$121.8	\$246.8	\$672.6	

The format of the Cap table has changed to account separately for MWRA spending, which excludes the local I/I grant and loan program and the local water pipeline loan spending which are both outside of MWRA's control. As in past Caps, contingency for each fiscal year is incorporated into the CIP to fund the uncertainties inherent to construction. The contingency budget is calculated as a percentage of budgeted expenditure outlays. Specifically, contingency is 7% for non-tunnel projects and 15% for tunnel projects. Inflation is added for unawarded construction contracts. Finally, the Cap excludes Chicopee Valley Aqueduct system projects.

It is important to emphasize that the majority of spending within the Wastewater and Waterworks programs is concentrated in several larger projects with significant spending in the FY19-23 timeframe. Project contracts with expenditures greater than \$13 million for the FY19-23 timeframe total \$267.2 million, which excludes local community assistance programs, and accounts for slightly over 30% of total projected FY19-23 spending. Large initiatives include, Nut Island Odor Control HVAC Improvement at \$60.6 million (\$60.6 million total cost), Chelsea Creek Upgrades at \$52.6 million (\$84.1 million total cost), Clarifier Rehab at Deer Island \$16.0 million (\$180.0 million total cost), and Office Space Rehabilitation at \$15.3 million (\$15.3 million total cost).

The table below highlights major project spending in the FY19-23 timeframe:

Project	Subphase	FY19-23 \$s in Millions
Corrosion & Odor Control	NI Odor Ctrl HVAC Imp Construction Phase 2	\$60.6
Facility Asset Protection	Chelsea Creek Upgrades - Construction	\$52.6
SEH Redundancy & Storage	Redundancy Pipeline Sect 111 - Construction 3	\$20.0
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	\$20.0
NIH Redundancy & Storage	Section 89 & 29 Redundancy Construction Phase 2	\$19.8
Metro Redundancy Interim Improvements	WASM 3 CP-1	\$19.3
DI Treatment Plant Asset Protection	Clarifier Rehab Phase 2 - Construction	\$16.0
MWRA Facilities Management	Office Space Modifications	\$15.3
New Connecting Mains-Shaft 7	CP3-Sect 23,24,47, Rehabilitation	\$15.3
Metro Redundancy Interim Improvements	Waltham Water Pipeline Construction	\$14.5
SEH Redundancy & Storage	Redundancy Pipeline Sect 111 - Construction 2	\$13.9
Top Spending Subphases FY19-23		\$267.2
% of FY19-23 Spending		30.2%
Remaining FY19-23 Spending		\$617.3
Total Projected FY19-23 Spending		\$884.5

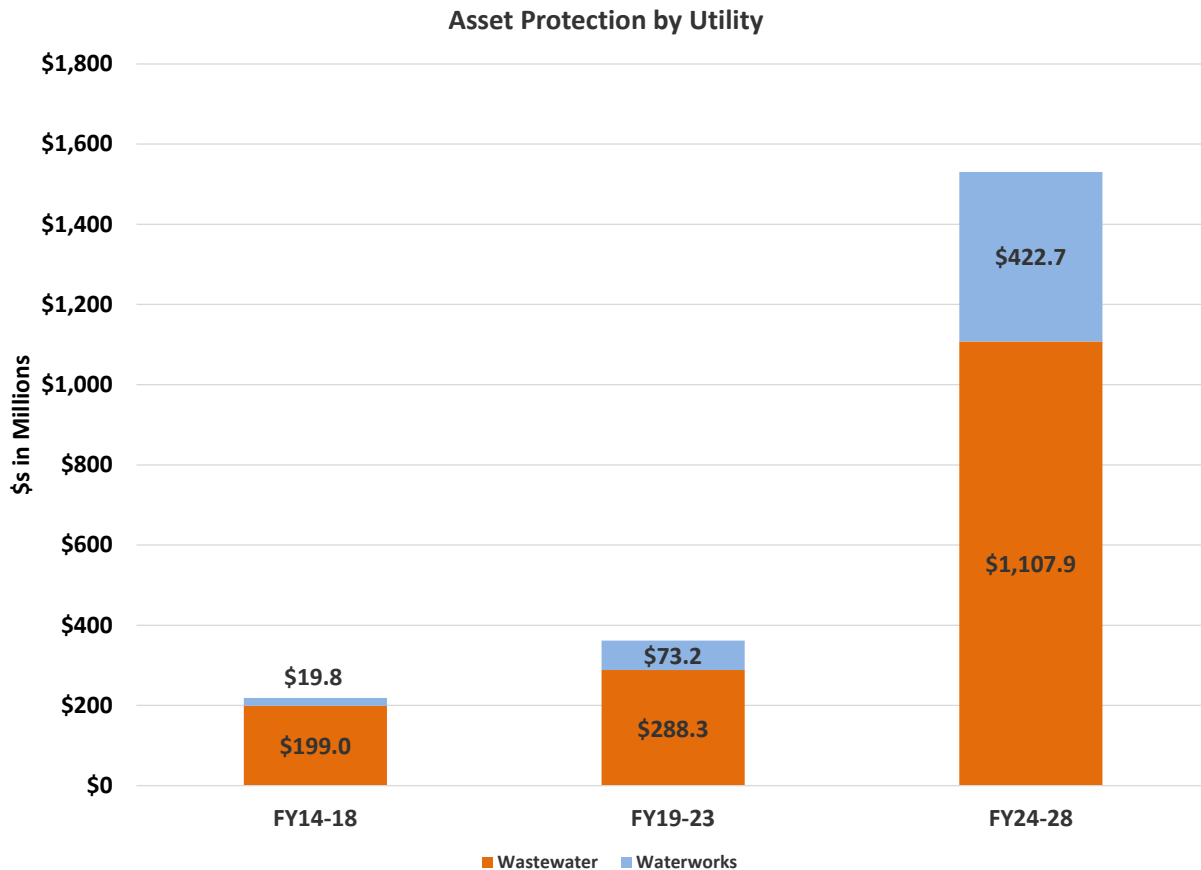
Asset Protection accounts for the largest share of capital expenditures for the FY19-23 period. The FY23 Final CIP includes \$372.8 million for asset protection initiatives, representing 42.1% of total MWRA spending in the FY19-23 timeframe. Wastewater and Waterworks Asset Protection are \$288.3 million and \$73.2 million, respectively. Deer Island Treatment Plant Asset Protection alone accounts for \$84.6 million of Asset Protection spending. Spending for water system redundancy projects total \$201.3 million in the same FY19-23 period, accounting for 22.8% of projected spending.

Changing nature of the CIP by Category

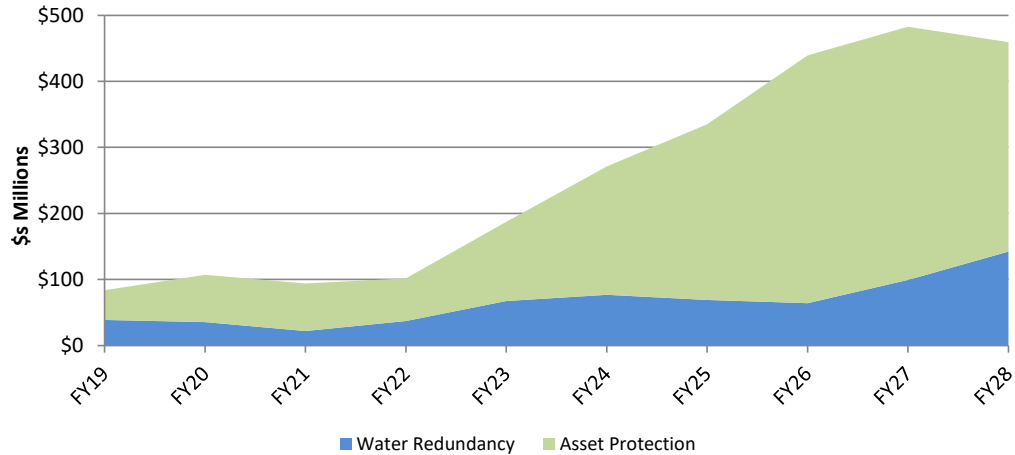
Project Category	Total Contract	FY14-18	FY19-23	FY24-28
Asset Protection	\$3,447.7	\$222.8	\$372.8	\$1,535.2
Water Redundancy	\$3,208.7	\$174.6	\$201.3	\$452.0
CSO	\$890.8	\$64.7	\$12.3	\$0.8
Other	\$1,506.5	\$123.5	\$298.1	\$235.3
Total	\$9,053.7	\$585.6	\$884.5	\$2,223.3
Asset Protection	38.1%	38.0%	42.1%	69.1%
Water Redundancy	35.4%	29.8%	22.8%	20.3%
CSO	9.8%	11.0%	1.4%	0.0%
Other	16.6%	21.1%	33.7%	10.6%
Total	100.0%	100.0%	100.0%	100.0%

In terms of utility spending, wastewater asset protection accounts for nearly 33% of the FY19-23 projected spending at \$288.3 million of which \$84.6 million is designated for the Deer Island

Wastewater Treatment Plant and \$203.7 million for headworks, pump stations, residuals facility, and pipelines. The \$73.2 million targeted for waterworks asset protection which includes \$36.6 million for water pipelines represents just over 8% of FY19-23 projected spending.



As illustrated in the following graph, the next two waves of spending over the FY19-23 period and the FY24-28 period will be for asset protection and water redundancy. This reflects MWRA’s commitment to maintaining its physical plant and addressing the need for water system redundancy in some critical service areas. Total asset protection spending for FY19-23 is projected at \$372.8 million or 42.1% of projected spending. Similarly, water redundancy spending for FY19-23 is projected at \$201.3 million or 22.8% of projected FY19-23 spending. For the FY24-28 spending window, total asset protection is projected at \$1.5 billion or 69.1% of projected spending. Similarly, water redundancy spending for FY24-28 is projected at \$452.0 million or 20.3% of projected FY24-28 spending.



FY23 CIP Future Expenditures

The FY23 Final CIP contains future spending (beyond FY23) estimated at \$3.9 billion. The table below represents the projected spending by the major project categories:

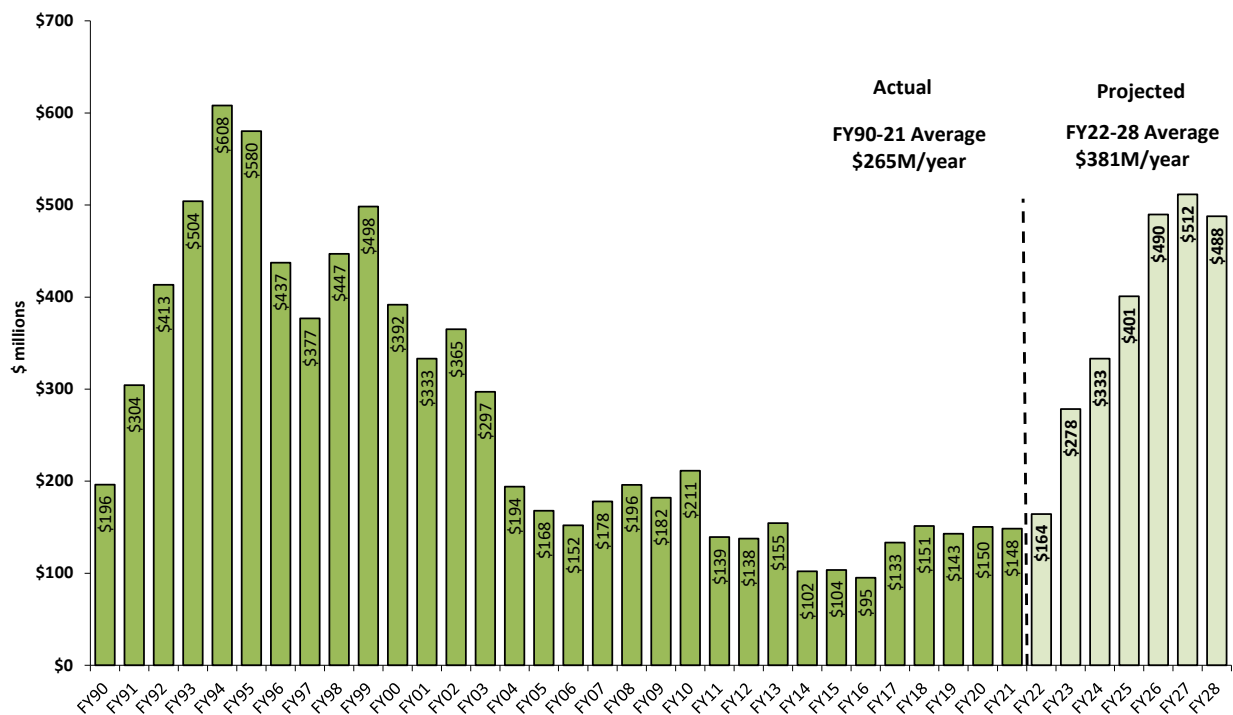
	Future Spending Beyond FY21	FY19	FY20	FY21	FY22	FY23	Total FY19-23	Beyond 23
Wastewater System Improvements	\$1,823.0	\$74.8	\$95.7	\$98.6	\$82.2	\$109.8	\$461.1	\$1,631.0
Interception & Pumping	589.7	23.1	33.1	45.9	39.1	38.9	180.1	511.7
Treatment	1,035.2	10.0	14.2	17.6	7.7	43.1	92.7	984.4
Residuals	90.6	0.8	13.4	1.4	0.0	0.0	15.7	90.6
CSO	9.5	1.2	1.3	2.3	4.8	2.7	12.3	2.1
Other Wastewater	97.9	39.6	33.7	31.3	30.6	25.1	160.3	42.2
Waterworks System Improvements	\$2,425.4	\$65.6	\$50.9	\$45.6	\$70.8	\$133.1	\$366.1	\$2,221.5
Drinking Water Quality Improvements	78.3	0.8	1.5	1.6	4.8	4.1	12.8	69.5
Transmission	1,811.6	9.9	12.8	17.5	33.6	58.9	132.7	1,719.2
Distribution & Pumping	569.4	36.6	26.6	10.7	15.3	35.1	124.4	519.0
Other Waterworks	(34.0)	18.4	9.9	15.8	17.1	35.1	96.2	(86.2)
Business & Operations Support	\$89.9	\$2.4	\$3.7	\$4.2	\$11.3	\$35.7	\$57.3	\$42.9
Total MWRA	\$4,338.3	\$142.9	\$150.4	\$148.4	\$164.4	\$278.5	\$884.5	\$3,895.5

Spending over the FY19-23 period totals \$884.5 million with Wastewater projects accounting for \$461.1 million of total period spending or 52.1% and Waterworks planned spending following at \$366.1 million or 41.4%. Spending beyond FY23 totals \$3.9 billion, including \$1.6 billion for Wastewater projects and \$2.2 billion for Waterworks projects. Beyond FY23, spending is split between Redundancy and Asset Protection initiatives with projected spending of \$1.8 billion and \$2.1 billion, respectively. Beyond FY23 spending for the Metro Tunnel Redundancy project is estimated at \$1.5 billion. Redundancy project spending accelerates in the FY24-28 window.

Historical & Projected Spending

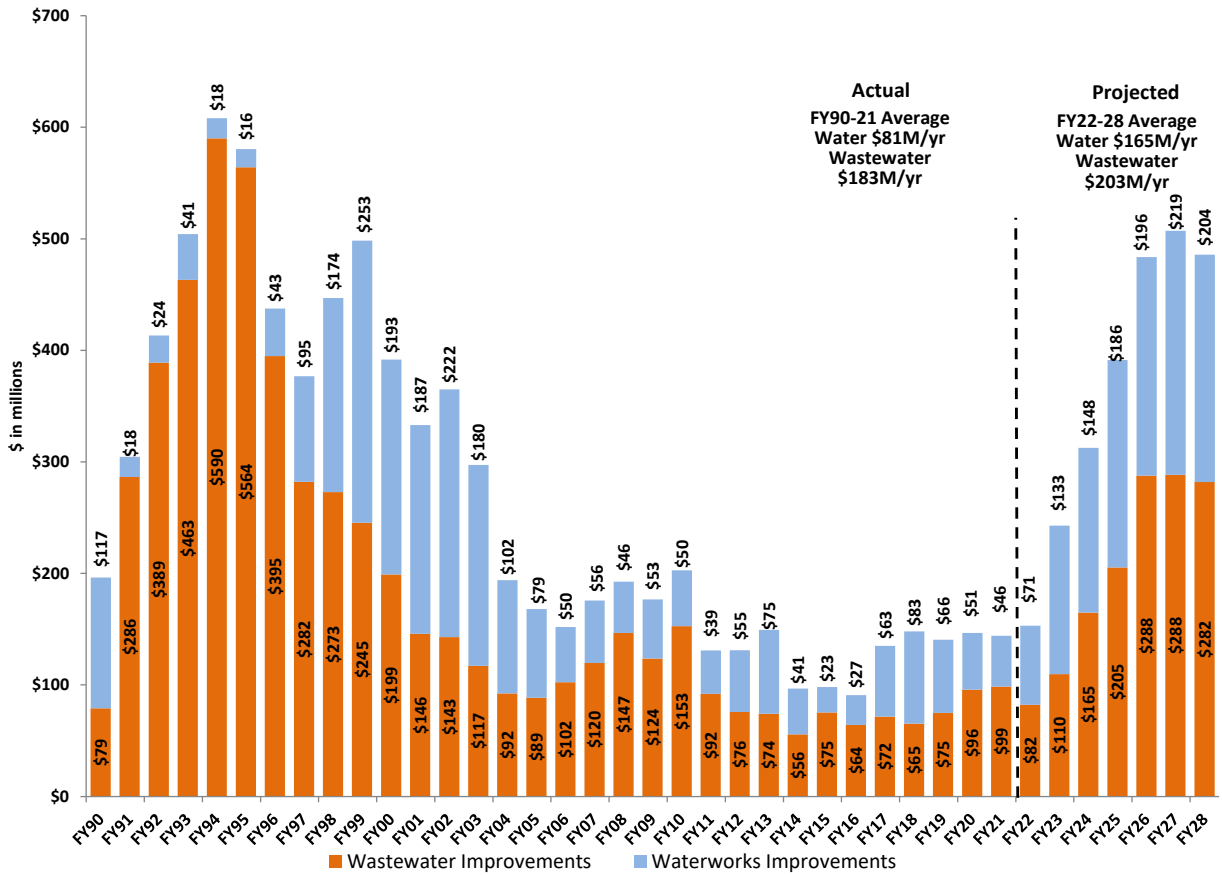
The following chart captures the historical CIP spending through FY21 and projects spending through FY28 based on the FY23 Final CIP. Average annual CIP spending through FY21 was \$265 million. Average annual CIP spending for the FY21-28 period is projected to be \$381 million.

Annual CIP Spending



The following chart shows the historical CIP spending from FY90 through FY21 by utility with projections through FY28. Average annual CIP spending through FY21 was \$81 million for Waterworks and \$183 million for Wastewater. Average annual CIP spending for the proposed FY21-28 period is projected to be \$165 million for Waterworks and \$203 million for Wastewater.

Annual CIP Spending by Utility



The spending projections set forth here include updates to FY23 Proposed CIP with the latest cost estimates, revised schedules, and new projects.

Community Loan Programs

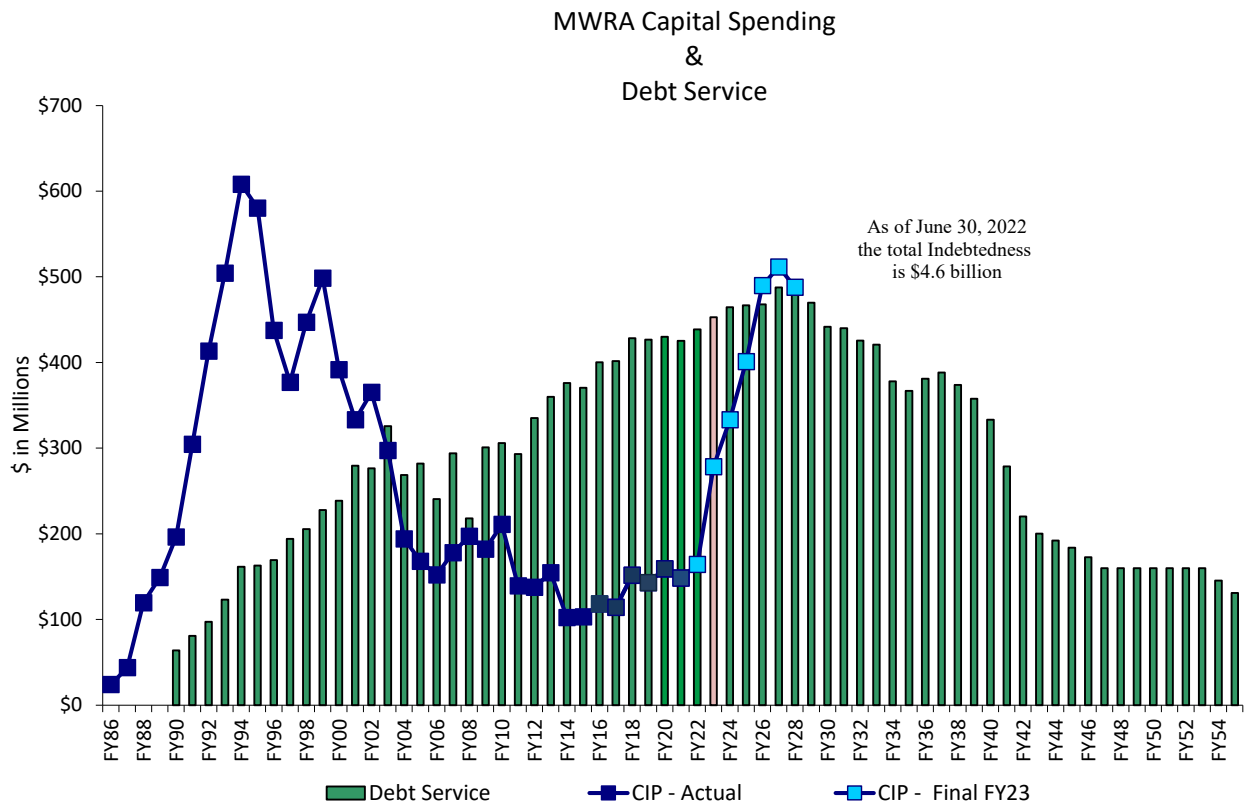
The MWRA offers its water and wastewater communities loan and grant opportunities for infrastructure preservation. Community loans are interest-free and repaid to MWRA over a 5-year or a 10-year period. On the water side, the program's goal is to improve local water system pipeline conditions to help maintain high water quality distribution from MWRA's treatment plant through local pipelines to customers' taps. The water loan program was established in 1998 and over 595 miles of pipeline have been improved. Similarly, on the wastewater side, the local financial assistance program provides MWRA sewer communities funding to perform local infiltration and inflow "I/I" reduction and sewer rehabilitation. The I/I program was established in 1993 and funds are currently approved for distribution through Fiscal Year 2025. Unlike the water loan program, the I/I program is a partial grant program.

Over the FY19-23 timeframe, \$160.3 million in funding is projected to be distributed to MWRA wastewater communities and \$68.4 million is projected to be distributed to MWRA water communities for a total of \$228.7 million in community support.

\$s in Millions	FY19	FY20	FY21	FY22	FY23	FY19-23
I/I Financial Assistance (Net of repayments)	\$39.6	\$33.7	\$31.3	\$30.6	\$25.1	\$160.3
Local Water System Assistance (Net of Repayments)	\$13.8	\$4.3	\$14.9	\$12.0	\$23.4	\$68.4
Total Community Loan Programs	\$53.5	\$38.0	\$46.2	\$42.6	\$48.5	\$228.7

MWRA Capital Improvement Spending and Debt Service

As of June 30, 2022, MWRA’s total debt is \$4.6 billion, which is \$205.0 million less than the MWRA’s total debt as of June 30, 2021. While total outstanding debt is decreasing, debt service obligations continue to rise and are projected to increase in coming years.



Project Level Budget Summaries and Detail of Changes

Information on individual project budgets and detail of changes is provided in the supplemental appendices attached to this document.

APPENDIX H

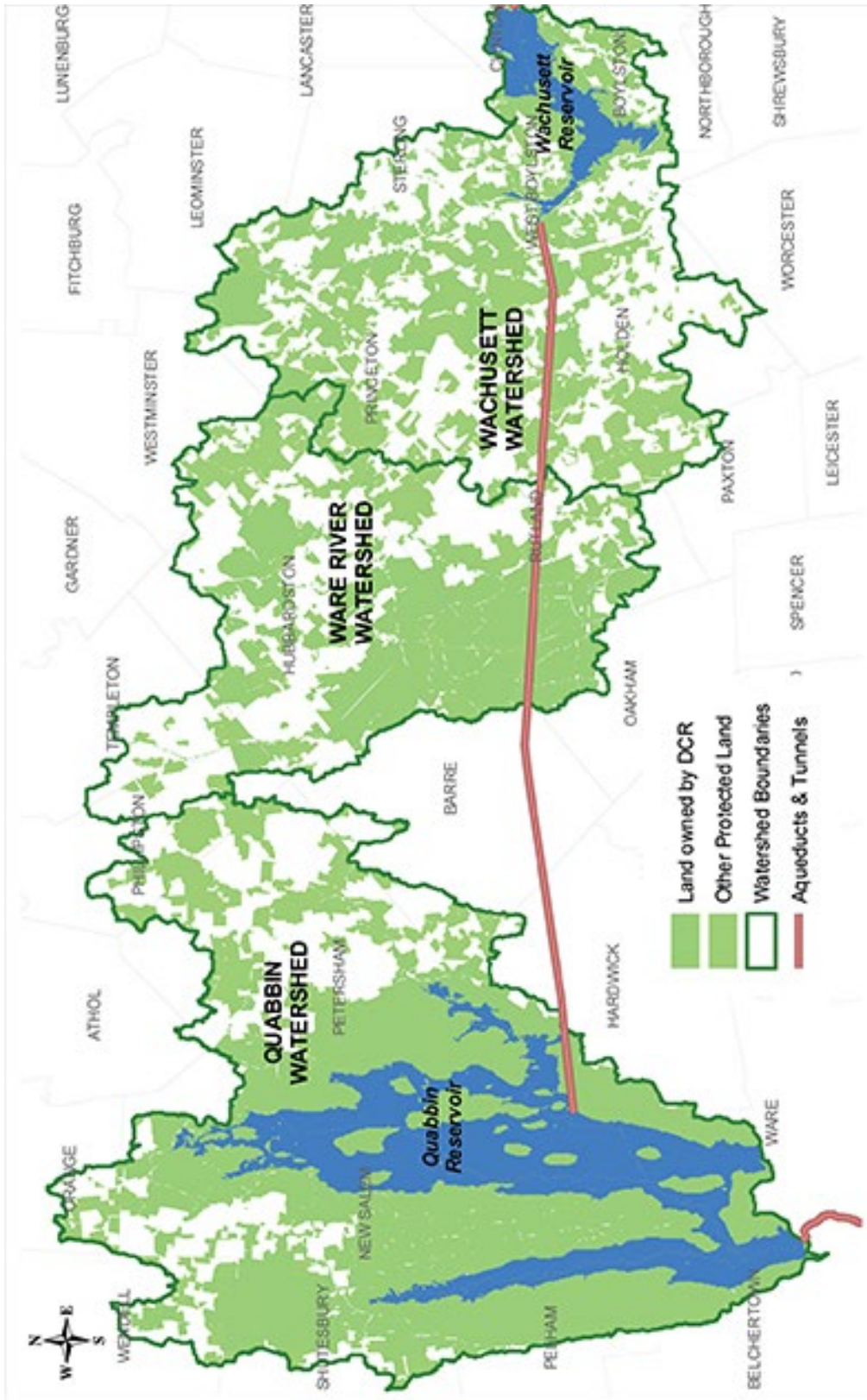
Water Supply Protection Trust

Code	Line Item	FY22 Final	FY23 Final	Change	% Change
AA	Personnel	\$ 10,588,163	\$ 11,904,891	\$ 1,316,728	12.4%
BB	Employee Expenses	\$ 20,000	\$ 15,000	\$ (5,000)	-25.0%
CC	Contracted Services	\$ 35,000	\$ 30,000	\$ (5,000)	-14.3%
DD	Pensions/Insurance	\$ 4,199,327	\$ 5,078,580	\$ 879,253	20.9%
EE	Admin Expenses	\$ 110,000	\$ 160,000	\$ 50,000	45.5%
FF	Facility Operational Supplies	\$ 260,000	\$ 250,000	\$ (10,000)	-3.8%
GG	Energy Costs	\$ 335,000	\$ 340,000	\$ 5,000	1.5%
HH	Consultant Contracts	\$ 231,000	\$ 237,000	\$ 6,000	2.6%
JJ	Operational Services	\$ 60,000	\$ 45,000	\$ (15,000)	-25.0%
KK	Equipment	\$ 970,000	\$ 910,000	\$ (60,000)	-6.2%
LL	Leases, Rentals	\$ 160,000	\$ 180,000	\$ 20,000	12.5%
NN	Construction Improvements	\$ 1,433,000	\$ 1,397,000	\$ (36,000)	-2.5%
PP	Grants to Public Entities	\$ 100,000	\$ 100,000	\$ -	100.0%
TT	Specials Payments	\$ 140,000	\$ 150,000	\$ 10,000	7.1%
UU	IT Expenses	\$ 305,000	\$ 210,000	\$ (95,000)	-31.1%
	Total Expenses	\$ 18,946,490	\$ 21,007,471	\$ 2,060,981	10.9%

6995	Hydro + Transmission	\$ 350,000	\$ 400,000	\$ 50,000	14.3%
4500	Forestry	\$ 500,000	\$ 450,000	\$ (50,000)	-10.0%
3148	Fishing & Recreation	\$ 150,000	\$ 150,000	\$ -	0.0%
6900	Miscellaneous	\$ 20,000	\$ 20,000	\$ -	0.0%
	Total Revenue	\$ 1,020,000	\$ 1,020,000	\$ -	0.0%

	Total Net Operating Budget	\$ 17,926,490	\$ 19,987,471	\$ 2,060,981	11.5%
	PILOT net of Fay School and Southboro rec use fee	\$ 8,805,000	\$ 8,903,291	\$ 98,291	1.1%
	Grand Total to Budget in Indirect Expense Section	\$ 26,731,490	\$ 28,890,762	\$ 2,159,272	8.1%

APPENDIX H



MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

First Quarter FY2023

Q1	Q2	Q3	Q4
█			



Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
November 16, 2022

Board of Directors Report on Key Indicators of MWRA Performance

1st Quarter - FY23

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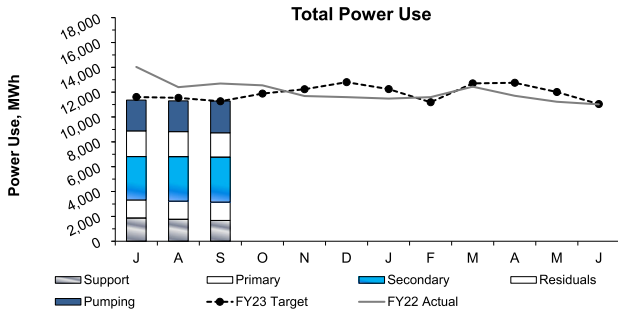
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for internal management use and is subject to correction and clarification.

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
November 16, 2022

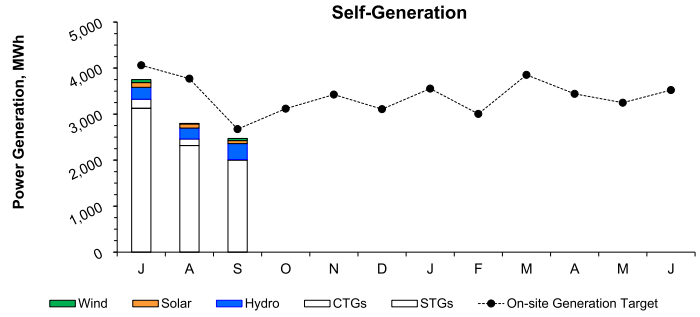
OPERATIONS AND MAINTENANCE

Deer Island Operations

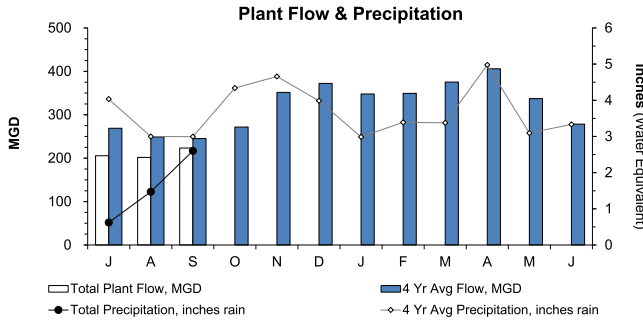
1st Quarter - FY23



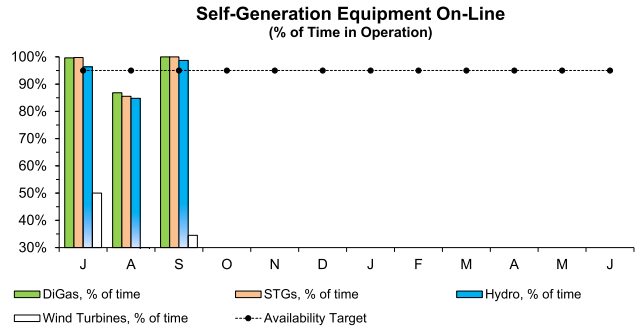
Total power usage in the 1st Quarter was 1.4% below target as plant flow for this period was 17.3% below target with historical data (4 year average) used to generate the electricity model. As a result, power usage in nearly all areas and treatment processes was similar to or below target, including power used for raw wastewater pumping, which was 8.4% below target.



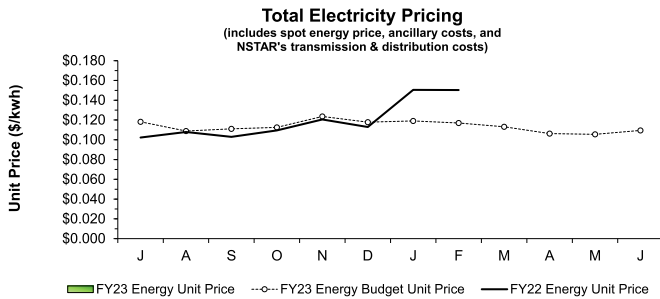
Power generated on-site during the 1st Quarter was 14.1% below the target. CTGs generation was below target by 49.5% as operation for ISO-New England demand response events and for peak shaving were lower-than-expected. STGs generation was 11.3% below as digester gas production was 12.4% below target. Hydro Turbine generation was 7.4% below target as Total Plant Flow was 17.3% below target. Wind Turbine generation was 46.6% below target as Turbine #1 has been out of service since April 11 pending repairs to the failed main shaft bearing and a failed cooling fan which left Turbine #2 out of service for much of the time from August 7 to September 10. Solar Panel generation was 4.7% below target due to a faulty power supply on one of the rooftop solar arrays on the Maintenance/Warehouse Building which kept the array out of service for several days and a failed grid inverter on the solar array on the Residuals Odor Control (ROC) Facility which has kept the array out of service since September 12. The ROC solar grid inverter is no longer available and is pending repair by the vendor.



Total Plant Flow for the 1st Quarter was 17.3% below target with the budgeted 4 year average plant flow (210.2 MGD actual vs. 254.3 MGD expected) as precipitation was 53.2% below target this quarter (4.69 inches actual vs. 10.03 inches expected).

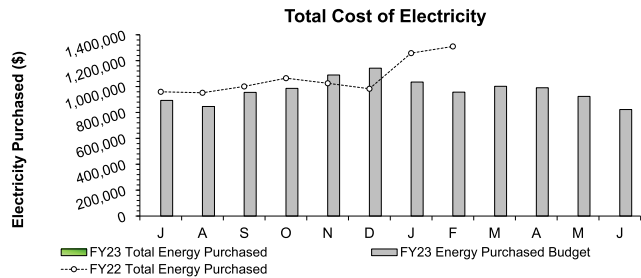


The DiGas System and STGs availability exceeded the 95% availability in the 1st Quarter, even though annual maintenance shut down portions or all of the Thermal Plant between August 21 through September 12. Hydro Turbine availability fell just below target (93.3%) due to electrical issues in the Hydro Turbine Facility in August. Wind Turbine availability was only 31.7% due to mechanical issues with Turbine #1 (main shaft bearing failure) which has left the turbine out of service since April 11, and Turbine #2 which was out of service from August 7 through September 10 due to a failed cooling fan and minor repairs that were needed on the turbine blades.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price for July, August, and September are not yet available as the complete invoices have not been received. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

Note: Only the actual energy prices are reported. Therefore, the dataset lags by seven (7) months (since March) due to the timing of invoice receipt and review.



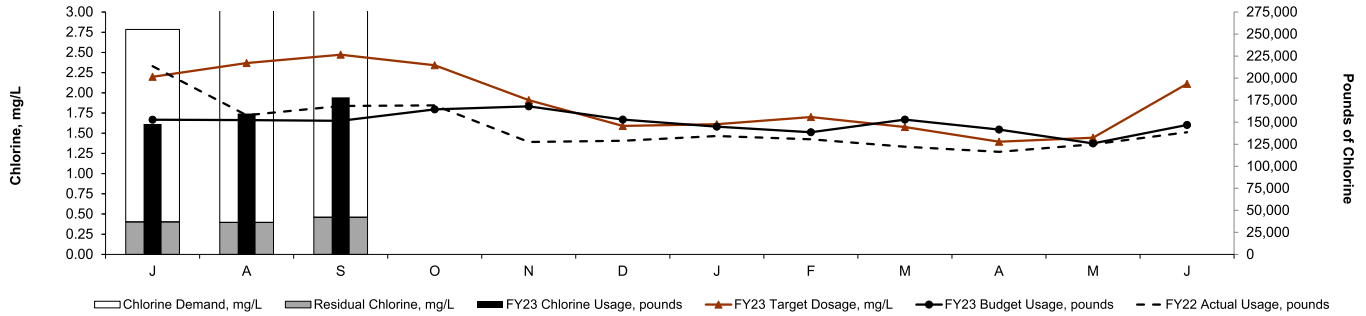
The Electricity cost data for Electricity Purchased in July, August, and September are not yet available as the complete invoices have not been received.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by seven (7) months (since March) due to the timing of invoice receipt and review.

Deer Island Operations

1st Quarter - FY23

Deer Island Sodium Hypochlorite Use



The disinfection dosing rate in the 1st Quarter was 28.0% above target with budgetary estimates. Additionally, actual sodium hypochlorite usage in pounds of chlorine was 6.4% higher-than-expected, even though the average plant flow was 17.3% below target. DITP maintained an average disinfection chlorine residual of 0.42 mg/L this quarter with an average dosing rate of 3.01 mg/L (as chlorine demand was 2.59 mg/L). The higher hypochlorite usage and dosing is due to a higher effluent chlorine demand resulting from the lower-than-expected plant flow.

The overall disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	0	0	0	100.0%	0.00
A	0	0	0	100.0%	0.00
S	0	0	0	100.0%	0.00
O					
N					
D					
J					
F					
M					
A					
M					
J					
Total	0	0	0	100.0%	0.00

100.0% of all flows were treated at full secondary during the 1st Quarter as there were no blending events.

The Maximum Secondary Capacity during the entire quarter was 700 MGD. Secondary permit limits were met at all times during the 1st Quarter of FY23.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 630.2 MGD during the early evening of August 26. This peak flow occurred during a storm event that brought 0.41 inches of rain to the metropolitan Boston area. The Total Plant Flow in Quarter 1 was 17.3% below the 4 year average plant flow target for the quarter.

Several recordsetting low monthly influent flows were recorded for July and August as the previous Total Plant Influent, North System Influent, and South System Influent flow records, and precipitation amounts were broken as a result of the regional drought conditions. These new records are shown in the tables below and are highlighted in yellow.

July Low Plant Flow Records

	Previous July Low Flow Record (since plant startup July 1998)	New July Low Flow Record (set 2022)	All-time Monthly Low Flow Record (since plant startup July 1998)
Total Plant Influent Flow	217.79 MGD (2016)	205.58 MGD	204.12 MGD (Sept. 2020)
North System Influent Flow	151.14 MGD (2020)	138.93 MGD	138.78 MGD (Sept. 2020)
South System Influent Flow	66.64 MGD (2016)	66.64 MGD (tied)	62.28 MGD (Sept. 2016)
Precipitation	0.63 inches (1997)	0.62 inches	0.00 inches (June 1999)

August Low Plant Flow Records

	Previous August Low Flow Record (since plant startup July 1998)	New August Low Flow Record (set 2022)	Current All-time Monthly Low Flow Record (since plant startup July 1998)
Total Plant Influent Flow	213.32 MGD (2020)	201.73 MGD (also New All Time Low Flow Record)	201.73 MGD (August 2022) Previous record: 204.12 MGD (Sept. 2020)
North System Influent Flow	145.34 MGD (2020)	139.10 MGD	138.78 MGD (Sept. 2020)
South System Influent Flow	66.96 MGD (2016)	62.63 MGD	62.28 MGD (Sept. 2016)
Precipitation	0.66 inches (2007)	No new record set (1.47 inches)	0.00 inches (June 1999)
All-time lowest Daily Average South System Flow	-----	55.83 MGD (Aug 20) and 55.96 MGD (Aug 21)	55.83 MGD (August 20, 2022) Previous record: 56.26 MGD (Sept. 4, 2016)

Deer Island Operations

1st Quarter - FY23

Deer Island Operations & Maintenance Report (continued)

Secondary Treatment:

Annual turnaround maintenance on Train #1 in the Cryogenic Oxygen Facility began on September 26 and will be completed on October 7. This two (2) week turnaround maintenance is performed on roughly half of the components and systems in the Cryogenic Oxygen Facility. During this turnaround maintenance, the contractor calibrated all the instrumentation on Cold Box unit #1 as well as, a number of other components of the oxygen plant. The same turnaround maintenance was completed on Train #2 in the spring (April).

Residuals Treatment:

Module #1 Digester #4 was taken out of service on August 22 due to a clog in the digester's recirculation line or pump which prevented the ability to properly heat the sludge in the digester and also prevented the addition of ferric chloride to control struvite to this single digester. The digester was emptied of sludge to allow staff to perform essential corrective maintenance to unclog a recirculation line and to replace several faulty isolation valves. The maintenance was completed by the end of the September and staff began preparing the digester for its return to operation in October, including conducting leak tests on the repairs and other necessary maintenance.

Odor Control Treatment:

Carbon adsorber (CAD) units #1 through #4 in the East Odor Control (EOC) Facility were emptied and refilled with new regenerated activated carbon media in September as part of routine maintenance to replace spent activated carbon. CAD unit #5 in the West Odor Control (WOC) Facility was emptied of spent carbon and will be filled with regenerated carbon in October.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 26.6% of Deer Island's total power use for the 1st Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 25.5% of Deer Island's total electrical power use for the quarter.

The CTGs were operated on a total of eight (8) days in July and August for a combination of peak demand shaving, Eversource, or ISO-New England demand response events during the 1st Quarter.

Annual maintenance at the Thermal Power Plant (TPP) began on August 21 and continued through September 12. Various maintenance activities on the STG, BP-STG, the two (2) Zurn boilers, and the common systems included maintenance on various pumps, valves, and instrumentation throughout the TPP and the DITP heat loop system. On August 21, maintenance began on the offline Boiler 101 and the main STG. On August 27 and 28, Boiler 201, the BP-STG, and the Deaerator, were taken out of service to allow for maintenance to proceed on these units, as well as maintenance on the common systems, and the DITP heat loop system. The boiler common system and the BP-STG maintenance was completed on August 29 allowing Boiler 201 to be returned to service overnight. The BP-STG was placed into operation on September 1 and the STG was returned to service on September 7. A gasket leak on Boiler 101 was repaired on September 9 and the boiler was successfully test operated before returning the boiler to stand by mode. All digester gas produced was flared from August 28 to August 31 during the full TPP shutdown and there were no negative impacts caused by this annual maintenance shutdown.

On September 8, the air starter that supports CTG 2B was replaced. The air starter drives the internal high pressure compressor at the gearbox until the required rotation for ignition is reached. The unit was successfully test operated following the air starter replacement and the CTG was returned to standby status. On September 12, CTG 1A's start air tank was inspected (by Dept. of Public Safety) as required every 2 years. As a result, CTG 1A was unavailable for most of the day as the start air tank was emptied to allow for the inspection and refilling of the start air tank takes several hours to complete. CTG 1A start air tank was filled by 3:00 p.m. and the turbine was returned to stand by mode. One CTG unit was available for operation at all times during both of these tasks in the event backup power was needed.

The blades on Wind Turbines #2 were inspected on September 7 and minor repairs were performed on a couple of areas on the leading edge and a few spots on the trailing edges of the turbine blades. The areas requiring attention were cited as being caused by normal wear. Wind Turbines #1 and #2 have been in operation since April 2010.

Other:

MWRA staff hosted a tour on July 28 for approximately 30 people, including executive staff, from the Mystic River Watershed Association. The group was provided a bus tour, with MWRA senior staff on board hosting the group, and included stops with accompanying brief tours and presentations at the Alewife Pump Station, the Chelsea Creek Headworks Facility, and the Deer Island Treatment Plant. The group was also able to view the approximate location of the Somerville Marginal CSO outfall where it discharges to the receiving water while on the bus enroute from the Alewife Pump Station to the Chelsea Creek Headworks Facility. The stop at DITP included a brief tour and a lunchtime presentation by ENQUAL staff on Alewife Brook and Mystic River Water Quality. DITP hosted a similar event for the Charles River Watershed Association on August 24.

A WCVB Channel 5 film crew was at DITP on July 22 to conduct an interview with MWRA Executive Director, Mr. Fred Laskey, as well as to record footage around the treatment plant, the surrounding public access walkway, and of Boston Harbor. This footage was used in a Chronicle segment that was broadcasted on August 8 focusing on the "Changing Boston Harbor" which featured Deer Island among other Boston Harbor highlights.

DITP was host for the Boston Harbor Islands Partnership's annual meeting and awards ceremony on the afternoon of September 20. Eleven different agencies make up the Boston Harbor Islands Partnership, the federally legislated body that governs the Boston Harbor Islands National and State Park. A brief tour of the Deer Island Treatment Plant was provided for all the attendees as part of the annual meeting.

Clinton Operations & Maintenance Report

Dewatering Building

Maintenance repositioned the drive gear, replaced the top and bottom belts, upper and lower wash box seals and doctor blade on # 1 sludge belt filter press. They also replaced a gasket on a leaking polymer valve. Operations and Maintenance staff worked on repositioning the ventilation duct work and painted black lines on the wall of the sludge garage. Maintenance completed several monthly PM work orders. A contractor repaired the # 1 gravity thickener rake arm skimmer and a contractor replaced the two (2) modine heaters and installed a 2 inch pressure reducing station.

Chemical Building

Operations took #1 and #2 chlorine contact basins down for cleaning and both were returned to service. Maintenance staff cleaned several soda ash lines for the pump distribution lines. They also cleaned soda ash lines on the upstairs and down stairs mixing tank. Staff cleaned and reassembled the process water strainer and re-piped the polymer system for the phosphorus removal system. A contractor repaired a leaking 1 inch process water line.

Aeration Basins

Operations staff cleaned the pH and D.O. probes. Maintenance staff checked the oil level in all six (6) blowers. The Facilities Specialist continued with the concrete repairs on top of the aeration tanks.

Phosphorus Building

Maintenance staff acid washed all three (3) disk filters, cleaned the troughs, and inspected all the nozzles. Staff replaced tubing with hard piping and cleaned the #1 polymer pump. Operation staff cleaned both CL17 chlorine analyzers.

Headworks

Plant staff hose cleaned Lancaster's Parshall Flume. Maintenance also cleaned the influent and mechanical bar rack and greased the upper and lower pin racks. They also installed a new sump pump # 2 in lower grit.

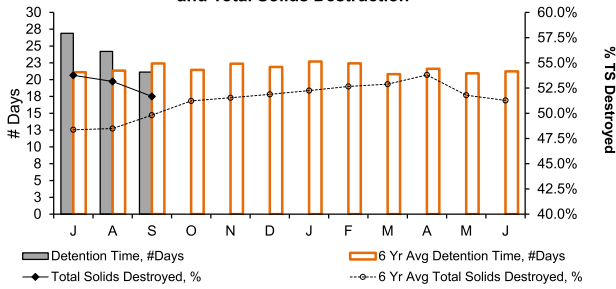
Digester Building

Operations staff changed from # 2 to #1 sludge digester heater. A contractor cleaned the boiler tubes and installed new gaskets on both units. Maintenance staff greased the floating cover mixers. The Facilities Specialist vacuumed and pressure washed the boiler room in preparation for paint. Deer Island staff connected the digester boiler room gas detector to the plant verbatim alarm system.

Deer Island Operations and Residuals

1st Quarter - FY23

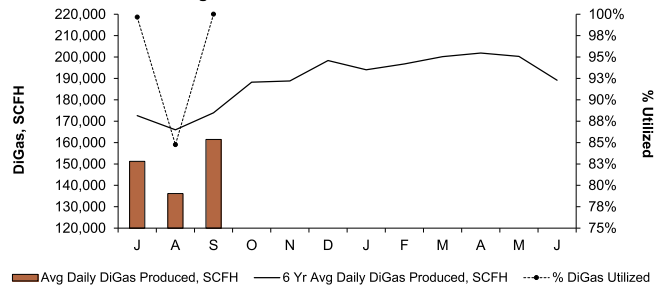
Sludge Detention Time in Digesters and Total Solids Destruction



Total solids (TS) destruction following anaerobic sludge digestion averaged 52.9% during the 1st Quarter, 8.1% above target with the 6 year average of 48.9%. Sludge detention time in the digesters was 24.1 days, 11.4% above target. 7.5 digesters were in operation, below target with the the 6 year average of 7.8 digesters due to corrective maintenance needed to unclog the Mod #1 Digester 4 recirculation line. Sludge detention time and solids destruction was higher-than-expected as the volume of sludge going to the digesters was lower-than-expected.

Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting around of sludge.

Digester Gas Production and % Utilized

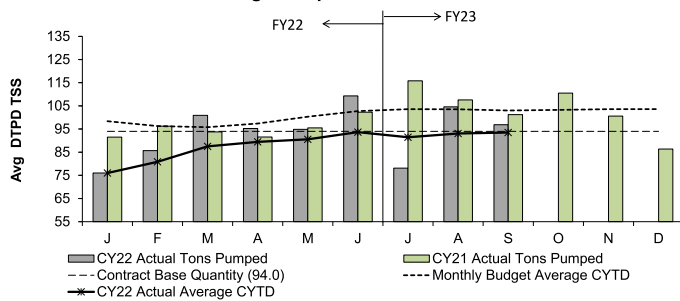


The Avg Daily DiGas Production in the 1st Quarter was 12.4% below the 6 Year Avg Daily DiGas Production due to 19.1% lower-than-expected primary sludge production as a result of the lower plant flows. 94.8% of the DiGas produced was utilized at the Thermal Power Plant as usage in August was 84.8% due to the annual Thermal Power Plant maintenance shutdown.

Residuals Pellet Plant

New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 94.0 DTPD/TSS as an annual average (for the extended contract period of January 1, 2021 through December 31, 2022). The monthly invoice is based on 94.0 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional payments are made on any quantity above the base amount. On average, MWRA processes more than 94.0 DTPD/TSS each year (FY22's budget is 104.0 DTPD/TSS and the preliminary FY23's budget is 103.3 DTPD/TSS).

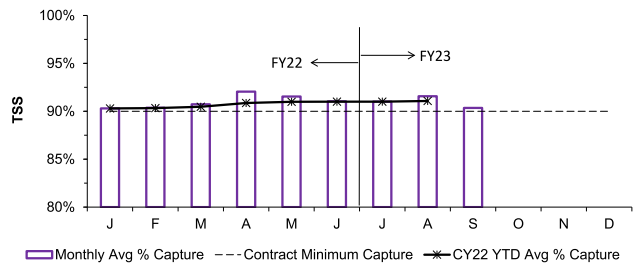
Sludge Pumped From Deer Island



The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 1st Quarter was 93.2 TSS Dry Tons Per Day (DTPD), 10.1% below target with the FY23 budget of 103.6 TSS DTPD for the same period.

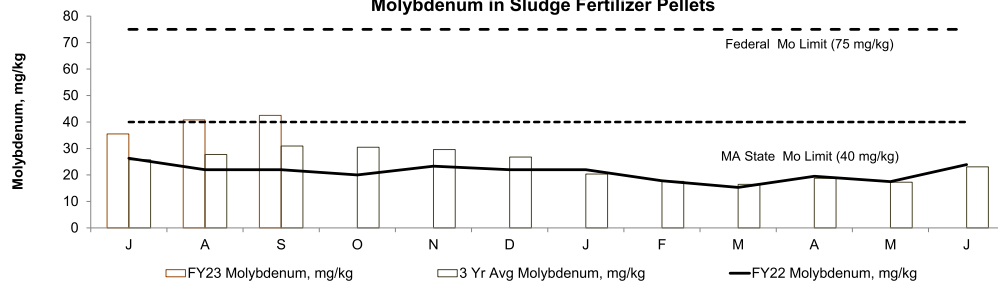
The overall CY22 average quantity of sludge pumped through September is 93.5 DTPD, 9.2% below target compared to the CY22-to-date average budget of 103.0 DTPD for the same time period.

Monthly Average % Capture of Processed Sludge



The contract requires NEFCO to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility. The average capture for the 1st Quarter was 90.98%.

Molybdenum in Sludge Fertilizer Pellets



Copper, lead, and molybdenum (Mo) are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Molybdenum-based cooling tower water is a significant source of Mo in the sludge fertilizer pellets. The Federal standard for Mo is 75 mg/kg. In 2016, Massachusetts Type 1 biosolids standard for molybdenum was changed to 40 mg/kg from the previous standard of 25 mg/kg. This has allowed MWRA to sell its pellets in-state for land application whereas the previous limits forced several months' worth of pellets to be shipped out of state. This made it an impractical source of fertilizer for local Massachusetts farms since NEFCO does not distribute product that does not meet the suitability standards.

The levels have been below the DEP Type 1 limit copper and lead. For Mo, the level in the MWRA sludge fertilizer pellets during the 1st Quarter averaged 39.6 mg/kg, 41% above the 3 year average, on target (-1%) with the MA State Limit, and 47% below the Federal Limit. However, the August Mo level of 40.8 mg/kg and the September Mo level of 42.5 mg/kg were above the MA State Limit, causing the sales of the pellets to be restricted to a smaller market where the product is still able to be utilized. Above average summer temperatures have resulted in increased Mo levels due to increased air conditioning "blow down" and the use of Mo-containing corrosion chemicals.

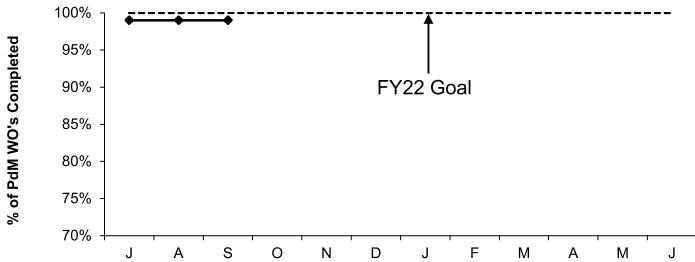
Deer Island Maintenance

1st Quarter - FY23

Productivity Initiatives

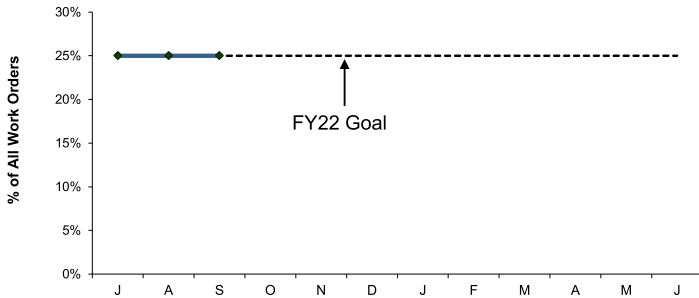
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



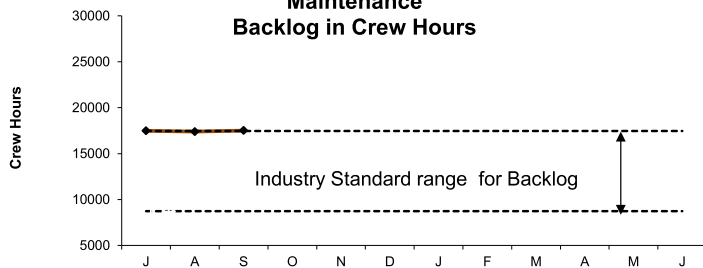
Deer Island's FY23 predictive maintenance goal is 100%. DITP completed 99% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Deer Island is below are goal this quarter, but we are trending upward.

Predictive Maintenance



Deer Island's increased FY23 predictive maintenance goal is 25% of all work orders to be predictive. 25% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

Maintenance Backlog in Crew Hours

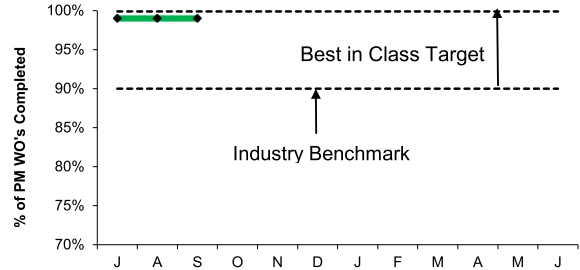


DITP's maintenance backlog at Deer Island is 17,501 hours this quarter. DITP is above the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by (5) vacancies; (2) Electricians, (1) O&M Specialist, (1) HVAC Technician and (1) Welder. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

Proactive Initiatives

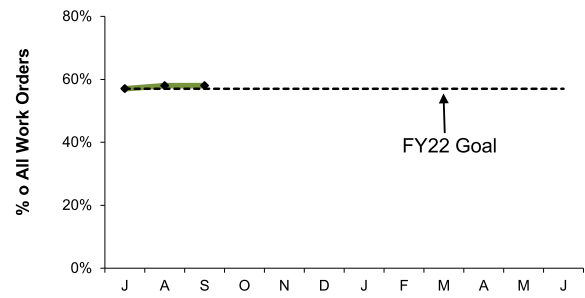
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



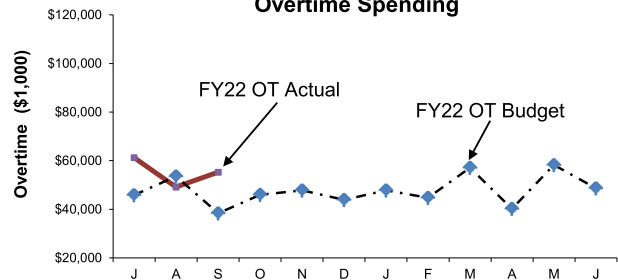
Deer Island's FY23 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 99% of all PM work orders this quarter. Deer Island was below our goal, but within Best in Class Target.

Maintenance Kitting



Deer Island's increased FY23 maintenance kitting goal is 57% of all work orders to be kitted. 58% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

Overtime Spending



Maintenance overtime was over budget by \$28K this quarter and \$28k over for the year. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarter's overtime was predominately used for Storm Coverage/High Flows, Pump Clogging Issues, Installation of Cooling Tower Bypass System, Start-Up/Testing of EN:DG.CHILL-2000, Repair of Hypo Tank Farm Emergency Showers, Thermal Boiler Annual Outage, and Miscellaneous Tank Work.

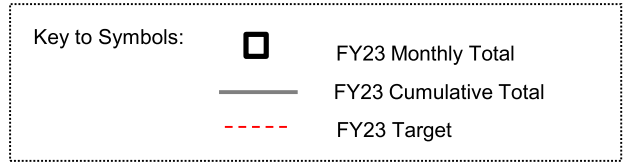
Water Distribution System Valves

1st Quarter - FY23

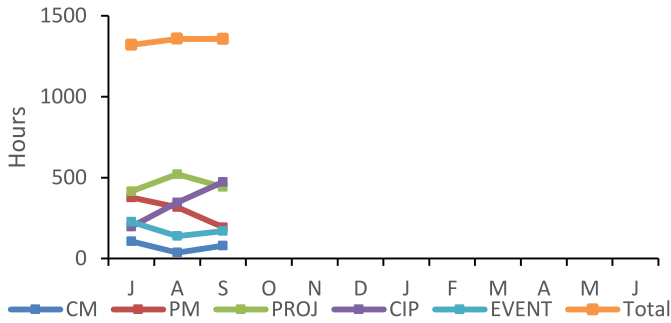
Background

Valves are exercised, rehabilitated, or replaced in order to improve their operating condition. This work occurs year round. Valve replacements occur in roadway locations during the normal construction season, and in off-road locations during the winter season. Valve exercising can occur year round but is often displaced during the construction season. This is due to the fact that a large number of construction contracts involving rehabilitation, replacement, or new installation of water lines, requires valve staff to operate valves and assist with disinfection, dechlorination, pressure-testing, and final acceptance. Valve exercising can also be impacted due to limited redundancy in the water system; valve exercising cannot be performed in areas where there is only one source of water to the community meters or flow disruptions will occur.

Type of Valve	Inventory #	Operable Percentage	
		FY23 to Date	FY23 Targets
Main Line Valves	2,159	97.1%	95%
Blow-Off Valves	1,682	98.6%	95%
Air Release Valves	1,519	95.8%	95%
Control Valves	49	100.0%	95%

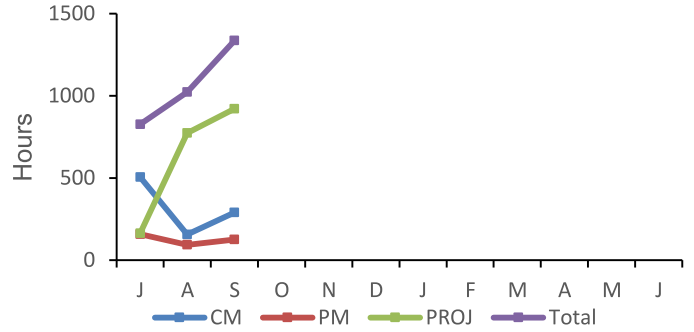


Water Valve Labor Hours



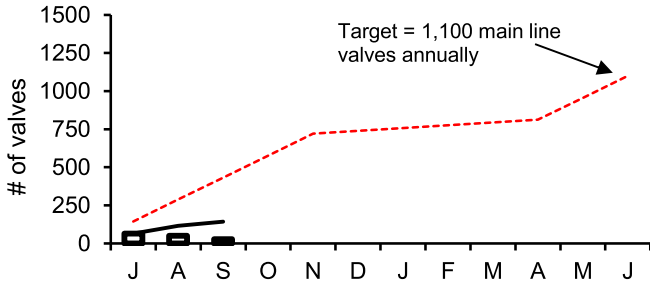
During Q1 FY23 there was a total of 4033 hours worked. Percentage breakdown; Corrective Maintenance 5%, Preventative Maintenance 22%, Project 34%, Capital Improvement Project 25%, Event - Wtr Fountain 13%

Water Pipeline Labor Hours



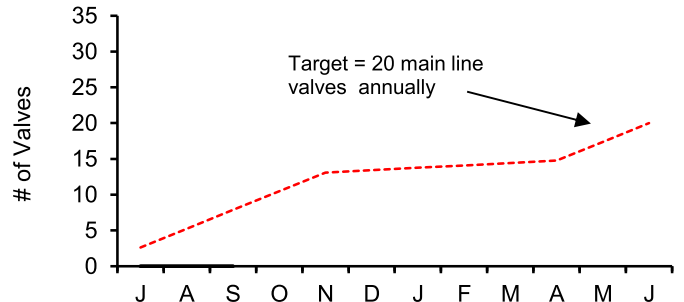
During Q1 FY23 there was a total of 3185 hours worked. Percentage breakdown; Corrective Maintenance 30%, Preventative Maintenance 12%, Project 58%

Main Line Valves Exercised



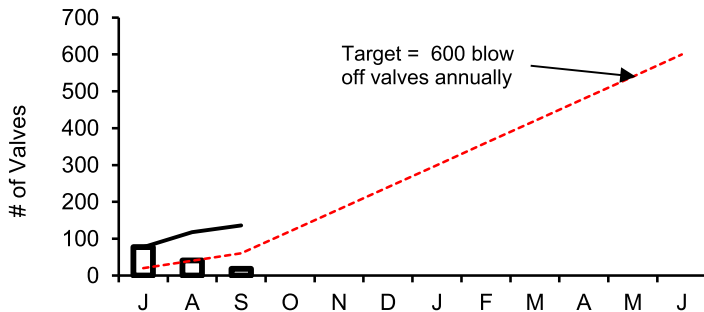
During Q1 FY23, 143 main line valves were exercised. The total exercised for the fiscal year to date is 143. Below target due to necessary hours spent to support Capital Improvement Projects and in-house construction work.

Main Line Valves Replaced



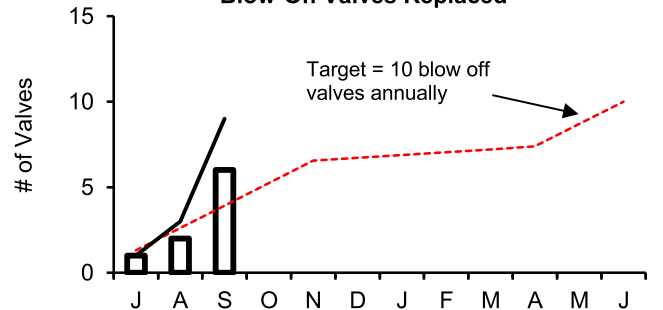
During Q1 FY23, there were no main line valves replaced. The total replaced for the fiscal year to date is 0. Below target due to staff vacancies.

Blow-Off Valves Exercised



During Q1 of FY23, 136 blow off valves were exercised. The total exercised for the fiscal year to date is 136.

Blow-Off Valves Replaced



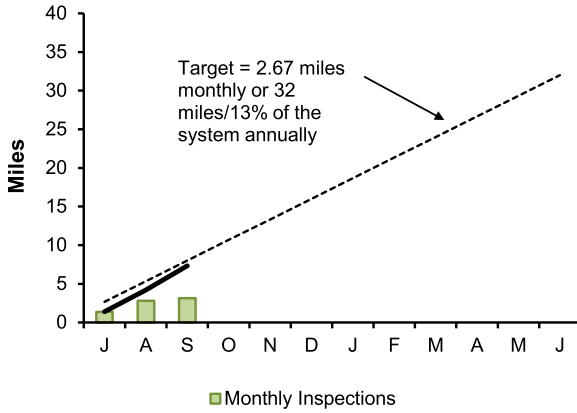
During Q1 of FY23, there were 9 blow off valves replaced. The total replaced for the fiscal year to date is 9.

Wastewater Pipeline and Structure Inspections and Maintenance

1st Quarter - FY23

Inspections

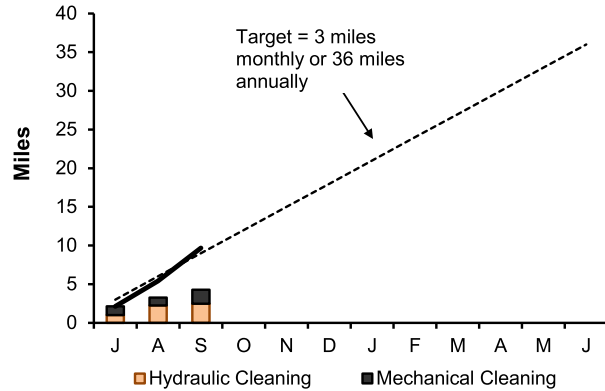
Pipeline Inspections



Staff internally inspected 7.33 miles of MWRA sewer pipe during this quarter. The year to date total is 7.33 miles. No Community Assistance was provided.

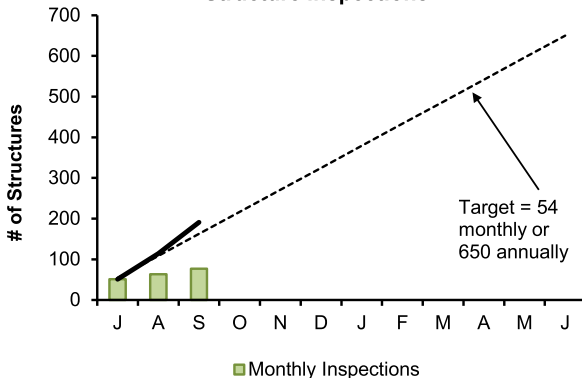
Maintenance

Pipeline Cleaning



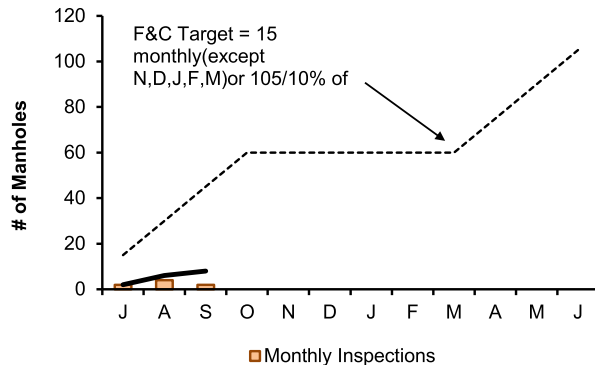
Staff cleaned 9.68 miles of MWRA sewer pipe, and removed 14 yards of grit. The year to date total is 9.68 miles. No Community Assistance was provided.

Structure Inspections



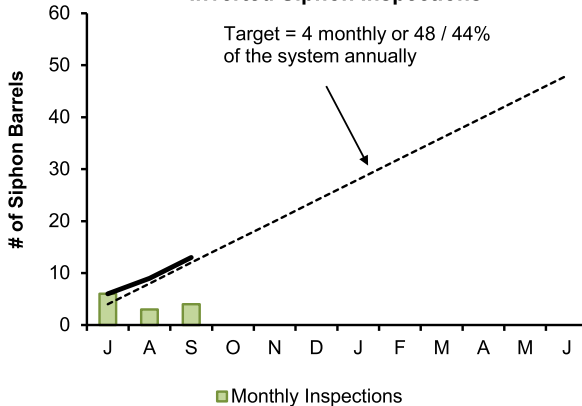
Staff inspected the 12 CSO structures and performed 65 other additional manhole/structure inspections during this quarter. The year to date total is 77 inspections.

Manhole Rehabilitation



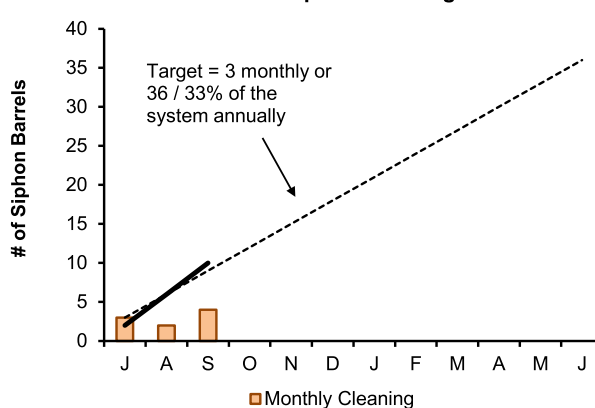
Staff replaced 8 frame and cover replacements this quarter. The year to date total is 8.

Inverted Siphon Inspections



Staff inspected 13 siphon barrels this quarter. The year total is 13 inspections.

Inverted Siphon Cleaning

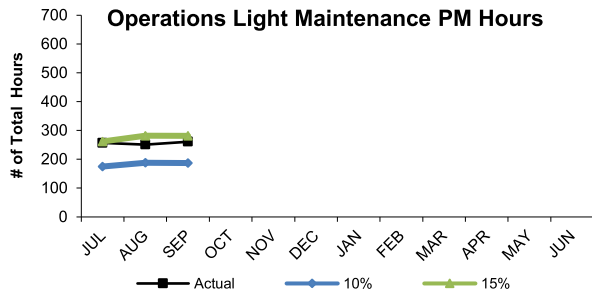


Staff cleaned 10 siphon barrels this quarter.

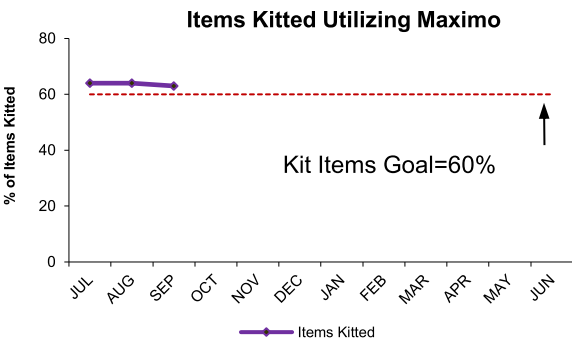
Field Operations' Metropolitan Equipment & Facility Maintenance

1st Quarter - FY FY23

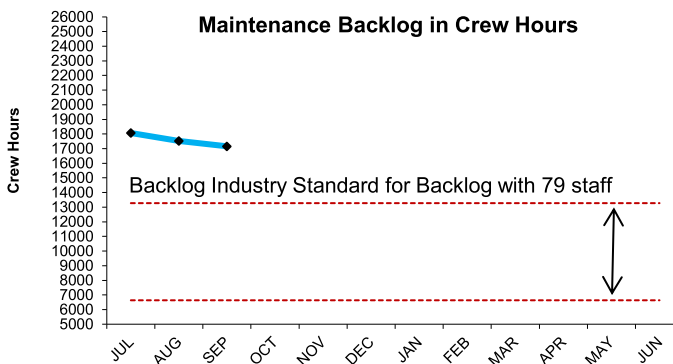
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion is 100%. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog and overtime metrics monitor the success of these maintenance initiatives.



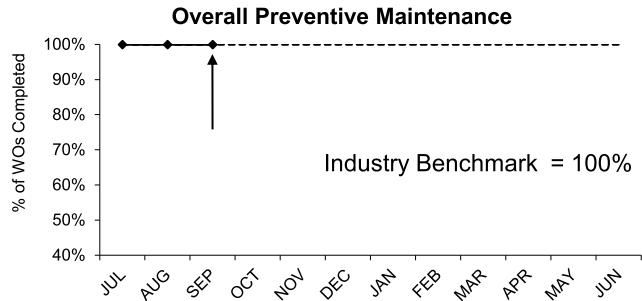
Operations staff averaged 256 hours per month of preventive maintenance during the 1st Quarter of FY23, an average of 14% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.



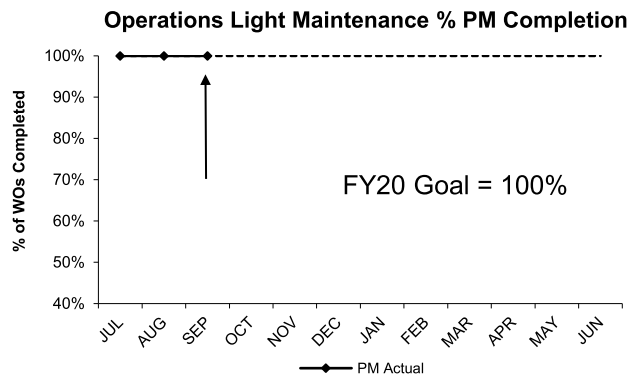
Operations' FY23 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material necessary to complete maintenance work. In the 1st Quarter of FY23, 64% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



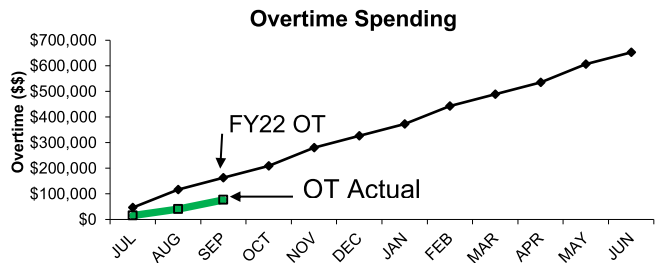
The 1st Quarter of FY23 backlog average is 17,583 hours. Management's goal is to continue to control overtime and try to get back within the industry benchmark of 6,636 to 13,275 hours. The increase is due to vacations, vacancies and several large maintenance projects.



The Field Operations Department (FOD) preventive maintenance goal for FY23 is 100% of all PM work orders. Staff completed 100% of all PM work orders in the 1st Quarter of FY23.



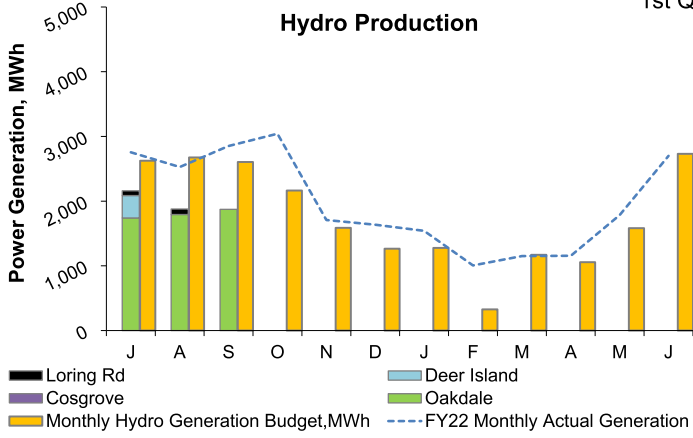
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY23 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 1st Quarter of FY23.



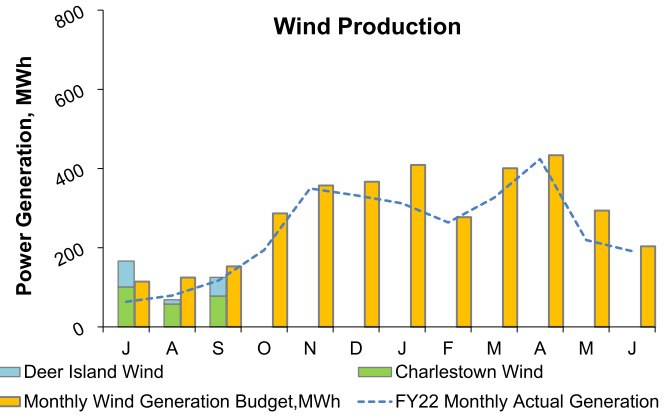
Maintenance overtime was \$28,976 under budget on average, per month, for the 1st Quarter of FY23. Overtime is used for critical maintenance repairs and wet weather events. The overtime budget through the 1st Quarter of FY23 is \$163,138. Overtime spending was \$76,209 which is \$86,929 under budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

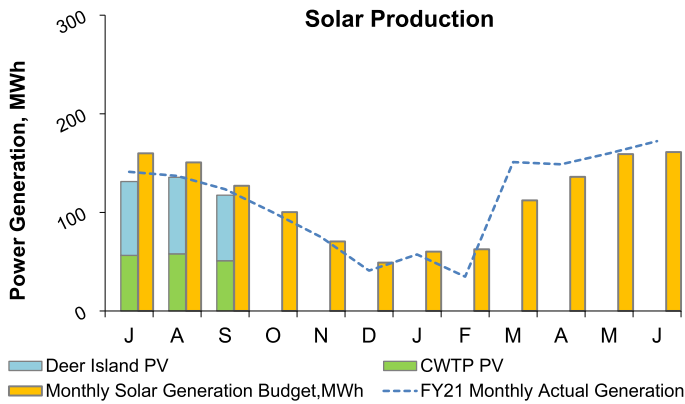
1st Quarter - FY23



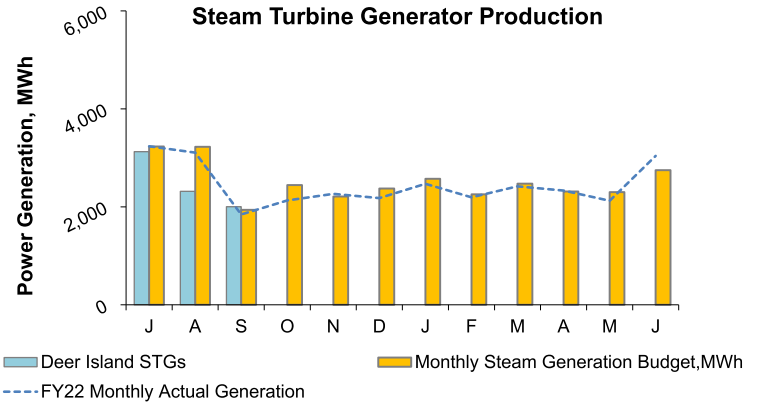
In Quarter 1 of FY23, the renewable energy produced from all hydro turbines totaled 6,512 MWh; 18% below budget³. Savings and revenue invoices have not yet been received for this FY23 reporting period.



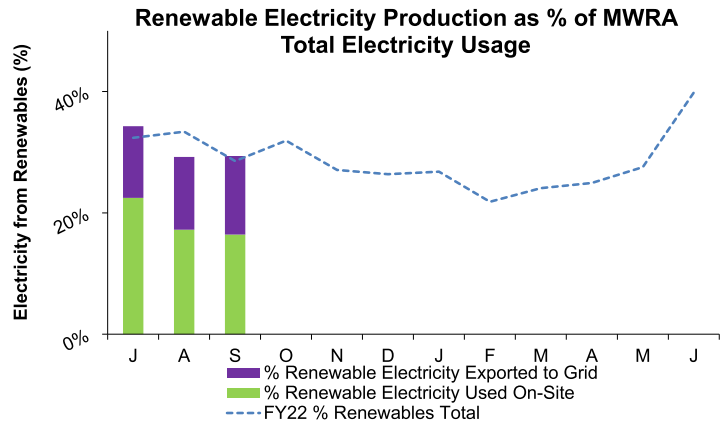
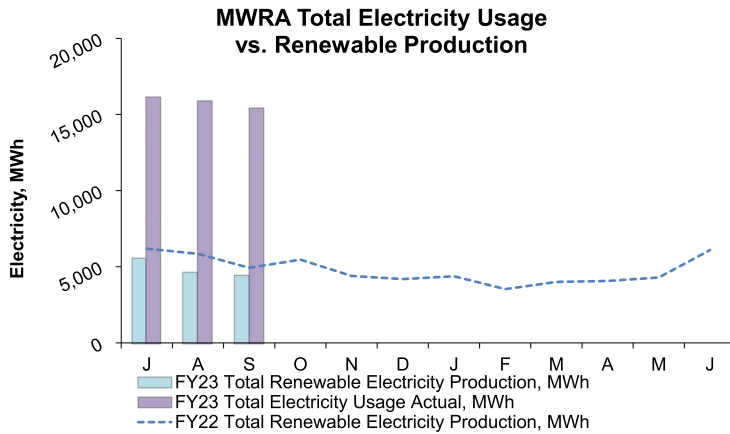
In Quarter 1 of FY23, the renewable energy produced from all wind turbines totaled 360 MWh; 8% below budget³. Savings and revenue invoices have not yet been received for this FY23 reporting period.



In Quarter 1 of FY23, the renewable energy produced from all solar PV systems totaled 422 MWh; 4% below budget³. Savings and revenue invoices have not yet been received for this FY23 reporting period.



In Quarter 1 of FY23, the renewable energy produced from all steam turbine generators totaled 7,444 MWh; 11% below budget³. Savings and revenue invoices have not yet been received for this FY23 reporting period.

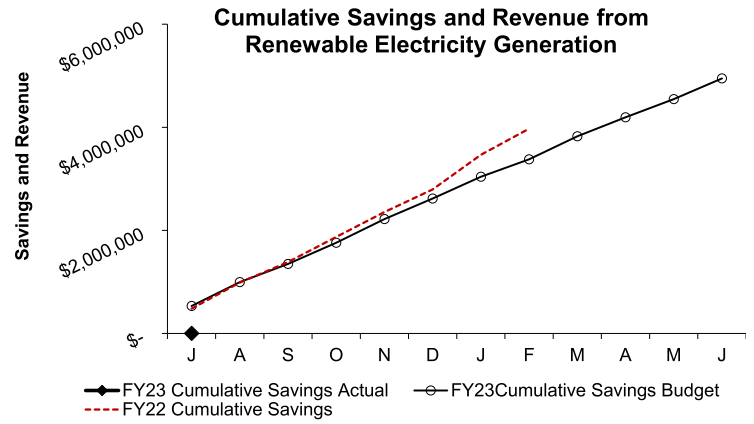
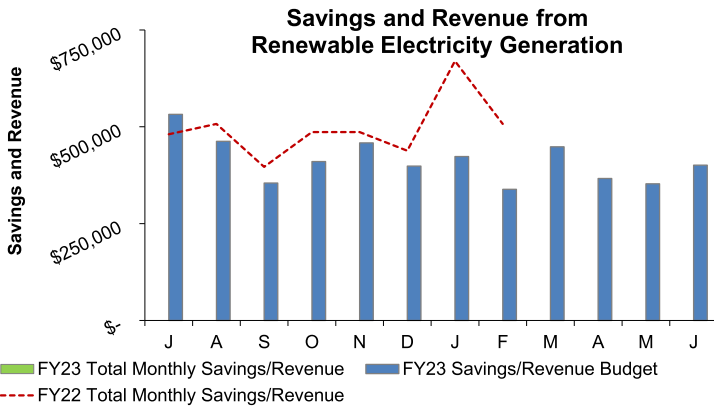


In Quarter 1 of FY23, MWRA's electricity generation by renewable resources totaled 14,737 MWh, 14% below budget. MWRA's total electricity usage was approximately 47,449 MWh. Renewable resources were 31% of total usage. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 99% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget. All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.

- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to 2 months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
 3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.

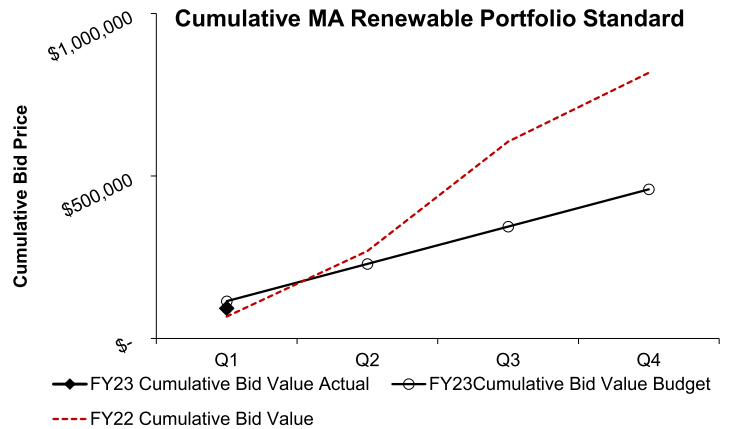
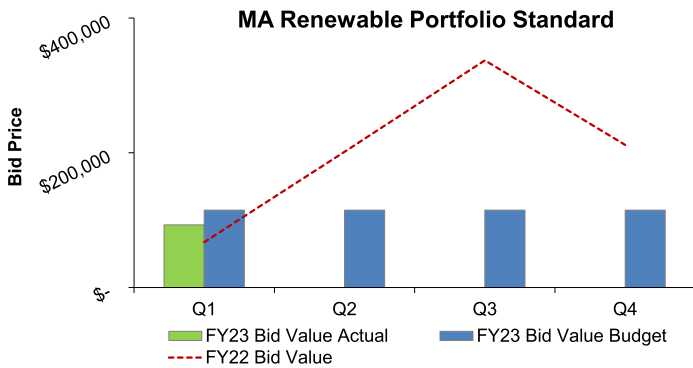
Renewable Electricity Generation: Savings and Revenue

1st Quarter - FY23



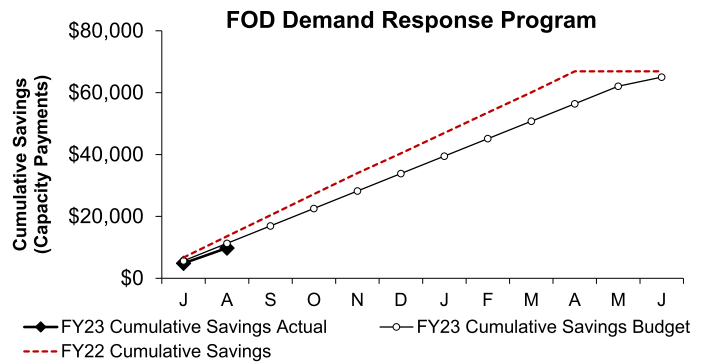
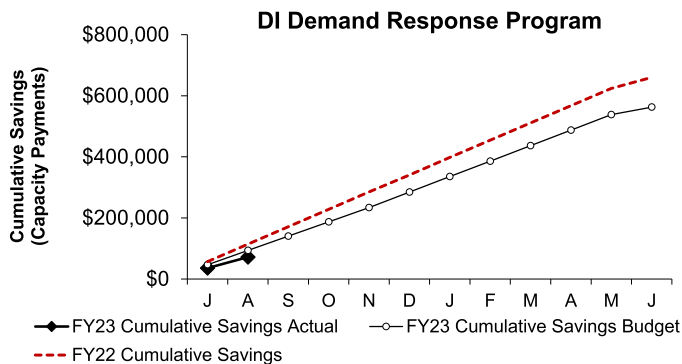
Savings and revenue invoices have not yet been received for this FY23 reporting period.

Savings and revenue² from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs). The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value for heating the plant, equivalent to approximately 5 million gallons of fuel oil per year (not included in charts above).



Bids were awarded during the 1st Quarter¹ from MWRA's renewable energy assets; 2,625 Q1 CY2022 Class I Renewable Energy Certificates (RECs) were sold for a total value of \$92,920 RPS revenue; which is 19% below budget³ for the Quarter. REC values reflect the bid value on the date that bids are accepted. Cumulative bid values reflects the total value of bids received to date.

*Only Class I are being reported for Q1 CY2022 sales. Class II RECs have not been sold and are currently reserved for future sale. SRECs have converted to Class 1 RECs starting in FY23.

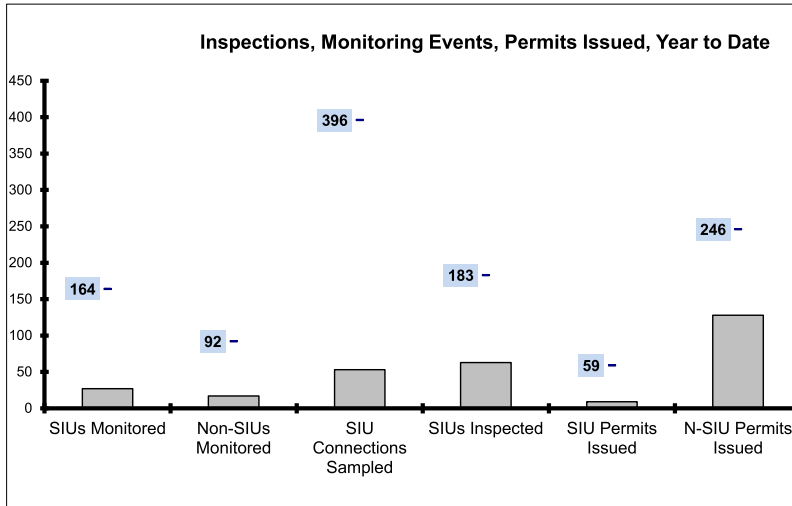


Currently Deer Island, JCWTP, Loring Rd, and Brusch participate in the ISO-New England Demand Response Programs⁴. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY22 Cumulative savings (Capacity Payments only) through August¹ total \$71,738 for DI and payments for FOD total \$9,800 for the same period¹.

- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to 2 months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
 3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.
 4. Chelsea Creek, Columbus Park, Ward St., and Nut Island participated in the ISO Demand Response Program through May 2016, until an emissions related EPA regulatory change resulted in the disqualification of these emergency generators, beginning June 2016. MWRA is investigating the cost-benefit of emissions upgrades for future possible participation.

Toxic Reduction and Control

1st Quarter - FY23



Significant Industrial Users (SIUs) are MWRA's highest priority industries due to their flow, type of industry, and/or their potential to violate limits. SIUs are defined by EPA and require a greater amount of oversight. EPA requires that all SIUs *with flow* be monitored at least once during the fiscal year.

The "SIU Monitored" data above, reflects the number of industries monitored; however, many of these industries have more than one sampling point and the "SIU Connections Sampled" data reflect samples taken from multiple sampling locations at these industries.

EPA requires MWRA to issue or renew 90 percent of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10 percent of SIU permits to be issued within 180 days.

	Number of Days to Issue a Permit						Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
Jul	0	9	0	3	1	8	1	20
Aug	1	38	1	8	1	18	3	64
Sep	5	14	0	5	0	25	5	44
Oct							-	-
Nov							-	-
Dec							-	-
Jan							-	-
Feb							-	-
Mar							-	-
Apr							-	-
May							-	-
Jun							-	-
% YTD	67%	48%	11%	13%	22%	40%	9	128

This is the first quarter of the MWRA fiscal year, FY23.

In the first quarter, 137 permits were issued, of which 9 were SIUs. Six of the SIU permits were issued within the 120-day timeframe, with two issued beyond 181 days. There were 128 non-SIU permits issued, of which 67 were issued late.

Reasons for late issuances continue to include a) staffing due to turnover and vacancies b) waiting for critical data needed for permit processing c) delays relating to new start-up operations and d) the late payment of the relevant permit charges. In addition, there are new Industrial Coordinators on board which caused some slow-down in processing while they get acquainted with their roles.

There were 66 new permits issued: 1-SIU and 5 N-SIUs not including 23-Low Flow Permits, 34-Dental, 1-Food Processing and 2-Construction dewatering.

For the Clinton Sewer Service area, there were no SIU permits issued during the first quarter of the FY23 fiscal year.

EPA Required SIU Monitoring Events for FY23: 164
YTD : 27

Required Non-SIU Monitoring Events for FY23: 92
YTD : 17

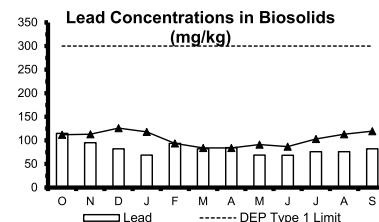
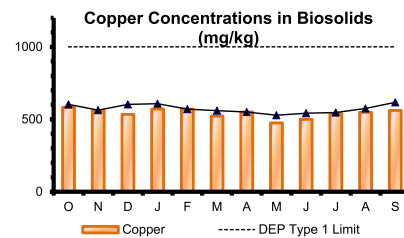
SIU Connections to be Sampled For FY23: 396
YTD: 53

EPA Required SIU Inspections for FY23: 183
YTD: 63

SIU Permits due to Expire In FY23: 59
YTD: 9

Non-SIU Permits due to Expire for FY23: 246
YTD: 128

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs. Monitoring of SIUs and Non-SIUs is dynamic for several reasons, including: newly permitted facilities; sample site changes within the year requiring a permit change; changes in operations necessitating a change in SIU designation; non-discharging industries; a partial sample event is counted as an event even though not enough sample was taken due to the discharge rate at the time; and also, increased/decreased inspections leading to permit category changes requiring additional monitoring events.



Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer.

Overall, copper and lead levels remain relatively constant, below the DEP Type 1 Limit, and within the range of values over the past several years.

A discussion of molybdenum concentrations in biosolids is included in the Deer Island Residuals Pellet discussion.

Field Operations Highlights

3rd Quarter – FY22

Western Water Operations and Maintenance

- Chestnut Hill Reservoir Refill via the Sudbury Aqueduct: Chestnut Hill had been lowered below its normal operating band to freeze invasive plants. To refill it, staff activated the Sudbury Aqueduct in March. It took around 7 hours for flow to reach Chestnut Hill and 3.5 days to refill it. Activation provided a training opportunity on the operation of this critical backup facility.
- Hultman Tree Project: About 5 acres of Red Pine trees along the aqueduct in Framingham were cleared as a safety measure for the houses and school in the area. The area will be replanted.
- Oakdale Turbine Bearing Inspection: While the Oakdale turbine was offline and no Quabbin transfer was taking place this spring, staff inspected the lower bearing on the turbine. No issues were identified and the turbine has subsequently been run for environmental testing.
- Carroll Water Treatment Plant Hypochlorite Project: Replacement of all the hypo piping and pumps is still underway. During the quarter, the operations team isolated, flushed, and opened the hypo storage tanks so the project team could replace the suction line piping feeding the pumps.
- Carroll Water Treatment Plant Lighting Project: Replacement of all the fixtures at CWTP with more efficient LED fixtures was completed in March.

Operations Engineering

- Section 89 Replacement: Staff provided contingency training for communities and in-house staff.
- Staff continued community assistance as needed:
 - Newton System, supported the testing of the isolation of Ward Street to support the replacement of Newton's 20 inch.
- Staff continued to manage the lead pipe rig corrosion control study at CWTP.
- Staff assisted in several wet weather storm events, compiled and finalized storm reports, monitored and reported on CSO activation durations and volumes.
- Staff provided on-going hydraulic modeling assistance for operational shutdowns.
- Staff developed simplified SOPs for water pumping stations. Staff continued Processbook development for water and wastewater facilities and OMMS updates.
- SCADA Staff completed the investigation of pump vibration issues at Alewife and resolved gate control issues of Channel 1 at Columbus Park Headworks.
- Staff improved SCADA alarming at Nut Island Headworks and supported Chelsea Headworks
- Rehabilitation Project, Nut Island Odor Control Improvements Project, and Hayes Pump Station Improvements Project.

Wastewater Operations & Maintenance

- Ward Street and Columbus Park Headworks Upgrade – Contract 7429: Operations staff continued to work Engineering staff and the consultant for this project. Staff attended meetings to discuss the lessons learned from the Chelsea Creek Headworks upgrade project.
- Chelsea Screen House: Based on the forecast for the predicted storm surge for the incoming storm on 1/26/22, the flood barrier protection was installed at the Chelsea Screen house facility as a precaution.
- Operations & Maintenance Meeting: Operations and maintenance staff attended weekly meetings to discuss the top 25 critical maintenance items that need to be addressed. Nuisance alarms: Operations and Operations Engineering staff attended bi-weekly meetings to discuss the top 15 alarms that came into SCADA to determine if operational issues are causing the condition.
- MassDEP Sewer System Overview: Staff met with MassDEP Northeast Region on 2/22/22 to discuss the operation of the MWRA wastewater collection and transport system.

Metro Equipment and Facility Maintenance

- Commonwealth Ave East Pump Station: The variable frequency drive for Pump #3 failed. MWRA electricians installed a new drive.
- Braintree/Weymouth IPS: The #1 Vortex grit pump was not operating properly. A pinch valve for the grit pump failed. MWRA mechanics installed a new pinch valve.
- An outside vendor and an MWRA Medium Voltage electrician conducted non-invasive thermal imaging scans at Columbus Park and Ward Street Headworks, Hayes, Squantum, New Neponset, Chestnut Hill, Braintree/Weymouth, Quincy, Framingham, and Gillis pump stations, and Somerville Marginal.
- New Neponset Pump Station: Light fixtures in the screen room/wet well area of the facility were corroded beyond repair. MWRA electricians replaced fixtures with more efficient LED explosion proof lighting.
- Hingham Pump Station: Operations requested better lighting in the wet well area in preparation for the valve replacement project. MWRA electricians installed new LED explosion proof fixtures.

Metering

Wastewater upgrade project:

Field Operations Highlights

3rd Quarter – FY22

- The Wastewater Meter upgrade project had conditionally accepted all meters by the December 2021 install deadline. Staff have begun tracking wastewater community flows for billing purposes. The wastewater collection system has a stated goal of billing greater than 95% of wastewater flows off metered flows. Prior to the meter replacement project, equipment reliability had left us unable to meet this goal with data capture rates typically between 88% and 93%. During Q3FY22, the new wastewater metering system will allow MWRA to bill communities with a data capture rate of 98%. Our 95% data capture goal was met all 3 months this quarter. This is the first time we met this goal across all 3 months in a quarter since 2017.

TRAC

Compliance and Enforcement

- TRAC issued 47 Notices of Violation, 6 Notices of Noncompliance and 1 Extension Letter.
- Dental Permit Fees: TRAC issued Annual Fee Invoices to the facilities permitted under the Group Permit for Dentists. The total number of invoices issued was 738, for a total of \$150,756.

Inspections and Permitting

- TRAC monitored the septage receiving sites a total of 30 times, and conducted inspections at 20 new construction and 168 existing gasoline/oil separators.
- TRAC staff conducted 44 Annual SIU Inspections and 278 other inspections. Annual SIU Inspections are required under TRAC's EPA approved Industrial Pretreatment Program. Other inspections include inspections for enforcement, permit renewal, NSIU, follow-up, temporary construction dewatering sites, group/combined permit audits, out-of-business facility reviews, and surveys.
- 118 MWRA Sewer Use Discharge Permits (Permits) were issued and/or renewed to its sewer users. One permit was issued and/or renewed in the Clinton Service Area.

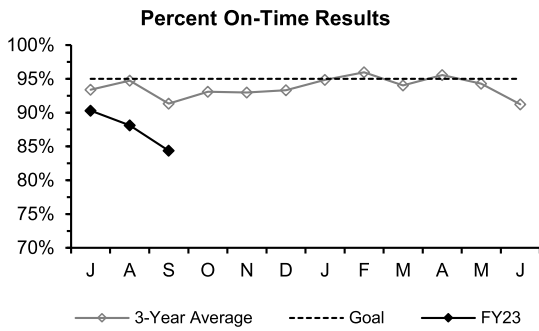
Monitoring

- TRAC completed 80 first time SIU monitoring events, 33 first time NSIU monitoring events and 124 other events including Clinton NPDES and Local Limits sampling, Metropolitan Local Limits sampling, Local Limits PFAS sampling, Special Sulfide sampling, Cosgrove and Oakdale NPDES sampling, CSO NPDES sampling, Sudbury Aqueduct monitoring and CSO Hypochlorite Tank chemical sampling.

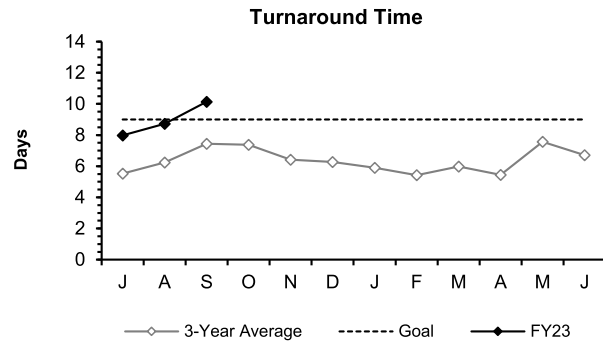
Environmental Quality-Water

- DCR algae monitoring commenced at Wachusett and Quabbin Reservoirs in March. Both reservoirs continue to be well-mixed with diatoms noted as the dominant phytoplankton. Sampling staff are preparing for algae monitoring season by establishing the annual algal toxin monitoring contract and training on the use of FlowCam Cyano fluid imaging equipment.
- Community & In-House Support
 - Sampling & Analysis: On 1/27, staff assisted Melrose with a complaint sample collection. Coliform and HPC results were non-detect and all other results were typical. On 3/23, staff assisted Hanscom AFB in collecting chlorine measurements at several coliform monitoring locations. Staff also trained their staff and the sampling contractor on proper technique for cleaning the sample taps and total chlorine testing. On 3/25, staff performed clearance samples associated with WASM-3, Segment 1A: all results were typical and bacteria results were absent for total coliform.
 - Training & Guidance: Staff helped in the filming of a video for community drinking water sampling staff on proper coliform sampling technique and chlorine residual testing. On March 31, staff provided a virtual presentation to 17 MWRA and community drinking water sampling staff from several local communities on proper coliform sampling technique and chlorine residual measurement.
 - Projects: Staff collected samples on six occasions during the quarter as part of the pipe-loop study. Many MWRA departments are involved in this initiative, to measure lead levels through community lead service lines with various corrosion control treatments. On March 29 and March 31, staff helped with clearance samples following an ROV inspection at four MWRA tanks: Arlington Covered, Bear Hill, Spot Pond Tank #1, and Blue Hills #1. All results were typical and bacteria results were absent for total coliform, and all tanks were cleared to go back on-line.
 - Chemical Supply: Staff are closely monitoring bulk chemical inventories and adherence to delivery schedules. Staff continue to check-in with chemical suppliers to review adherence to delivery schedules and to work on chemical supply emergency planning.

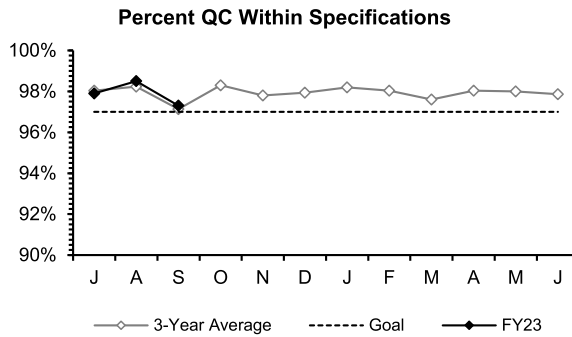
Laboratory Services 1st Quarter - FY23



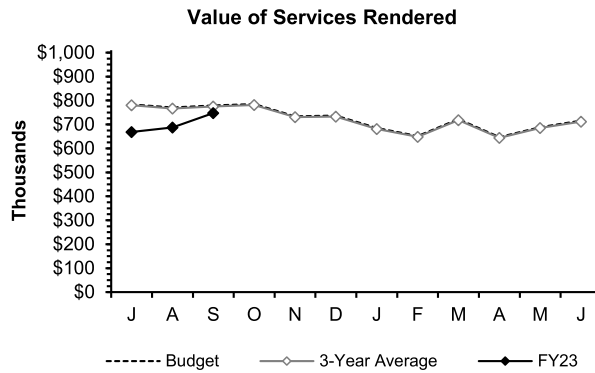
The Percent On-Time measurement continued to run below the 95% goal due to staffing vacancies.



Turnaround Time exceeded the 9-day goal.



Percent of QC tests within specifications met the 97% goal.



Value of Services Rendered continued to run below the annual budget projection due to staffing vacancies.

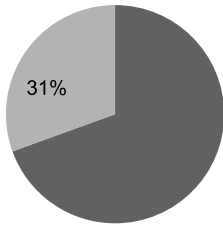
Performance: Percent QC within Specification continues to meet the goal, but all other indicators fell short of the goals for the quarter due to reduced staffing levels.

School Lead Program: During the 1st quarter of FY23, MWRA's lab completed 216 tests from 55 schools and childcare facilities in 27 communities. Since 2016, MWRA's Laboratory has conducted over 40,000 tests from 557 schools and daycares in 44 communities. We have also completed over 700 home lead tests under the DPH sampling program since 2017.

CONSTRUCTION PROGRAMS

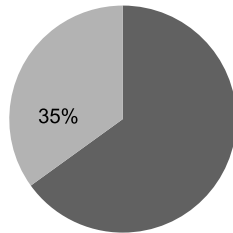
Projects In Construction 1st Quarter – FY23

Money



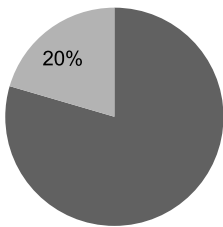
■ Amount Remaining
■ Billed to Date

Time



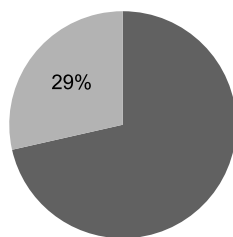
■ Days Remaining
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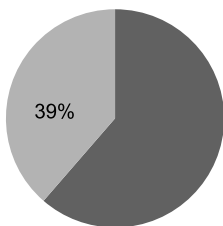
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■ Billed to Date

Time



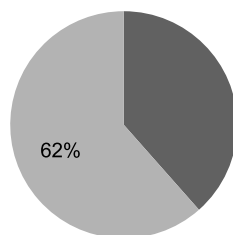
■ Days Remaining
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Money



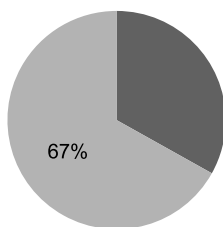
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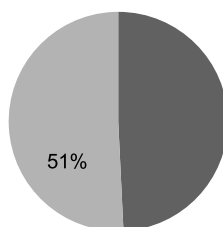
■ Days Remaining
■ Days Expended

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Carroll Water Treatment Plant SCADA Improvements

Project Summary: This project will replace SCADA Control equipment at the Carroll Plant, to enhance cybersecurity, redundancy, ensure future reliability, and maintain secure plant operations.

Contract Amount: \$12,929,159.87 *Contract Duration:* 1,127 Days

Notice to Proceed: 1-Sep-21 *Contract Completion:* 2-Oct-24

Status and Issues: As of September, the Contractor continued working in the Ozone Building coring holes and installing sleeves for conduit wall penetrations. In the Corridors, Switchgear Room and Ozone Generator Room conduit racks and conduits are being installed. In the Operation Building temporary telephone and power wiring was installed.

Section 89 Replacement Pipeline

Project Summary: This project will include replacement of a 10,500-foot portion of PCCP with class IV reinforcing wire, line valves and appurtenances, and abandonment of the 118-year old, 24-inch diameter cast iron Section 29 pipeline.

Contract Amount: \$32,619,000 *Contract Duration:* 1,475 Days

Notice to Proceed: 5-Aug-21 *Contract Completion:* 19-Aug-25

Status and Issues: As of September, the Contractor continuing to provide submittals for review and coordination on major components of the work with longest lead time for product delivery and installation scheduling. They completed installing an additional 36" horizontal gate valve and manhole on Section 110, Straw Point, Stoneham. In addition, they completed installing 465 LF of 12" ductile iron water line for the Stone Zoo.

Low Service PRV Improvements

Project Summary: This project will replace pressure reducing valves on the Weston Aqueduct Supply Main (WASM) 4 at Nonantum Road in Boston and WASM 3 at Mystic Valley Parkway in Medford

Contract Amount: \$11,326,000 *Contract Duration:* 720 Days

Notice to Proceed: 14-Jul-21 *Contract Completion:* 4-Jul-23

Status and Issues: As of September, the Contractor took delivery of the 48" butterfly valves. They loaded trucks for the removal of excavated materials and performed additional sampling of soil samples. In addition, they were on-site to take monthly construction progress photos at W14.

Rehabilitation of WASM 3

Project Summary: This project consists of the rehabilitation of 13,800 feet of 56-inch and 60-inch diameter water main in Arlington, Somerville and Medford.

Contract Amount: \$19,656,427.23 *Contract Duration:* 1,383 Days

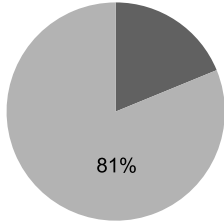
Notice to Proceed: 28-Oct-20 *Contract Completion:* 11-Aug-24

Status and Issues: As of September, the Contractor successfully shutdown and dewatered the 56" steel WASM3 pipe from the butterfly valve on Mass Ave near Swan Place to the butterfly valve on Pleasant St at Brunswick Rd.

Projects In Construction

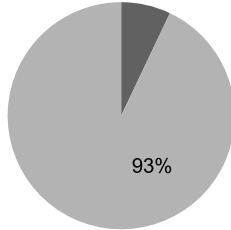
1st Quarter – FY23

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Nut Island Odor Control and HVAC

Project Summary: This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

Contract Amount: \$58,913,925.69

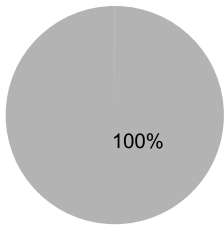
Contract Duration: 1,034 Days

Notice to Proceed: 12-Feb-20

Contract Completion: 12-Dec-22

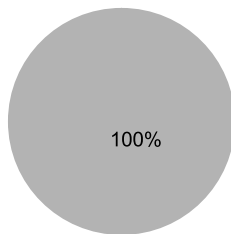
Status and Issues: As of September, the Contractor prepared the floor, installed formwork and rebar, and placed concrete for equipment pad extension for AHU-10. They removed carbon from the existing carbon adsorbers and removed from site. They demolished the FRP inlet ducts to the carbon adsorbers and removed them from the building.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Chemical Tank Relining & Pipe Replacement

Project Summary: This project involves replacing the chlorobutyl rubber linings in 3 sodium hypochlorite and 2 sodium bisulfite storage tanks and assorted gravity thickener overflow piping at Deer Island.

Contract Amount: \$8,794,899

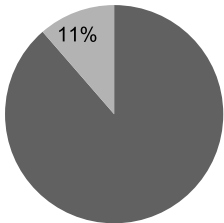
Contract Duration: 850 Days

Notice to Proceed: 13-Aug-19

Contract Completion: 10-Dec-21

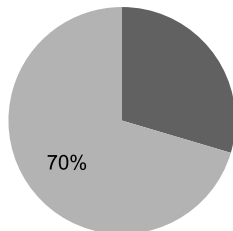
Status and Issues: This project is complete. Staff are awaiting bids for a future project to replace this one.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

DITP Odor Control Damper Replacement

Project Summary: This project involves replacing three existing 30-inch diameter steel dampers with stainless steel dampers, surface preparation and coatings application on the existing 30-inch diameter ductile iron pipe. ,

Contract Amount: \$538,000

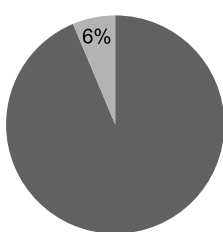
Contract Duration: 365 Days

Notice to Proceed: 3-Feb-22

Contract Completion: 3-Feb-23

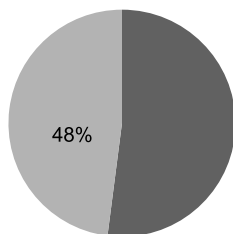
Status and Issues: As of September, the fabrication of stainless steel dampers and spool piece continues.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Clinton Screw Pump Replacement

Project Summary: This project involves demolishing and replacing three screw pumps and motors and three existing 72-inch by 60-inch pump isolation slide gates and associated electrical and controls.

Contract Amount: \$3,452,985

Contract Duration: 540 Days

Notice to Proceed: 14-Jan-22

Contract Completion: 8-Jul-23

Status and Issues: As of September, the gate testing plan was submitted and approved, and the gate leakage test was performed and passed.

CSO CONTROL PROGRAM

1st Quarter – FY23

Overview

In compliance with milestones in the Federal District Court Order, all 35 projects in the CSO Long-Term Control Plan (LTCP) were complete as of December 2015. Subsequently, MWRA completed a multi-year CSO post-construction monitoring program and performance assessment, filing the Final CSO Post Construction Monitoring Program and Performance Assessment Report with the Court and submitted copies to EPA and DEP in December 2021. The report shows that there has been an 87% reduction in CSOs in a typical year, from 3.3 billion gallons to 414 million gallons, with 70 of 86 outfalls meeting the LTCP goals for CSO activation frequency and volume. MWRA and its member CSO communities are moving forward with plans to bring 6 of the 16 CSOs in line with the LTCP goals. With respect to the remaining 10 CSO outfalls, MWRA identified potentially feasible alternatives that may enable four to achieve CSO LTCP volume and activation goals-

Progress on the work to comply with the court ordered levels of CSO control is discussed with the EPA/MassDEP at progress meetings held quarterly. Most recent quarterly meeting was on **9/22/22** and the next meeting scheduled for **12/22/22**.

As part of MWRA's CSO Control Program, MassDEP has issued a series of multi-year CSO variances that allow MWRA, Cambridge, and Somerville to continue to have limited CSO discharges to Alewife Brook and the Upper Mystic River, as well as the Charles River lower basin. The most recent variances, issued in 2019, require the development of Updated LTCPs for the CSO outfalls that each entity owns and operates that may discharge to the corresponding waterbody. The Updated LTCPs must include a description of the existing level of CSO control, an evaluation of the costs and the performance and water quality improvements achieved by additional CSO control alternatives, a public participation plan, and an affordability analysis. MassDEP and EPA conditionally approved MWRA's Updated CSO Control Plan Scope of Work and the Authority is currently working closely with the CSO communities of Cambridge and Somerville to develop these plans over the upcoming years.

Progress on the progress made as identified in the variance is reported at monthly meetings with EPA/MassDEP. The last meeting was on **10/12/22** and the next meeting is scheduled for **11/9/2022**. Key elements of the Updated CSO Control Plan discussed were the development of an Updated Typical year which includes climate change and the development of a Unified Model. **Next public meeting to be held the third week of December.**

Ongoing Projects as of September 30, 2022

Boston Water and Sewer Commission (BWSC)

- East Boston CSO Control: As part of the East Boston CSO financial assistance agreement executed in June 2021, BWSC is finalizing design of an upgraded connection to the MWRA system to lower CSO discharges at Outfall BOS014. MWRA has agreed to fund a portion of the work and has set up a FAA/MOU in the amount of \$2.1 million dollars to assist with the cost of the eligible construction. **FAA/MOU is effective form 7/1/2022 to 6/1/2023.**
- South Boston Sewer Separation: The South Boston sewer separation project includes five sewer separation contracts and two paving contracts. The five separation contracts are to be completed in 2027. The purpose of this project is to achieve CSO LTCP volume and activations goals and reduce pollution levels into Fort Point Channel and Boston Harbor from BOS070/DBC.
- Fort Point Channel and Mystic Confluence - BOS062, BOS065, BOS070 DBC and BOS017: Currently in design with substantial completion November 15, 2024 - MWRA portion not to exceed \$10 million. The purpose of this project is to bring four of the sixteen outfalls currently not forecast to attain LTCP in to compliance. Design commenced in October 2022, Final Design due September 2023, the construction contract will be advertise in November 2024 and shall be substantially completed in December 2024. On 10/19/2022 the BOD approved the request to enter into a new FAA/MOU with BWSC to fund up to \$10 million dollars of eligible design and construction costs. **The agreement and the account are being set up now for a 32 month term, from 10/1/2022 to June 30, 2025.**

City of Somerville

- Somerville Marginal Interceptor Rehabilitation: As part of a financial assistance agreement with Somerville, the City will repair its combined sewer trunk line upstream of the Somerville Marginal CSO Facility. Pursuant to the agreement, the repair work is intended to maintain the full in-system storage capacity of the trunk sewer to support CSO control. Somerville completed design and construction commenced in January 2022.

MWRA CSO Performance Assessment

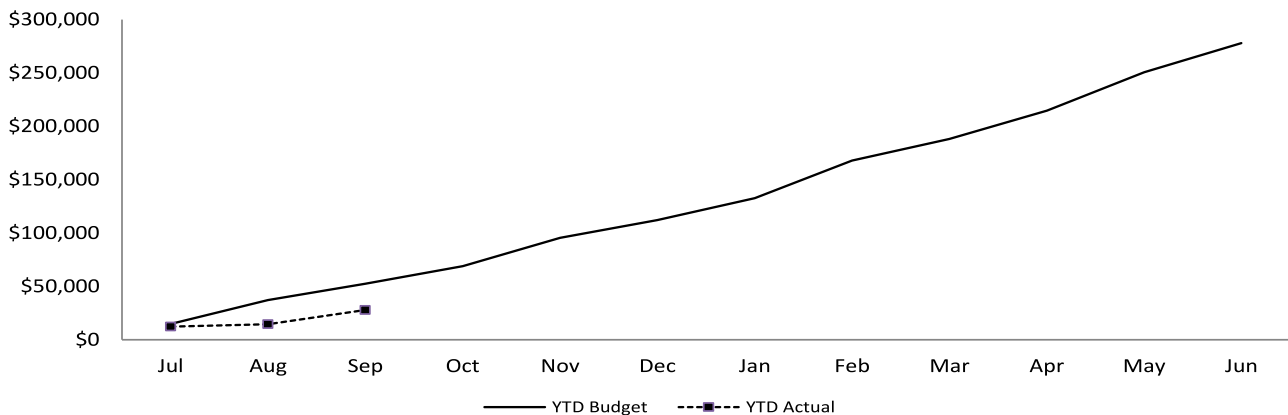
- In November 2017, MWRA signed a contract for CSO Post-Construction Monitoring and Performance Assessment with AECOM Technical Services, Inc. The contract includes CSO inspections, overflow metering, hydraulic modeling, system performance assessments and water quality impact assessments, culminating in the submission of a report to EPA and MassDEP in December 2021 verifying whether the LTCP goals are attained.
 - o AECOM continues to conduct receiving water quality modeling and CSO and stormwater sampling, evaluate additional CSO controls for those outfalls that do not meet the LTCP requirements, coordinate and draft the Updated CSO Control Plan mentioned above in relation to the variance water bodies, and develop an updated Typical Year CSO performance assessment relative to the LTCP activation and volume goals.

CIP Expenditures 1st Quarter – FY23

FY23 Capital Improvement Program Expenditure Variances through September by Program - (\$ in thousands)				
Program	FY23 Budget Through September	FY23 Actual Through September	Variance Amount	Variance Percent
Wastewater	\$17,582	\$9,505	(\$8,077)	-45%
Waterworks	\$30,625	\$14,700	(\$15,925)	-52%
Business and Operations Support	\$4,348	\$3,706	(\$643)	-14%
Total	\$52,555	\$27,910	(\$24,644)	-46%

Project underspending within Wastewater was due to timing of grant and loan distributions for the I/I Local Financial Assistance program, contractor behind schedule for the Nut Island Odor Control and HVAC Improvements, and completion of some design and inspection tasks were later than anticipated for Ward Street and Columbus Park Headworks Upgrades Design/CA. Project underspending in Waterworks was due to timing of community distributions for the Water Loan program, long lead time for piping material for Waltham Water Pipeline Construction, timing of work for WASM/SPSM Pressure Reducing Valves, and less than anticipated progress for CP-1 NEH Improvements. This underspending was partially offset by contractor progress for NIH Section 89 & 29 Replacement, and Wachusett Bastion Rehabilitation.

Budget vs. Actual CIP Expenditures (\$ in thousands)
Total FY23 CIP Budget of \$278,053



Construction Fund Management

All payments to support the capital program are made from the Construction Fund. Sources of fund in-flows include bond proceeds, commercial paper, SRF reimbursements, loan repayments by municipalities, and current revenue. Accurate estimates of cash withdrawals and grant payments (both of which are derived from CIP spending projections) facilitate planning for future borrowings and maintaining an appropriate construction fund balance.

Cash Balance as of 9/24/22	\$108.5 million
Unused capacity under the debt cap:	\$2.1 billion
Estimated date for exhausting construction fund without new borrowing:	Nov-22
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding:	\$ 90 million
Commercial paper capacity / Revolving Loan	\$160 million
Budgeted FY23 Cash Flow Expectancy*:	\$248 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

1st Quarter – FY23

Source Water – Microbial Results

Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. However, fecal coliforms, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal tract of mammals. They act as indicators of possible fecal contamination. The Surface Water Treatment Rule for unfiltered water supplies allows for no more than 10% of source water samples prior to disinfection over any six-month period to have more than 20 fecal coliforms per 100mL.

Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the William A. Brutsch Water Treatment Facility raw water tap before being treated and entering the CVA system.

All samples collected during the quarter were below 20 cfu/100mL. **For the current six-month period, 0.0% of the samples have exceeded a count of 20 cfu/100mL.**

Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled at the CWTP raw water tap in Marlborough before being treated and entering the MetroWest/Metropolitan Boston systems.

In the wintertime when smaller water bodies near Wachusett Reservoir freeze up, many waterfowl will roost in the main body of the reservoir - which freezes later. This increased bird activity tends to increase fecal coliform counts. DCR has an active bird harassment program to move the birds away from the intake area.

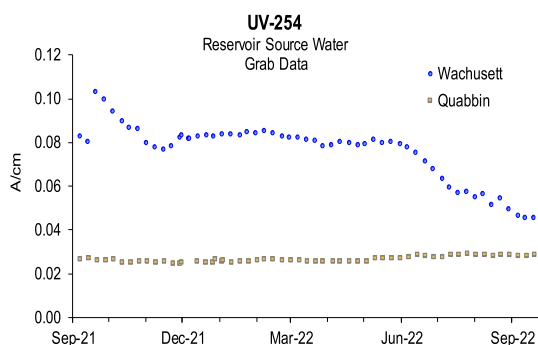
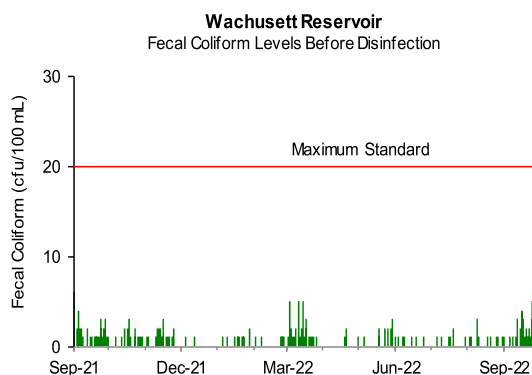
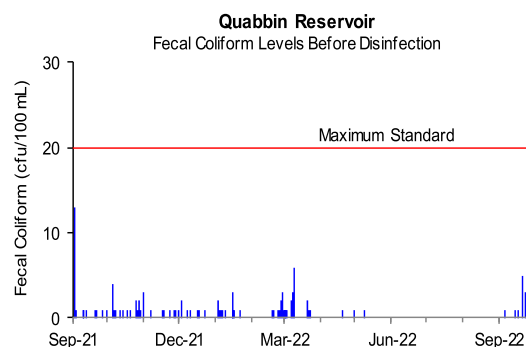
All samples collected during the 1st Quarter were below 20 cfu/100mL. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

Source Water – UV Absorbance

UV Absorbance at 254nm wavelength (UV-254), is a measure of the amount and reactivity of natural organic material in source water. Higher UV-254 levels cause increased ozone and chlorine demand resulting in the need for higher ozone and chlorine doses, and can increase the level of disinfection by-products. UV-254 is impacted by tributary flows, water age, sunlight and other factors.

Quabbin Reservoir UV-254 levels averaged 0.028 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.052 A/cm for the quarter.



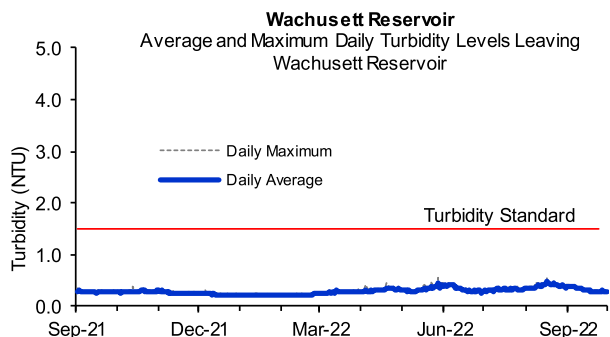
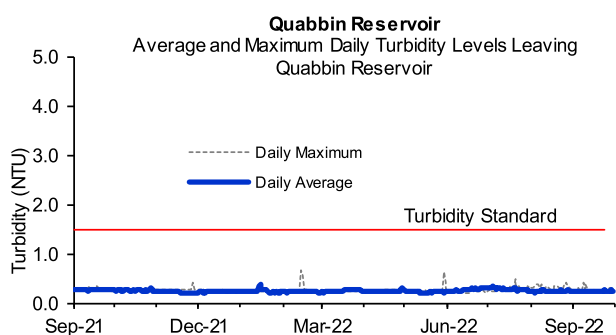
Source Water – Turbidity

1st Quarter – FY23

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher disinfectant demand or may protect bacteria from disinfection effects, thereby interfering with the disinfectant residual throughout the distribution system.

There are two standards for turbidity: all water must be below five NTU (Nephelometric Turbidity Units), and water only can be above one NTU if it does not interfere with effective disinfection.

Turbidity of Quabbin Reservoir water is monitored continuously at the Brutsch Water Treatment Facility (BWTF) before UV and chlorine disinfection. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant (CWTP) before ozonation and UV disinfection. Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter.

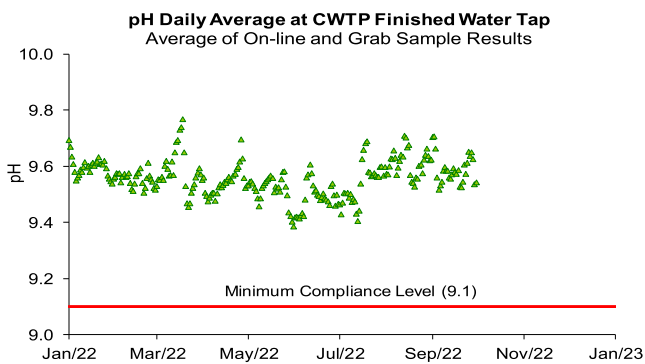
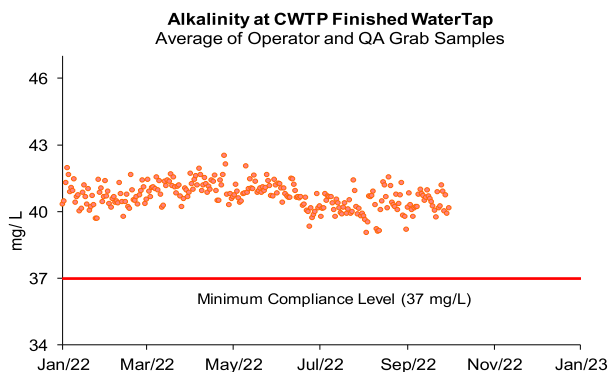


Treated Water – pH and Alkalinity Compliance

MWRA adjusts the alkalinity and pH of Wachusett water at CWTP to reduce its corrosivity, which minimizes the leaching of lead and copper from service lines and home plumbing systems into the water. MWRA tests finished water pH and alkalinity daily at the CWTP's Fin B sampling tap. MWRA's target for distribution system pH is 9.3; the target for alkalinity is 40 mg/l. Per DEP requirements, CWTP finished water samples have a minimum compliance level of 9.1 for pH and 37 mg/L for alkalinity. Samples from 27 distribution system locations have a minimum compliance level of 9.0 for pH and 37 mg/L for alkalinity. Results must not be below these levels for more than nine days in a six month period. Distribution system samples are collected in March, June, September, and December.

Each CVA community provides its own corrosion control treatment. See the CVA report: www.mwra.com/water/html/awqr.htm.

Quarterly distribution system samples were collected over a course of two weeks in September. Distribution system sample pH ranged from 9.3 to 9.7 and alkalinity ranged from 39 to 42 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

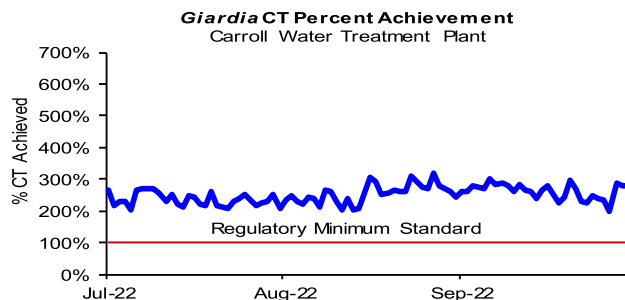
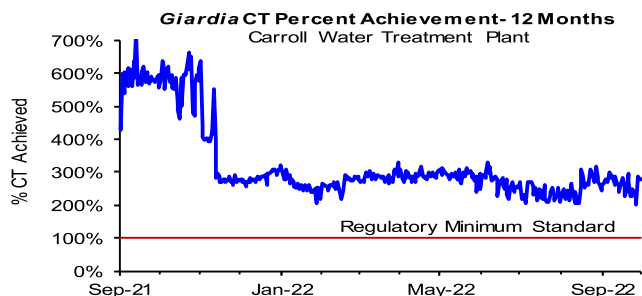
1st Quarter – FY23

At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA calculates inactivation rates hourly and reports *Giardia* inactivation at maximum flow and *Cryptosporidium* inactivation at minimum UV dose. MWRA must meet 100% of required CT and IT.

CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. For *Cryptosporidium*, there is also an "off-spec" requirement. Off-spec water is water that has not reached the full required UV dose or if the UV reactor is operated outside its validated ranges. No more than 5% off-spec water is allowed in a month.

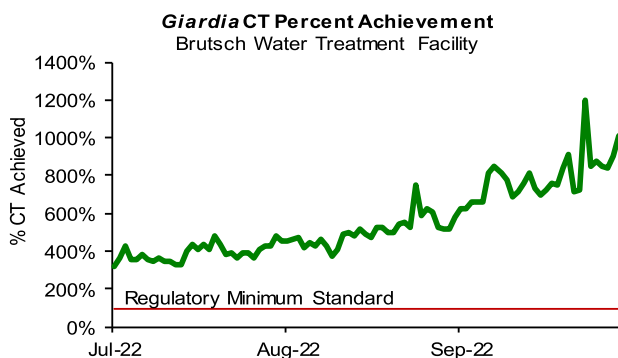
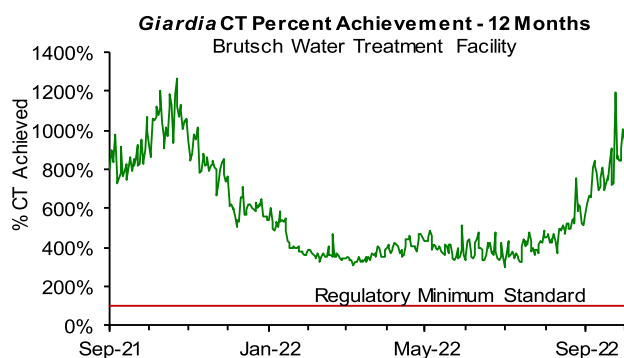
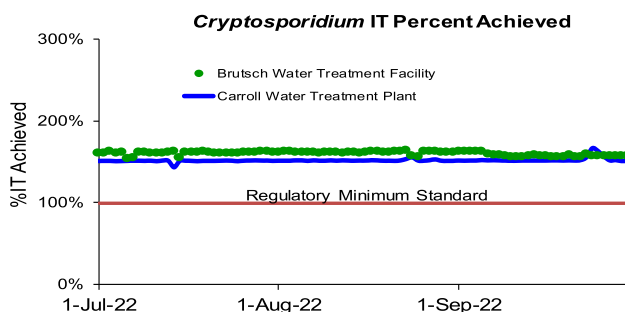
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- The chlorine dose at the CWTP varied between 3.6 and 3.9 mg/L for the quarter.
- Ozone dose at the CWTP varied between 1.5 to 2.7 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- Cryptosporidium* IT was maintained above 100% for the quarter. Off-spec water was less than 5%.
- The ozone target was increased in mid-August 2021 through early November to reduce chlorine demand and decay, as during this time chlorine residuals declined in the distribution system.



Quabbin Reservoir (CVA Supply) at: Brutsch Water Treatment Facility

- The chlorine dose at BWTF is adjusted in order to achieve MWRA's seasonal target of 0.75 - 0.85 mg/L (November 1 – May 31) and 0.85 - 1.05 mg/L (June 1 – October 31) at Ludlow Monitoring Station.
- The chlorine dose at BWTF varied between 1.54 to 1.80 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter.
- Cryptosporidium* IT was maintained above 100% for the quarter. Off-spec water was less than 5%.



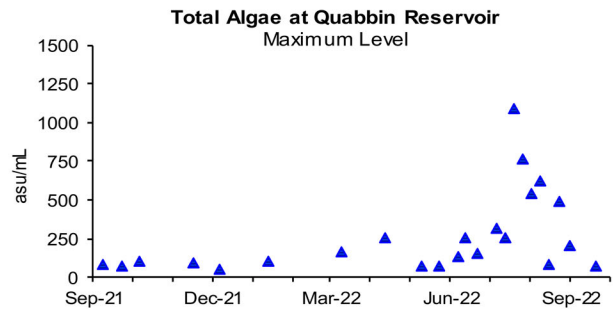
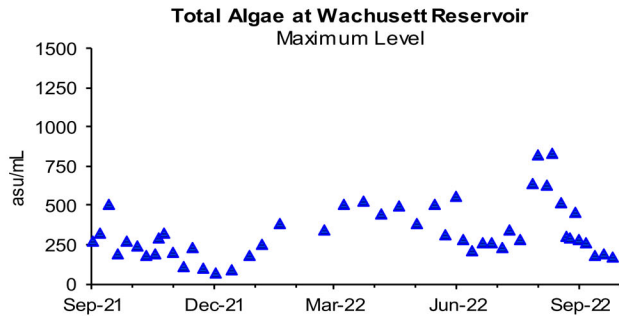
Source Water - Algae

1st Quarter – FY23

Algae levels in the Wachusett and Quabbin Reservoir are monitored by DCR and MWRA. These results, along with taste and odor complaints, are used to make decisions on source water treatment for algae control.

Taste and odor complaints at the tap may be due to algae, which originate in source reservoirs, typically in trace amounts. Occasionally, a particular species grows rapidly, increasing its concentration in water. When *Synura*, *Anabaena*, or other nuisance algae bloom, MWRA may treat the reservoirs with copper sulfate, an algaecide. During the winter and spring, diatom numbers may increase. While not a taste and odor concern, consumers that use filters may notice a more frequent need to change their filters.

In the 1st quarter, there were no complaints which may be related to algae reported from the local water departments.

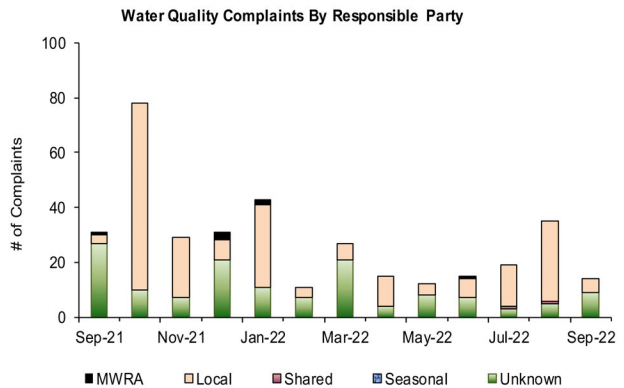
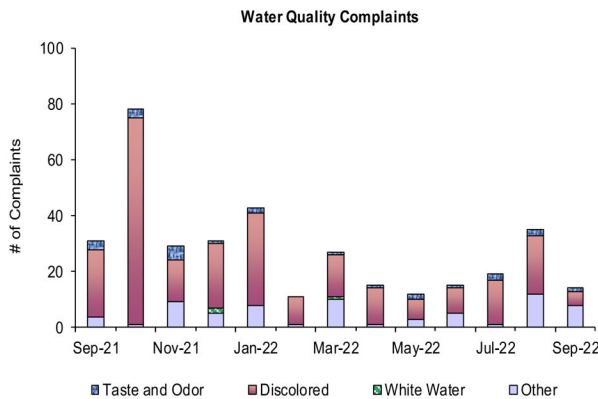


Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

MWRA collects information on water quality complaints that typically fall into four categories: 1) discoloration due to MWRA or local pipeline work; 2) taste and odor due to algae blooms in reservoirs or chlorine in the water; 3) white water caused by changes in pressure or temperature that traps air bubbles in the water; or 4) "other" complaints including no water, clogged filters or other issues.

MWRA routinely contacts communities to classify and tabulate water complaints from customers. This count, reflecting only telephone calls to towns, probably captures only a fraction of the total number of customer complaints. Field Operations staff have improved data collection and reporting by keeping track of more kinds of complaints, tracking complaints to street addresses and circulating results internally on a daily basis.

Communities reported 42 complaints during the quarter compared to 77 complaints from 1st Quarter of FY21. Of these complaints, 29 were for "discolored water", 4 were for "taste and odor", and 9 were for "other". Of these complaints, 22 were local community issues, 1 was an MWRA related issue, and 19 were unknown in origin.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

1st Quarter – FY23

While all communities collect bacteria samples and chlorine residual data for the Total Coliform Rule (TCR), data from the 44 systems that use MWRA's Laboratory are reported below.

The MWRA TCR program has 144 sampling locations. These locations include sites along MWRA's transmission system, water storage tanks and pumping stations, as well as a subset of the community TCR locations.

Samples are tested for total coliform and *Escherichia coli* (*E.coli*). *E.coli* is a specific coliform species whose presence likely indicates potential contamination of fecal origin.

If *E.coli* are detected in a drinking water sample, this is considered evidence of a potential public health concern. Public notification is required if repeat tests confirm the presence of *E.coli* or total coliform.

Total coliform provide a general indication of the sanitary condition of a water supply. If total coliform are detected in more than 5% of samples in a month (or if more than one sample is positive when less than 40 samples are collected), the water system is required to investigate the possible source/cause with a Level 1 or 2 Assessment, and fix any identified problems.

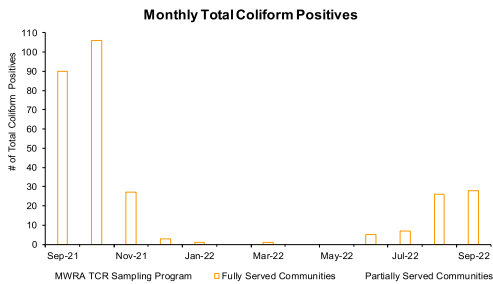
A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

In the 1st Quarter, eighty-one of the 6,450 samples (1.26% system-wide) submitted to MWRA labs for analysis tested positive. Fourteen of the 1975 MWRA locations or Community/MWRA Shared samples (0.71%) tested positive for total coliform. Eleven of the 418 CVA/MWRA community samples tested positive for total coliform. Eleven communities were required to perform a Level 1 Assessment. In July, MWRA was required to conduct a Level 1 Assessment for the CVA system based on positive total coliform samples at Ludlow Monitoring Station. (Bedford, Burlington, Marlborough, Wilbraham, Winthrop – August; Milton, Newton, Southborough, Wakefield, Wilmington, Winthrop, Woburn – September). One sample in Wilmington, collected on September 7, tested positive for *E.coli*. A Boil Water Order was required and an automatic Level 2 Assessment will be conducted since repeat samples confirmed for total coliform. Only 0.3% of the Fully Served community samples had chlorine residuals lower than 0.2 mg/L for the quarter.

NOTES:

- MWRA total coliform and chlorine residual results include data from community locations. In most cases these community results are indicative of MWRA water as it enters the community system; however, some are strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.
- The number of samples collected depends on the population served and the number of repeat samples required.
- These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.
- Part of the Chicopee Valley Aqueduct System. Free chlorine system.



		Total Coliform		<i>E.coli</i> Positive	# Assessment Required
		# Samples (b)	# (%) Positive		
MWRA	MWRA Locations	410	5 (1.22%)	0	
	Shared Community/MWRA sites	1565	9 (0.06%)	1	
	Total: MWRA	1975	14 (0.71%)	1	No
Fully Served	ARLINGTON	169	0 (0%)	0	
	BELMONT	104	0 (0%)	0	
	BOSTON	795	5 (0.63%)	0	
	BROOKLINE	230	2 (0.87%)	0	
	CHELSEA	172	1 (0.58%)	0	
	DEER ISLAND	52	0 (0%)	0	
	EVERETT	169	0 (0%)	0	
	FRAMINGHAM	237	0 (0%)	0	
	LEXINGTON	117	0 (0%)	0	
	LYNNFIELD	18	0 (0%)	0	
	MALDEN	234	0 (0%)	0	
	MARBLEHEAD	87	1 (1.15%)	0	
	MARLBOROUGH	126	0 (0%)	0	
	MEDFORD	210	10 (4.76%)	1	Yes
	MELROSE	117	0 (0%)	0	
	MILTON	126	6 (4.76%)	0	Yes
	NAHANT	30	0 (0%)	0	
	NEWTON	285	6 (2.11%)	0	Yes
	NORTHBOROUGH	51	1 (1.96%)	0	
	NORWOOD	99	0 (0%)	0	
	QUINCY	355	1 (0.28%)	0	
	READING	130	0 (0%)	0	
	REVERE	195	0 (0%)	0	
SAUGUS	104	0 (0%)	0		
SOMERVILLE	255	1 (0.39%)	0		
SOUTHBOROUGH	40	3 (7.50%)	0	Yes	
STONEHAM	91	0 (0%)	0		
SWAMPSCOTT	51	0 (0%)	0		
WALTHAM	217	1 (0.46%)	0		
WATERTOWN	130	0 (0%)	0		
WESTON	45	0 (0%)	0		
WINTHROP	96	23 (23.96%)	0	Yes	
	Total: Fully Served	5137	61 (1.19%)		
Partially Served	BEDFORD	63	3 (4.76%)	0	Yes
	BURLINGTON	153	1 (2.56%)	0	No
	CANTON	88	0 (0%)	0	
	NEEDHAM	123	0 (0%)	0	
	PEABODY	207	0 (0%)	0	
	WAKEFIELD	151	7 (4.64%)	0	Yes
	WELLESLEY	114	0 (0%)	0	
	WILMINGTON	97	3 (3.09%)	1	Yes
	WINCHESTER	91	0 (0%)	0	
	WOBURN	226	6 (2.65%)	0	Yes
		Total: Partially Served	1313	20 (1.52%)	
	Total: Community Samples No CVA	6450	81 (1.26%)		
CVA	MWRA CVA Locations	117	7 (5.98%)	0	Yes
	CHICOPEE	186	0 (0%)	0	
	SOUTH HADLEY FDI	63	1 (1.59%)	0	
	WILBRAHAM	52	3 (5.77%)	0	Yes
		Total: CVA	418	11 (2.63%)	

Chlorine Residuals in Fully Served Communities

	2021				2022								
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
% <0.1	0.7	0.9	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
% <0.2	2.8	3.1	1.7	0.8	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.3	0.4
% <0.5	12.3	10.9	7.4	2.8	1.1	1.1	0.5	0.6	0.5	0.5	1.4	1.6	1.8
% <1.0	27.9	26.2	15.7	7.3	3.7	4.1	2.3	2.3	2.1	2.6	4.0	5.7	6.5
% ≥1.0	72.1	73.8	84.4	92.7	96.3	95.9	97.7	97.7	97.9	97.4	96.0	94.3	93.5

Treated Water Quality: Disinfection By-Product (DBP) Levels in Communities

1st Quarter – FY23

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. TTHMs and HAA5s are of concern due to their potential adverse health effects at high levels. EPA’s locational running annual average (LRAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s.

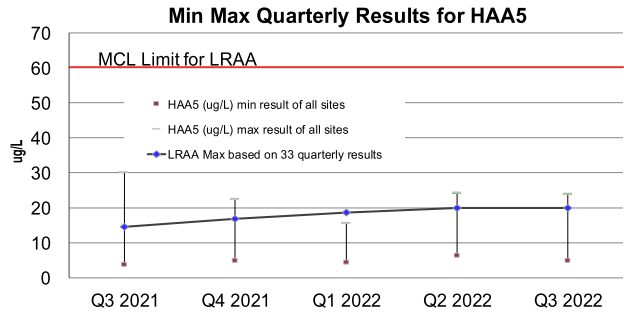
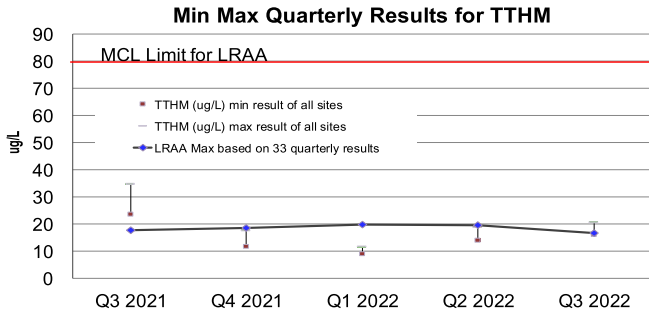
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines data for all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1). Each community is regulated individually.

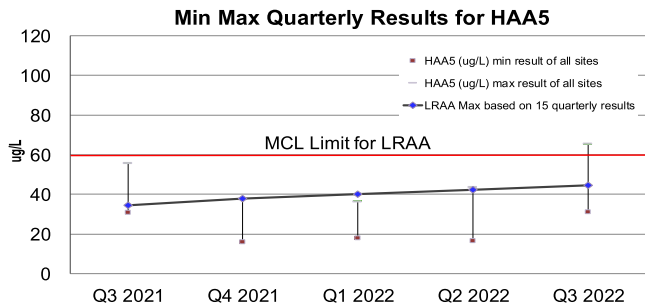
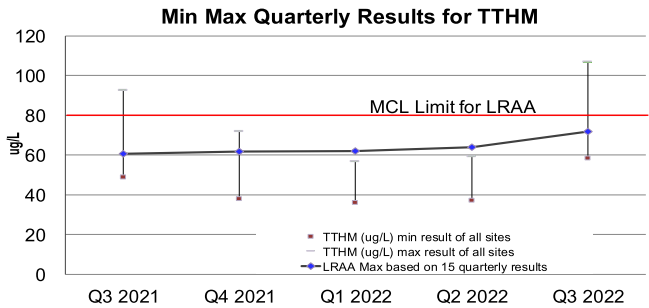
Bromate is tested monthly as required for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA’s RAA MCL standard for bromate is 10 µg/L.

The LRAA for TTHMs and HAA5s for MWRA’s Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 16.7 µg/L; HAA5s = 19.9 µg/L. The current RAA for Bromate = 0.0 µg/L. No LRAA exceedances or violations occurred this quarter for MetroBoston and any of the CVA communities. MWRA and the CVA communities continue to closely monitor and manage the disinfection process to minimize DBP production.

MetroBoston Disinfection By-Products



CVA Disinfection By-Products (Combined Results)



Water Supply and Source Water Management

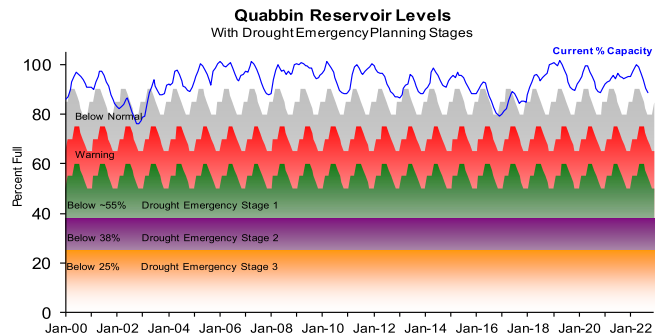
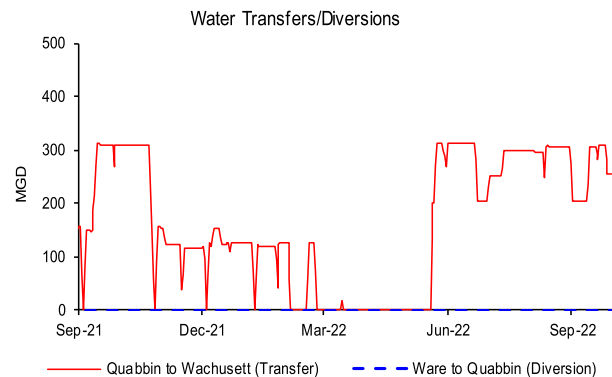
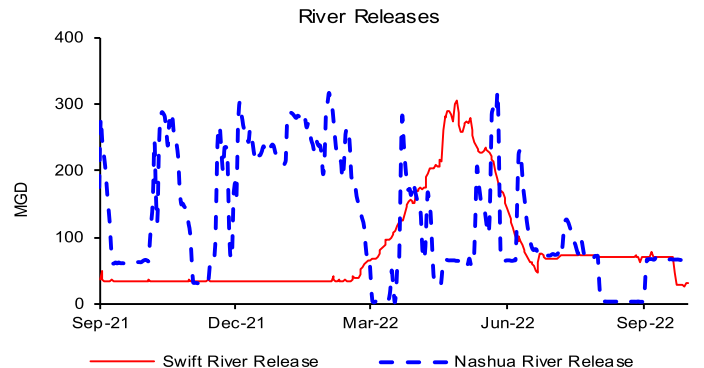
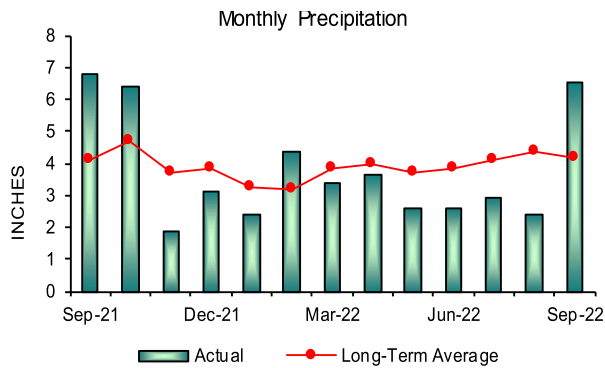
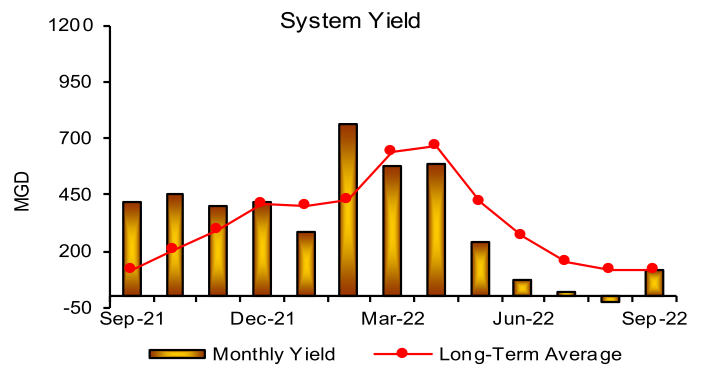
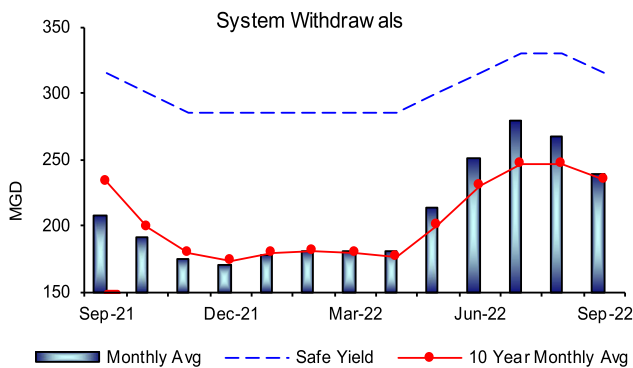
1st Quarter – FY23

Background

A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir was designed to effectively supply water to the service areas under a range of climatic conditions and has the ability to endure a range of fluctuations. Wachusett Reservoir serves as a terminal reservoir to meet the daily demands of the Greater Boston area. A key component to this reservoir's operation is the seasonal transfer of Quabbin Reservoir water to enhance water quality during high demand periods. On an annual basis, Quabbin Reservoir accounts for nearly 50% of the water supplied to Greater Boston. The water quality of both reservoirs (as well as the Ware River, which is also part of the System Safe Yield) depend upon implementation of DCR's DEP-approved Watershed Protection Plans. System Yield is defined as the water produced by its sources, and is reported as the net change in water available for water supply and operating requirements.

Outcome

The volume of the Quabbin Reservoir was at 88.8% as of September 30, 2022; a 7.6 % decrease for the quarter, which represents a loss of more than 31 billion gallons of storage and a decrease in elevation of 4.15'. System withdrawal, precipitation and yield were below their long term quarterly averages. Quabbin is in Normal Operating Range for this time of year.



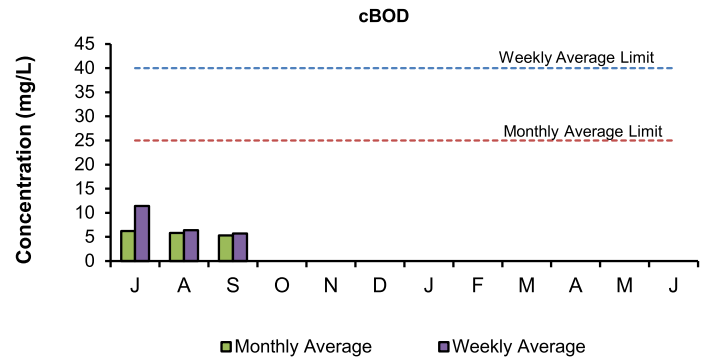
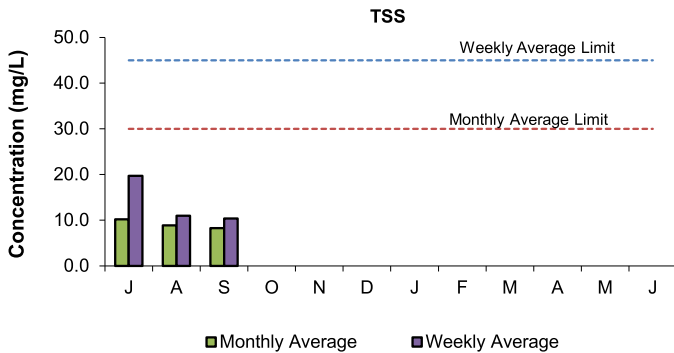
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant 1st Quarter - FY23

NPDES Permit Limits

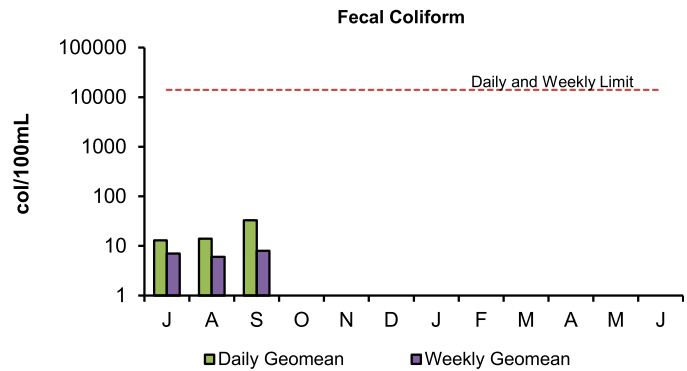
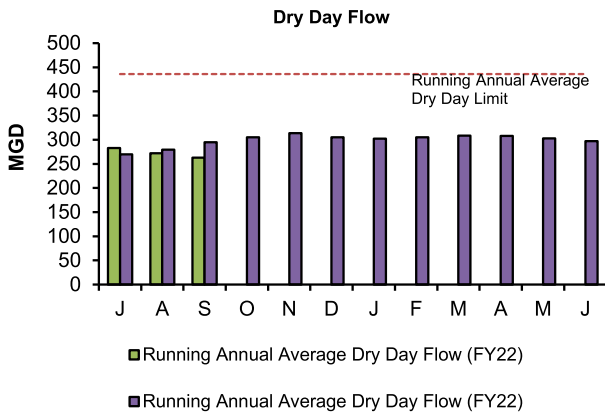
Effluent Characteristics		Units	Limits	July	August	September	1st Quarter Violations	FY23 YTD Violations
Dry Day Flow (365 Day Average):		mgd	436	282.7	272.0	262.8	0	0
cBOD:	Monthly Average	mg/L	25	6.2	5.8	5.3	0	0
	Weekly Average	mg/L	40	11.4	6.4	5.7	0	0
TSS:	Monthly Average	mg/L	30	10.2	8.9	8.3	0	0
	Weekly Average	mg/L	45	19.7	11.0	10.4	0	0
TCR:	Monthly Average	ug/L	456	0.4	0.0	0.0	0	0
	Daily Maximum	ug/L	631	13.3	0.0	0.0	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	13	14	33	0	0
	Weekly Geometric Mean	col/100mL	14000	7	6	8	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.5-7	6.5-6.9	6.5-6.9	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
	Inland Silverside	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	≥1.5	100	100	50	0	0
	Inland Silverside	%	≥1.5	50	25	50	0	0

There have been no permit violations in FY23 to date at the Deer Island Treatment Plant (DITP).



Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 1st Quarter were within permit limits.

Carbonaceous Biochemical Oxygen Demand (cBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials in the environment. All cBOD measurements for the 1st Quarter were within permit limits.



Running Annual Average Dry Day Flow is the average of all dry weather influent flows over the previous 365 days. The Dry Day Flow for the 1st Quarter was well below the permit limit of 436 MGD.

Fecal Coliform is an indicator for the possible presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms. In the 1st Quarter, all permit conditions for fecal coliform were met.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant
1st Quarter - FY23

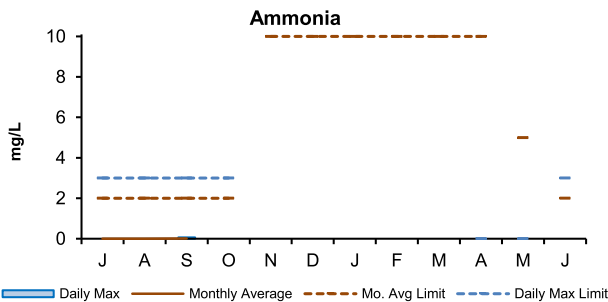
NPDES Permit Limits

Effluent Characteristics		Units	Limits	July	August	September	1st Quarter Violations	FY23 YTD Violations
Flow:	12-month Rolling Average:	mgd	3.01	3.02	2.90	2.69	1	1
BOD:	Monthly Average:	mg/L	20	1.50	1.40	1.30	0	0
	Weekly Average:	mg/L	20	1.90	1.60	1.60	0	0
TSS:	Monthly Average:	mg/L	20	1.20	1.50	1.50	0	0
	Weekly Average:	mg/L	20	1.80	2.40	1.70	0	0
pH:		SU	6.5-8.3	7.3-7.8	7.2-7.8	7.3-7.8	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	8.10	8.10	8.30	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5	5	5	0	0
	Daily Geometric Mean:	cfu/100mL	409	5	7	23	0	0
TCR:	Monthly Average:	ug/L	17.6	0.13	0.11	0.00	0	0
	Daily Maximum:	ug/L	30.4	4.00	3.33	0.00	0	0
Copper:	Monthly Average:	ug/L	11.6	12.45	12.25	9.82	2	2
	Daily Maximum:	ug/L	14.0	12.70	12.30	10.70	0	0
Total Ammonia Nitrogen: June 1st - October 31st	Monthly Average:	mg/L	2.0	0.00	0.00	0.01	0	0
	Daily Maximum:	mg/L	3.0	0.00	0.00	0.07	0	0
Total Phosphorus: April 1st - October 31st	Monthly Average:	ug/L	150	97	71	49	0	0
	Daily Maximum:	ug/L	RPT	173	183	150	0	0
Acute Toxicity*:	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity*:	Daily Minimum:	%	≥62.5	N/A	N/A	12.5	1	1

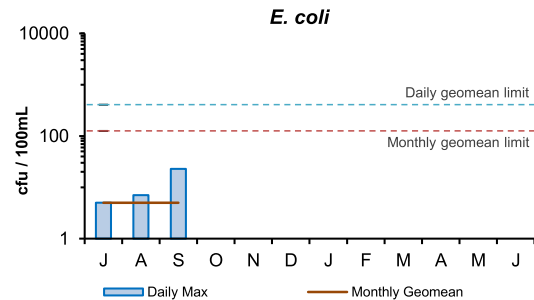
There have been four permit violations in FY23 at the Clinton Treatment Plant.

1st Quarter: There were four permit violations in the first quarter. In July, plant flows exceeded the 12-month rolling average. July and August copper monthly averages exceeded the permit limit of 11.6 ug/L. The quarterly chronic toxicity result of 12.5% was below the minimum permit limit of 62.5%.

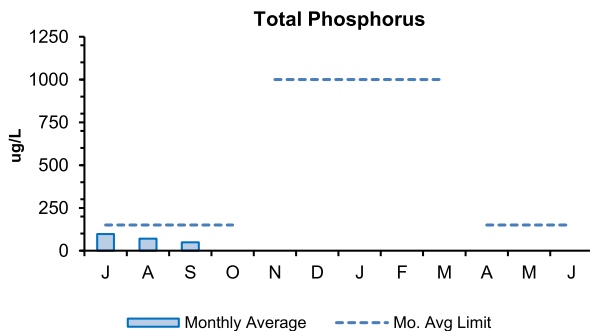
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



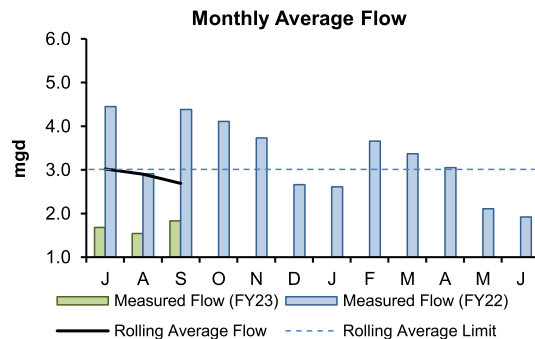
The 4th Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 4th Quarter are 2.0 and 3.0 mg/L respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.



E. coli is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 4th Quarter. The monthly and daily limits are 126 cfu/100 mL and 409 cfu/100 mL respectively.



Total phosphorus limits are most stringent during the growing season from April to October. The 4th Quarter's monthly average concentrations for total phosphorus were below permit limits.



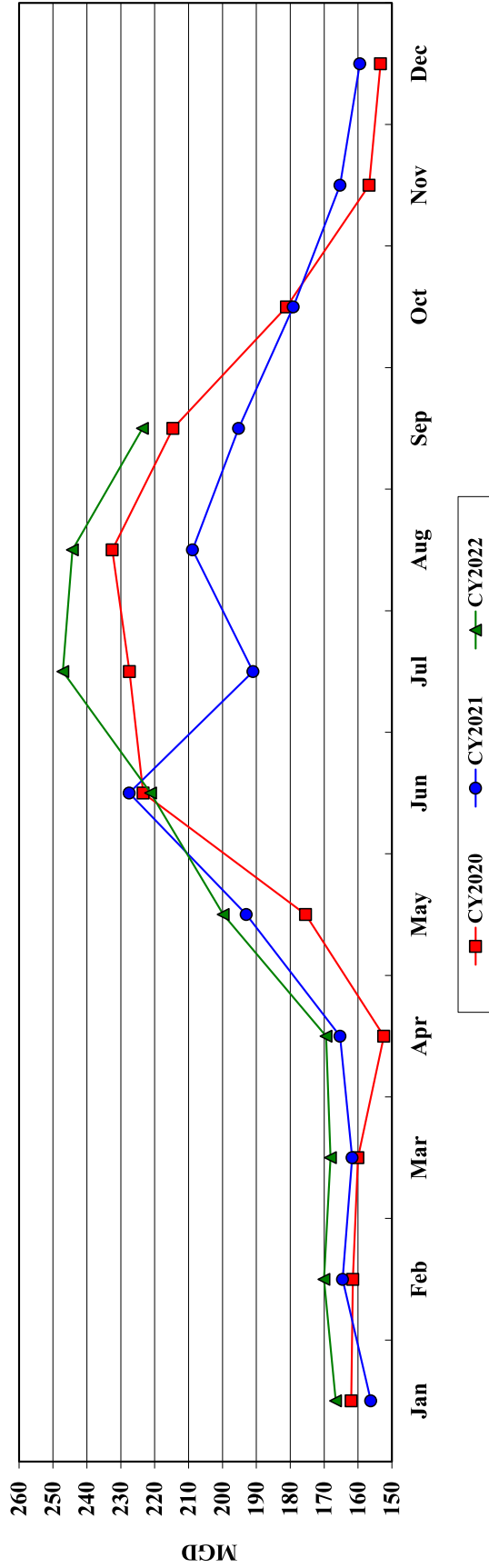
The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant. The 12-month rolling average flows during the 4th Quarter were below the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use

1st Quarter - FY23

MWRA Water Supplied: All Revenue Customers



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2020	162.016	161.551	160.018	152.368	175.435	223.405	227.454	232.496	214.617	181.110	156.727	153.367	190.061	183.462
CY2021	156.213	164.567	161.697	165.284	192.998	227.522	190.945	208.810	195.229	179.116	165.302	159.442	184.907	180.641
CY2022	166.570	170.056	168.107	169.415	199.769	221.149	247.087	244.267	223.603	-	-	-	201.415	201.415

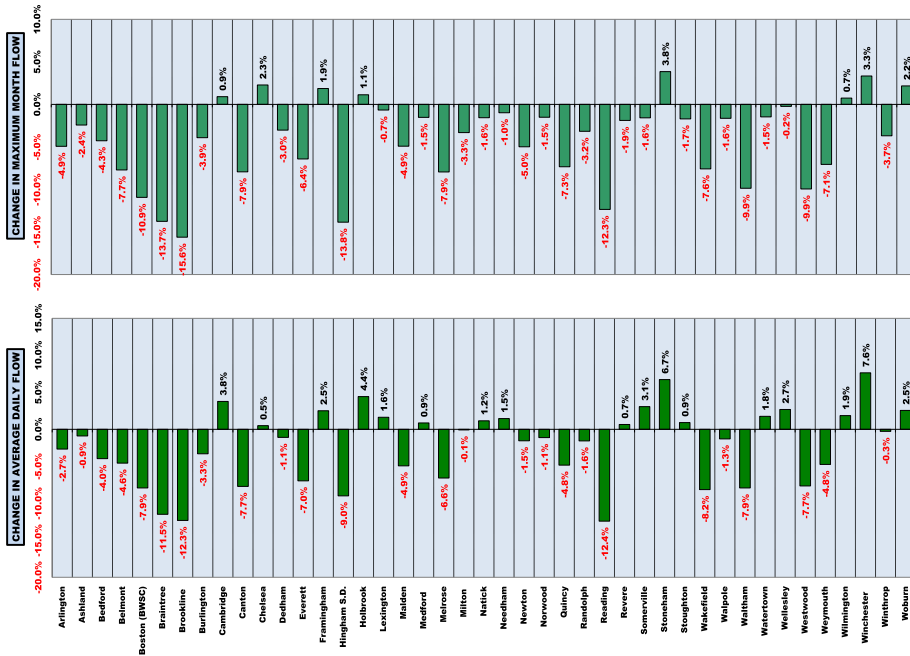
MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2020	5,022.510	4,684.968	4,960.567	4,571.025	5,438.470	6,702.146	7,051.078	7,207.384	6,438.520	5,614.399	4,701.821	4,754.375	52,076.668	67,147.263
CY2021	4,842.593	4,607.873	5,012.608	4,958.533	5,982.944	6,825.661	5,919.300	6,473.120	5,856.857	5,552.611	4,959.064	4,942.705	50,479.491	65,933.870
CY2022	5,163.682	4,761.563	5,211.326	5,082.449	6,192.845	6,634.472	7,659.688	7,572.270	6,708.080	-	-	-	54,986.375	54,986.375

The September 2022 Community Water Use Report was recently distributed to communities served by the MWRA Metropolitan and Chicopee Valley waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2022 water use will be used to allocate the FY2024 water utility rate revenue requirement.

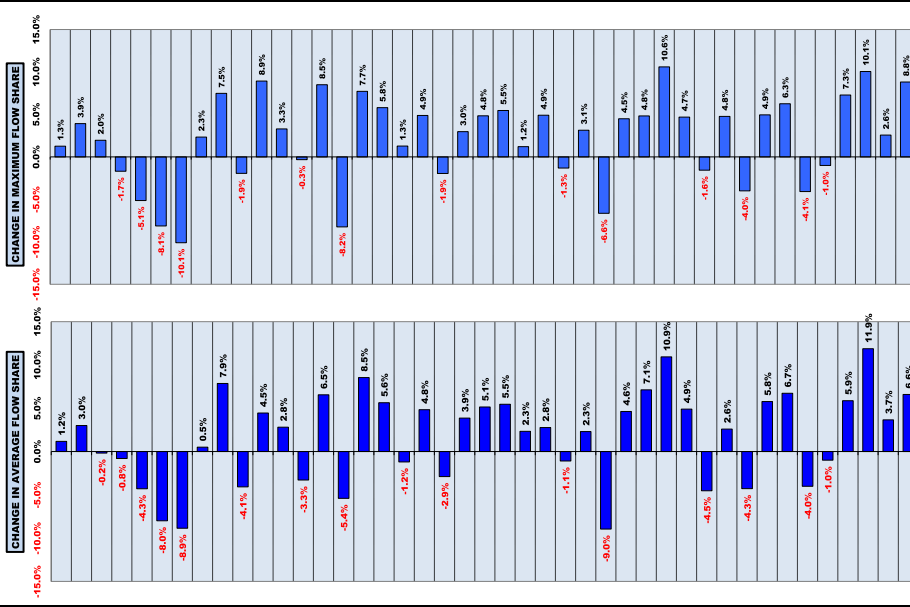
MWRA customers used an average of 238.48 mgd in the 1st quarter (Jul-Sep 2022) of FY2023. This is an increase of 26.81 mgd or 12.7% compared to the average of the 1st quarters in FY2020 and FY2021. The City of Cambridge used 438.31 million gallons in the first quarter, and averaged 13.96 mgd in September.

How CY2020-22 Community Wastewater Flows Could Effect FY2024 Sewer Assessments ^{1,2,3}

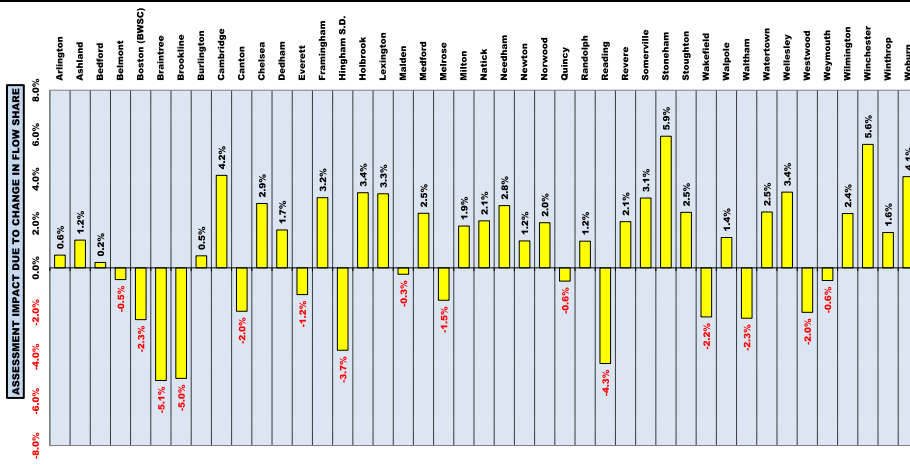
The flow components of FY2024 sewer assessments will be calculated using a 3-year average of CY2020 to CY2022 wastewater flows compared to FY2023 assessments that will use a 3-year average of CY2019 to CY2021 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2020 to CY2022 flow share compared to CY2019 to CY2021 flow share, compared to all other communities in the system.



The chart below illustrates the change in the TOTAL BASE assessment due to FLOW SHARE CHANGES. ⁴



¹ MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smooths the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.
² Based on actual flows for 2019 and 2022 (through June), and January to March, and June to December 2020. April & May 2020 based on the average of three prior years, adjusted for 2020 water use. January to December 2021 estimated based on the average of the three prior years.
³ Flow data is preliminary and subject to change pending additional MWRA and community review.
⁴ Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

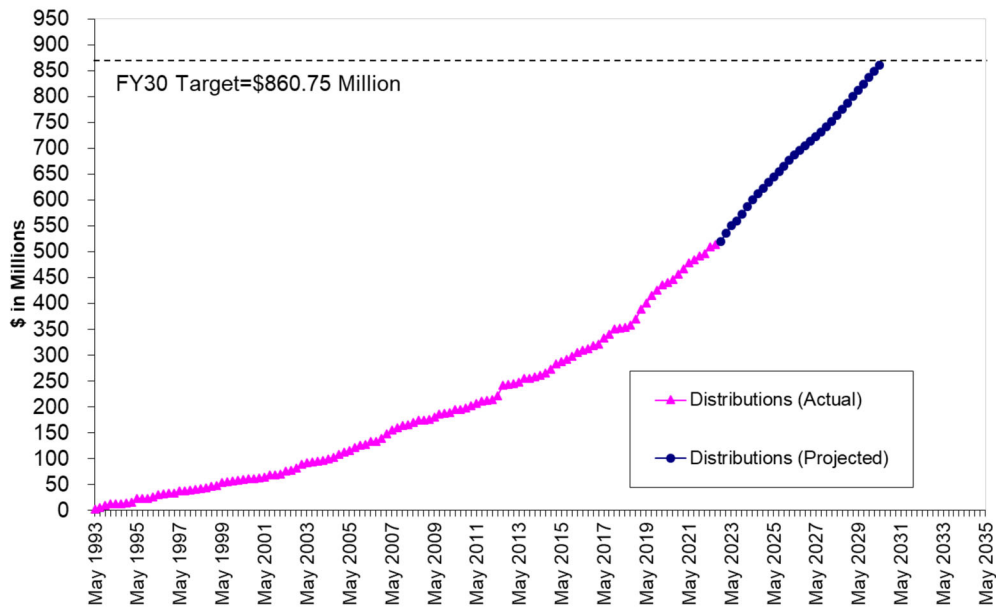
Community Support Programs

1st Quarter – FY23

Infiltration/Inflow Local Financial Assistance Program

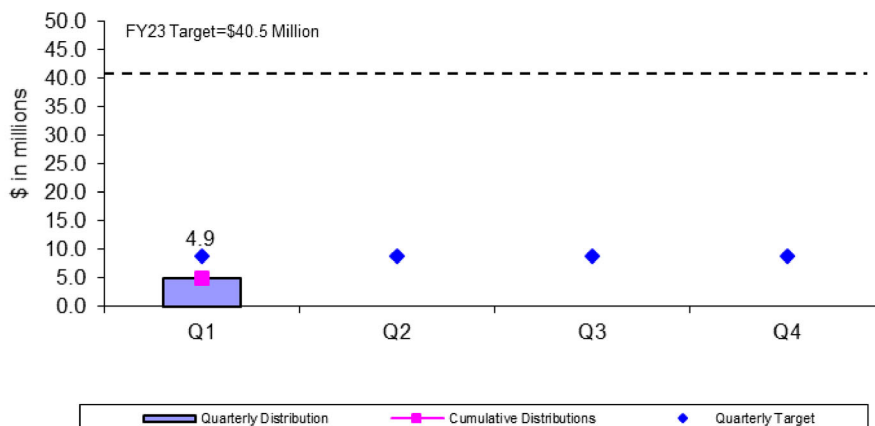
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$860.75 million in grants and interest-free loans (average of about \$22 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Eligible project costs include: sewer rehabilitation construction, pipeline replacement, removal of public and private inflow sources, I/I reduction planning, engineering design, engineering services during construction, etc. I/I Local Financial Assistance Program funds are allocated to member sewer communities based on their percent share of MWRA's wholesale sewer charge. Phase 1-8 funds (total \$300.75 million) were distributed as 45% grants and 55% loans with interest-free loans repaid to MWRA over a five-year period. Phase 9 through 12 funds (total \$360 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period. Phase 13 provides an additional \$100 million in ten-year loan-only funds. Phase 14 funds (total \$100 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period.

I/I Local Financial Assistance Program Distribution FY93-FY30



During the 1st Quarter of FY23, \$4.9 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Holbrook, Quincy, Revere and Weymouth. Total grant/loan distribution to date for FY23 is \$4.9 million. From FY93 through 1st Quarter of FY23, all 43 member sewer communities have participated in the program and \$515 million has been distributed to fund 648 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY30 and community loan repayments will be made through FY40. All scheduled community loan repayments have been made.

FY23 Quarterly Distributions of Sewer Grant/Loans



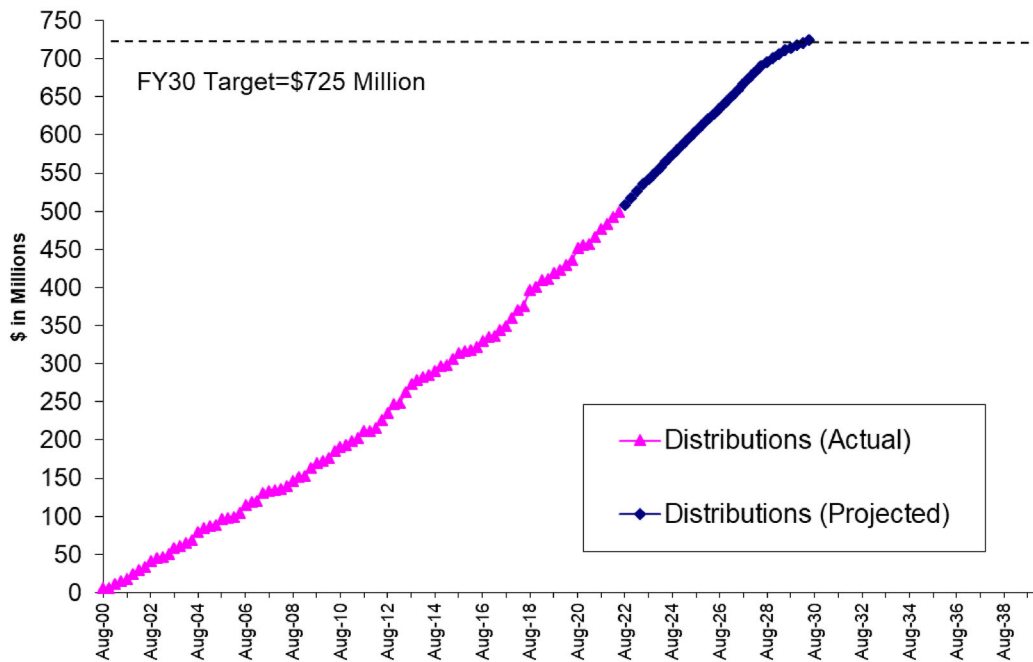
Community Support Programs

1st Quarter – FY23

Local Water System Assistance Program

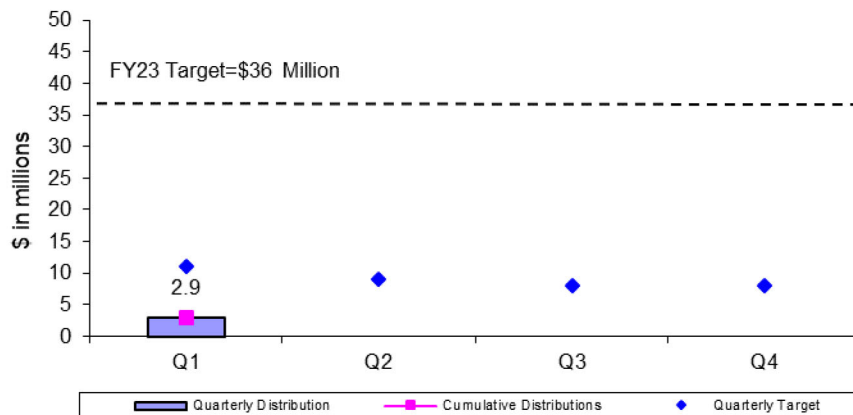
MWRA's Local Water System Assistance Programs (LWSAP) provides \$725 million in interest-free loans (an average of about \$24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at \$222 Million, Phase 2 at \$210 Million, and Phase 3 at \$293 Million. Eligible project costs include: water main cleaning/lining, replacement of unlined water mains, lead service replacements, valve, hydrant, water meter, tank work, engineering design, engineering services during construction, etc. MWRA partially-supplied communities receive pro-rated funding allocations based on their percentage use of MWRA water. Interest-free loans are repaid to MWRA over a ten-year period beginning one year after distribution of the funds. The Phase 1 water loan program concluded in FY13 with \$222 million in loan distributions. The Phase 2 - LWSAP continues distributions through FY25. The Phase 3 Water Loan Program is authorized for distributions FY18 through FY30.

Local Water System Assistance Program Distribution FY01-FY30



During the 1st Quarter of FY23, \$2.9 million in interest-free loans was distributed to fund local water projects in Belmont, Norwood, Stoughton, and Watertown. Total loan distribution to date for FY23 is \$2.9 million. From FY01 through the 1st Quarter of FY23, \$502 million has been distributed to fund 505 local water system rehabilitation projects in 43 MWRA member water communities. Distribution of the remaining funds has been approved through FY30 and community loan repayments will be made through FY40. All scheduled community loan repayments have been made.

FY23 Quarterly Distributions of Water Loans



Community Support Programs

1st Quarter – FY23

Lead Service Line Replacement Loan Program

By its vote on March 16, 2016, the Board approved an enhancement to the Local Water System Assistance Program to provide up to \$100 million in 10-year zero-interest loans to communities solely for efforts to fully replace lead service lines. The Lead Service Line Replacement Loan Program is also referenced as the Lead Loan Program or LLP. Each community can develop its own program, tailored to their local circumstances. MWRA's goal in providing financial assistance to member communities is to improve local water systems so that the high quality water MWRA delivers can make it all the way to the consumer's tap. The presence of a lead service line connecting a home to the main in the street can lead to elevated lead levels in tap water, especially if that water sits stagnant for an extended period. MWRA's stable water quality and effective corrosion control treatment reduce the risk that a lead service line will cause elevated lead levels, and measured lead levels in high risk homes have decreased by 90 percent since corrosion control was brought on-line in 1996. However, the risk of elevated levels remains as long as lead service lines are in use.

FY17 was the first year of the Lead Service Line Replacement Loan Program – MWRA made three Lead Loans.

FY18 was the second year of the Lead Loan Program - MWRA made five Lead Loans.

FY19 was the third year of the Lead Loan Program - MWRA made four Lead Loans.

FY20 was the fourth year of the Lead Loan Program - MWRA made eight Lead Loans.

FY21 is the fifth year of the Lead Loan Program – MWRA made seven Lead Loans.

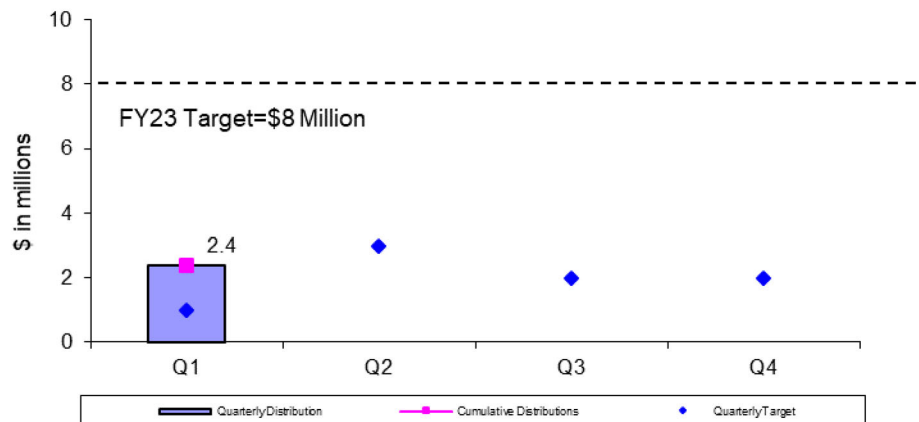
FY22 is the sixth year of the Lead Loan Program – MWRA made six Lead Loans.

FY23 is the seventh year in the Lead Loan Program – MWRA made three Lead Loans in the first quarter.

Summary of Lead Loans:

Reading in FY23	\$1.5 Million	Marlborough in FY19	\$1.0 Million
Watertown in FY23	\$0.3 Million	Winthrop in FY19	\$0.5 Million
Winchester in FY23	\$0.6 Million	Chelsea in FY19	\$0.1 Million
Everett in FY22	\$1.5 Million	Everett in FY19	\$1.0 Million
Boston in FY22	\$0.9 Million	Needham in FY18	\$1.0 Million
Winthrop in FY22	\$0.8 Million	Winchester in FY18	\$0.5 Million
Somerville in FY22	\$1.6 Million	Revere in FY18	\$0.2 Million
Revere in FY22	\$1.3 Million	Winthrop in FY18	\$0.3 Million
Chelsea in FY22	\$0.3 Million	Marlborough in FY18	\$1.0 Million
Watertown in FY21	\$0.6 Million	Newton in FY17	\$4.0 Million
Marlborough in FY21	\$2.0 Million	Quincy in FY17	\$1.5 Million
Everett in FY21	\$1.5 Million	<u>Winchester in FY17</u>	<u>\$0.5 Million</u>
Boston in FY21	\$2.6 Million	TOTAL	\$34 Million
Winthrop in FY21	\$0.8 Million		
Chelsea in FY21	\$0.3 Million		
Winchester in FY21	\$0.6 Million		
Everett in FY20	\$0.5 Million		
Marlborough in FY20	\$1.0 Million		
Winchester in FY20	\$0.6 Million		
Winthrop in FY20	\$0.7 Million		
Weston in FY20	\$0.2 Million		
Everett in FY20	\$1.0 Million		
Somerville in FY20	\$0.9 Million		
Chelsea in FY20	\$0.3 Million		

FY23 Quarterly Distributions of Lead Service Line Replacement Loans

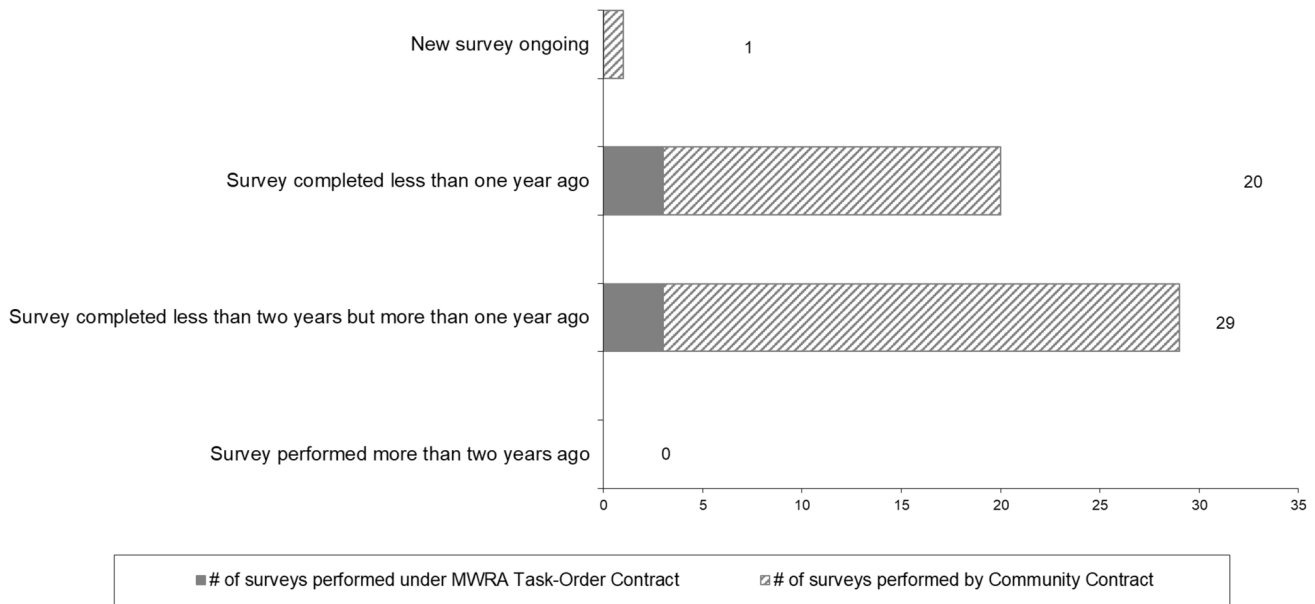


Community Support Programs

1st Quarter – FY23

Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractors or municipal crews; or alternatively, using MWRA’s task order leak detection contract. MWRA’s task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 1st Quarter of FY23, all member water communities were in compliance with MWRA’s Leak Detection Regulation.



Community Water Conservation Outreach

MWRA’s Community Water Conservation Program helps to maintain average water demand below the regional water system’s safe yield of 300 mgd. Current 5-year average water demand is less than 200 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor - outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, and toilet leak detection dye tabs), all at no cost to member communities or individual customers. The Program’s annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	9,985				9,985
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,302				2,302
Toilet Leak Detection Dye Tablets	—	1,151				1,151

BUSINESS SERVICES

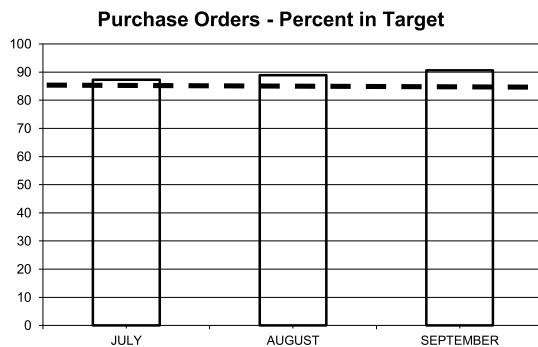
Procurement: Purchasing and Contracts

1st Quarter - FY23

Background: Goal is to process 85% of Purchase Orders and 80% of Contracts within Target timeframes.

Outcome: Processed 91% of purchase orders within target; Average Processing Time was 5.66 days vs. 4.75 days in Qtr 1 of FY22. Processed 11% (1 of 9) of contracts within target timeframes; Average Processing Time was 264 days vs. 207 days in Qtr 1 of FY22.

Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	448	3 DAYS	85.0%
\$500 - \$2K	537	7 DAYS	95.7%
\$2K - \$5K	515	10 DAYS	94.9%
\$5K - \$10K	51	25 DAYS	78.4%
\$10K - \$25K	64	30 DAYS	75.0%
\$25K - \$50K	14	60 DAYS	85.7%
Over \$50K	33	90 DAYS	84.8%

The Purchasing Unit processed 1662 purchase orders, 35 less than the 1697 processed in Qtr 1 of FY22 for a total value of \$20,155,610 versus a dollar value of \$14,524,801 in Qtr 1 of FY22 .

The purchase order processing target was not met for the \$5K - \$10K category due to vendor registration requirements and end user confirmations and the \$10K - \$25K category due to end user confirmations, specification development and vendor response delays.

Contracts, Change Orders and Amendments

Procurement executed nine contracts with a value of \$23,371,557 and three amendments with a value of \$250,000. Eleven change orders were executed during the period. The dollar value of all non-credit change orders during Qtr 1 of FY23 was \$159,993 and the value of credit change orders was (\$470,442).

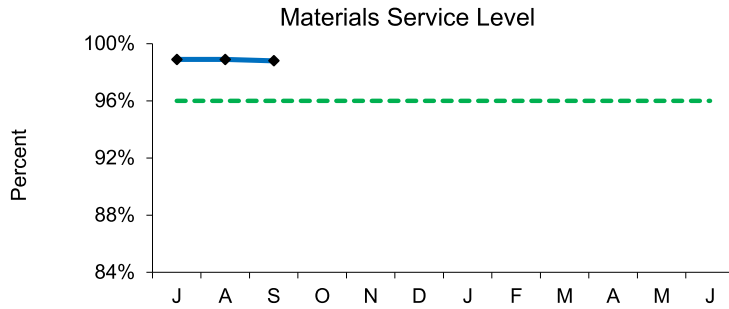
Eight contracts were not executed within the target timeframes. Two contracts were delayed due to additional procurement requirements necessary for insurance services. Insurance for all categories of coverage was obtained timely and according to schedule. Another contract was delayed due to the need for a bid review with the contractor in addition to negotiations with the local municipality regarding scope and funding. A fourth contract was delayed due to specification review which took longer than anticipated.

Several contracts were delayed due to reduced staffing due to retirement, and consultant proposed contract language changes for one of the contracts. Another contract was delayed due to a longer than anticipated sub bid and general bid qualification process. The final contract was delayed due to changes in scope and cost, and contractor questions that led to a bid date extension.

Staff reviewed 29 proposed change orders and 11 draft change orders.

Materials Management

1st Quarter - FY23



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 6,116 (98.8%) of the 6,190 items requested in Q1 from the inventory locations for a total dollar value of \$1,450,218.

Inventory Value - All Sites

Inventory goals focus on:

- Maintaining optimum levels of consumables and spare parts inventory
- Adding new items to inventory to meet changing business needs
- Reviewing consumables and spare parts for obsolescence
- Managing and controlling valuable equipment and tools via the Property Pass Program

The FY22 goal is to reduce consumable inventory from the July '22 base level (\$8.3 million) by 2.0% (approximately \$167,437), to \$8.2 million by June 30, 2023.

Items added to inventory this quarter include:

- Deer Island – gloves, hardhats, lamps, inspection tags, equipment labels for Safety; o-rings and gear reducers for Maintenance; valves, transformer contact kit, valves and pressure switches for Electrical; pull handles and rotating hasps for Facilities.
- Chelsea – equipment labels, inspection tags and equipment tags for Safety; PH sensors for SCADA; Degreaser for Work Coordination; pipe saw blades Operations & Maintenance.
- Southboro – hardhats and headlamps for Safety; valve rebuild kits for Plumbers; gloves for Operations & Maintenance.

Property Pass Program:

- Nine audits were conducted during Q1.
- Scrap revenue received for Q1 amounted to \$7,876. Year to date revenue received amounted to \$7,876.
- Revenue received from online auctions held during Q1 amounted to \$106,251. Year to date revenue received amounted to \$106,251.

Items	Base Value July-22	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,371,867	8,259,525	-112,342
Spare Parts	9,447,310	9,559,332	112,022
Total	17,819,177	17,818,857	-320

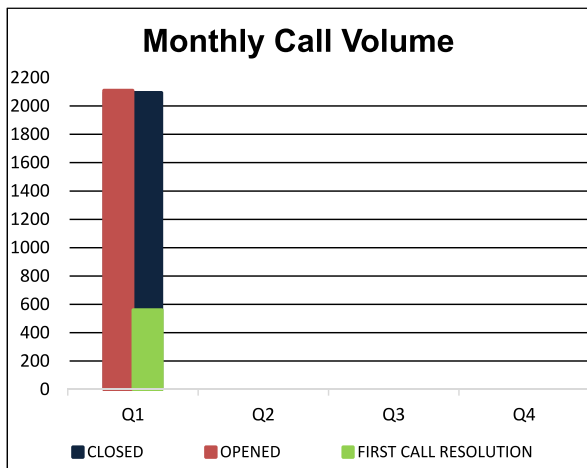
Note: New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

MIS Program

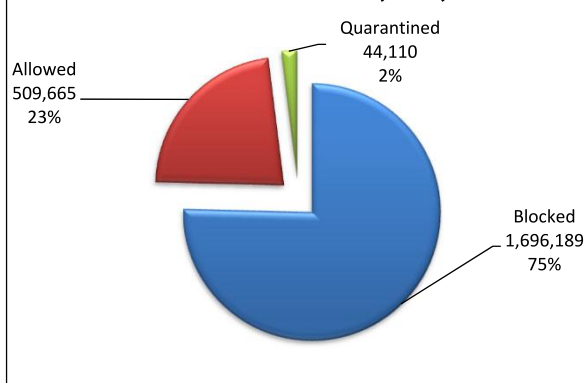
1st Quarter – FY23

Numbers & Statistics

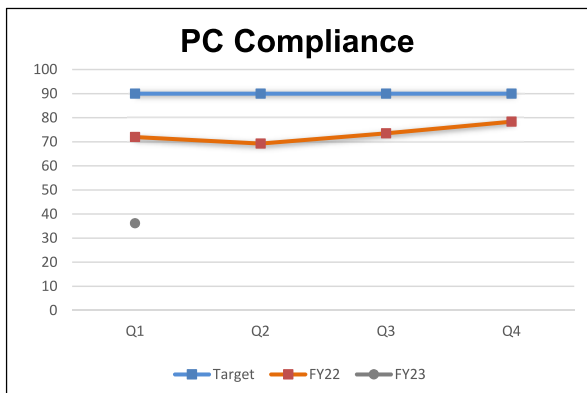
Monthly Call Volume



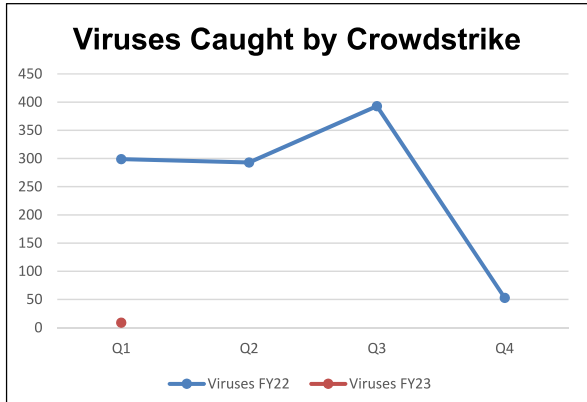
Emails Received: 2,249,964



PC Compliance



Viruses Caught by CrowdStrike



Project Updates

Infrastructure & Security

Managed Security Services Contract: The new contract was awarded in September to NWN Carousel. NTP & go-live are on schedule to complete during Q2.

Firewall Replacement: New Fortinet firewalls are in place in Chelsea, and their rules have been reviewed, edited, and optimized after conversion. Firewalls for Deer Island and remote sites are being configured and will be rolled out during Q2.

Identity and Access Management: Okta's multi-factor authentication (MFA) solution was implemented authority wide, replacing the less secure DUO MFA.

Forticlient VPN Solution: Fortinet VPN has been implemented. MIS began migrating all users and vendors to the new Fortinet solution. This process will continue into Q2. New, larger VPN devices have been ordered and received to accommodate the increased number of total VPN users, as we transition away from Citrix. Upgrade to the new devices to complete in Q2.

PBX (Telephone System Upgrade): VOIP phones roll-out, which started in Q4 of FY22, have been completed (with the exception of DITP). Cabling and other required infrastructure upgrades that started during FY22 will continue through 2023.

Expansion of Wi-Fi Networking: Wireless is now available at Chelsea, Charlestown, Southboro, NI conference room, Clinton (front offices & conf. room), CWTP conference room, DITP RT building (Admin/lab 1 & 2 to be completed with construction) and Belchertown.

Other Software & Custom Applications

Learning Management System: The LMS went live in August, and is fully rolled out for all MWRA employees. The project moved from the Infor implementation team to their support team.

ECM/Electronic Document Management: Cadence and Subject Matter Experts met and determined that more work will be needed to configure the functionality required. Significant effort was put into this re-configuration and testing, and we expect this phase to wrap up in October or November. Continued to work on data preparation for full data migration.

BOE Upgrade: The vendor Qlarion completed upgrading the Business Objects Enterprise development and production servers to version 4.3 and worked with the ENQUAL department to prioritize the Oracle Discoverer reports to be migrated to the new BOE Webi environment.

Maximo/Lawson Interface: The vendor Starboard Consulting completed working with staff to re-write the business rules of the Lawson-Maximo interface to reduce the number of failed transactions that currently must be resolved manually by the Maximo administrator.

Lawson ERP Upgrade: MIS continues to work on drafting the upgrade RFQP and has help multiple discovery sessions with Workday, another ERP vendor, during this quarter.

Library, Record Center, & Training

Library: Undertook 15 research requests, supplied 21 books for circulation, provided 14 new books and 10 new standards. The MWRA Library Portal supported 726 end user searches, including: Ashland MA original sewage system, Frederick Stearns/damming of the Nashua River (1880s), history of chlorination in the metropolitan water system..

Record Center (RC): The Record Center added 276 new boxes, handled 489 total boxes, and shredded (36) 65 gallon bins and (8) 96 gallon bins of confidential documentation on-site. It performed 117 database/physical box searches for multiple departments on various topics, including administrative info, law cases, and project docs for Engineering.

Training: In Q1, 52 online IT lessons were taken, by 20 employees, spanning 75 hours (75 YTD). 0 standard class lessons were taken. 0 outside certifications were earned.

Legal Matters
1st Quarter FY 2023

PROJECT ASSISTANCE

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits and License Agreements:** Reviewed one hundred (100) 8(m) permits. Drafted one-day license for Nut Island. Reviewed Direct Connect Permit. Finalized draft amendment 1 to the Town of Northborough public access 8(m) permit. Reviewed New Cingular wireless renewal agreement for Walnut Hill water tank.
- **Real Property:** Drafted lease for Core Storage Facility for Tunnel Redundancy. Drafted and finalized first amendment to Walpole records center lease. Completed review of DCR watershed acquisition package for W-001236 in Petersham and Barre, MA. Drafted and finalized license from UMass to MWRA allowing for geophysical survey in support of Tunnel Redundancy Program. Reviewed land acquisition needs for MWRA Contract 6224 - Siphon and Junction Structure Rehabilitation. Reviewed lease terms with respect to requirements for permanent fixtures and business fixtures upon termination of lease. Prepared response with respect to the removal of certain security equipment at termination of lease. Reviewed property rights for parcel(s) in Southborough and in Newton, MA. Drafted and finalized Memorandum of Agreement between MWRA and the Town of Ludlow regarding construction and ownership of an antenna tower at Nash Hill Reservoir for communication equipment. Researched Clinton WTP property rights for tree plantings. Drafted notice letter for access over private property concerning boring work in Newton pursuant to statutory right of entry. Reviewed property rights for parcels of interest for Tunnel Redundancy Program. Researched Article 97 restrictions for two separate MWRA projects.
- **Energy:** Prepared a summary of recent Commonwealth energy legislation, Chapter 179 of the Acts of 2022, *An Act Driving Clean Energy and Offshore Wind*, including items relevant to MWRA operations. Assisted energy team with Site Host Agreement with local electrical utility regarding electric vehicle charging infrastructure at MWRA facility. Provided ongoing legal support the energy group regarding updates to the Cosgrove and Oakdale Hydro facilities' Interconnection Services Agreements with National Grid and associated interconnection processes. Review of HEEC information request filings in D.P.U. 22-56, *Petition of Harbor Electric Energy Company for approval by the Department of Public Utilities of its Capacity and Support Charge True-Up Adjustment for 2021*.
- **Environmental/NPDES:** Assisted TRAC with preparation of various documents, , and permitting templates. Assisted TRAC/Lab with response to request for data. Reviewed a Memorandum of Agreement with the Massachusetts Historical Commission. Provided legal support for Medium Wastewater Treatment Facility General NPDES Permit related to MWRA's Clinton Wastewater Treatment Facility and for Deer Island Wastewater Treatment Plant's NPDES permit renewal.
- **Miscellaneous:** Reviewed documents for submission to Records Conservation Board for disposal. Updated commonly used codes for reference guide using the current edition of the Massachusetts Statewide Records Retention Schedule. Drafted memorandum on archiving, scanning and purging records in compliance with the Massachusetts Statewide Records Retention Schedule. Finalized Professional Services Agreement for use in procuring

consultant services. Drafted professional Rules of Conduct memorandum. Reviewed bills SB3074 and HB4250 for completeness. Reviewed legislation related to certain easements at Hingham Pump Station and legislation related to release of sewer access easement at 777 Dedham Street in Canton. Further advised on certain prevailing wage law issues. Review of procurement documents for Metropolitan Water Tunnel Program lease for core storage facility. Reviewed MWRA Enabling Act Section 8(k) and drafted correspondence for use in securing electrical inspection for Chelsea Facility by DPS. Reviewed agreements for Deer Island Treatment Plant's demand response program, and terms of MWRA Contract numbers S590 and S594 concerning request for release of parental guarantee. Assisted with revisions to OP.10, *Admission of New Community to MWRA Water System*, regarding water supply entrance fees.

- **Public Records Requests:** During the 1st Quarter of FY23, MWRA received and responded to one hundred fifty-seven (157) public records requests.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Unemployment appeal involving a former employee who alleges he resigned due to a medical condition.

Matters Concluded

Received an arbitrator's decision in favor of the MWRA following a hearing regarding a grievance alleging that it violated a collective bargaining agreement when employee was working out of title.

Received an arbitrator's decision in favor of the MWRA following a hearing regarding a grievance alleging that it violated a collective bargaining agreement when employee was not selected for promotion.

Received an arbitrator's decision in favor of the Union following a hearing regarding a grievance alleging that the MWRA violated a collective bargaining agreement when employee was suspended for three days.

Received an arbitrator's decision in favor of the Union following a hearing regarding a grievance alleging that the MWRA violated a collective bargaining agreement by reclassifying a position without bargaining over the pay rate.

A Union withdrew a demand for arbitration regarding a grievance alleging that MWRA violated a collective bargaining agreement when an employee was demoted.

A Union withdrew a charge of prohibited practice at the Massachusetts Department of Labor Relations alleging the MWRA violated Chapter 150E when it announced it would not bargain over the decision to make changes to job descriptions.

A Union withdrew a petition for mediation and fact-finding filed at Massachusetts Department of Labor Relations after parties reached agreement on a successor Collective Bargaining Agreement. Received an MCAD dismissal due to complainant withdrawing charge.

LITIGATION/CLAIMS

New Lawsuits/Claims: There are no new Lawsuits to report for the First Quarter FY 2023.

Significant Developments: Conservation Law Foundation (CLF) v. MWRA, D. Mass., Case No. 1:22-cv-10626-AK: On September 23, 2022, MWRA filed a motion to dismiss CLF’s complaint.

Closed Cases: GEICO v. MWRA, Suffolk Superior Court C.A. No. 2184CV02107: A subrogation action arising out of a motor vehicle accident between the plaintiff’s insured and an MWRA driver/vehicle was resolved by way of settlement. A Stipulation of Dismissal was filed with the court in August.

MWRA v. Saba Development LLC, et al, Suffolk Superior Court C.A. No. 2283CV00968: MWRA filed a complaint for declaratory judgment and injunctive relief against the defendants to stop unpermitted construction activities on a portion of the Sudbury Aqueduct abutting their residential property. A Notice of Voluntary Dismissal was filed with the court on August 26, 2022 after defendants’ subsequent remediation of the site.

Closed Claims: There are no closed claims to report.

Subpoenas: During First Quarter FY 2023, no subpoenas were received and one subpoena was closed.

Wage Garnishments There are two wage garnishment matters that are active and monitored by Law Division.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Sept 2022	As of June 2021	As of March 2021
Construction/Contract/Bid Protest (other than BHP)	0	0	0
Tort/Labor/Employment	1	3	4
Environmental/Regulatory/Other	4	4	3
Eminent Domain/Real Estate	0	0	0
Total	5	7	7
Other Litigation matters (restraining orders, etc.)	0	2	2
Total – all pending lawsuits	5	9	9
Claims not in suit:	0	0	0
Bankruptcy	2	2	1

Wage Garnishment	2	2	2
TRAC/Adjudicatory Appeals	0	0	0
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	9	13	13

TRAC/MISC.

New Appeals: There were no new appeals in the 1st Quarter FY 2023.

Settlement by Agreement of Parties There were no Settlements by Agreement of Parties in the 1st Quarter FY 2023.

Stipulation of Dismissal No Stipulations of Dismissal were filed in 1st Quarter FY 2023.

Notice of Dismissal Fine paid in full No Notices of Dismissal for Fines Paid in Full were filed in the 1st Quarter FY 2023.

Tentative Decision No Tentative Decisions were issued in the 1st Quarter FY 2023.

Final Decisions No Final Decisions were issued in the 1st Quarter FY 2023.

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
1st Quarter - FY23

Highlights

During the 1st quarter FY23, Internal Audit (IA) commenced a fleet physical inventory of all plated vehicles and equipment in coordination with management. An updated Mandatory Confined Space Entry Training report aligned with the recently implemented Learning Management System is nearing completion. An internal review of water and wastewater license and certifications and an internal review of MIS assets are progressing.

Internal Audit completed 2 incurred cost audits (JCK Underground and Corrosion Probe Inc.). Internal Audit completed 4 labor burden reviews. IA also issued 10 indirect cost rate letters to consultants following a review of their consultant disclosure statements.

Management advisory services included support on the MWRA's leases. Internal Audit also participated in the managed cyber security services selection process.

Internal Audit also supported the issuance of 4 new policies while a few more are in process.

Status of Recommendations

During FY23, 1 recommendation was closed.

IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation. When a recommendation has not been implemented within 36 months, the appropriateness of the recommendation is re-evaluated.

All Open Recommendations Pending Implementation – Aging Between 0 and 36 Months

Report Title (issue date)	Audit Recommendations		
	Open	Closed	Total
Fleet Services Non-Plated Equipment Inspections (3/30/20)	0	15	15
Total Recommendations	0	15	15

Note: The Compliance Status of Employees' Mandatory Confined Space Entry Training report issued on 6/30/21 has been retracted. An amended report will be issued in the 2nd quarter FY23.

Cost Savings

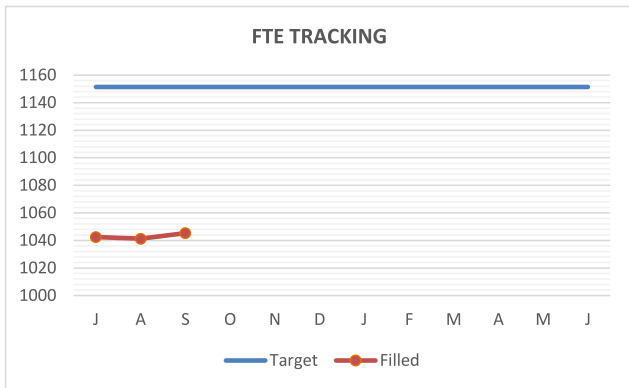
IA's target is to achieve at least \$1,000,000 in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of prior years' audits.

Cost Savings	FY19	FY20	FY21	FY22	FY23 Q1	TOTALS
Consultants	\$262,384	\$643,845	\$563,525	\$39,938	\$103,088	\$1,612,780
Contractors & Vendors	\$3,152,884	\$2,097,729	\$1,547,223	\$1,714,614	\$733,130	\$9,245,580
Internal Audits	\$210,063	\$212,517	\$214,458	\$222,554	\$54,287	\$913,879
Total	\$3,625,331	\$2,954,091	\$2,325,206	\$1,977,106	\$890,505	\$11,772,240

OTHER MANAGEMENT

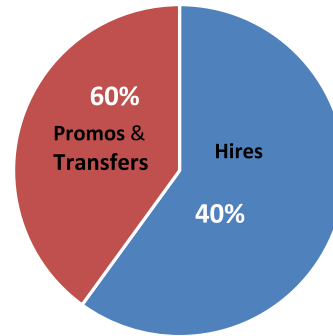
Workforce Management

1st Quarter - FY23

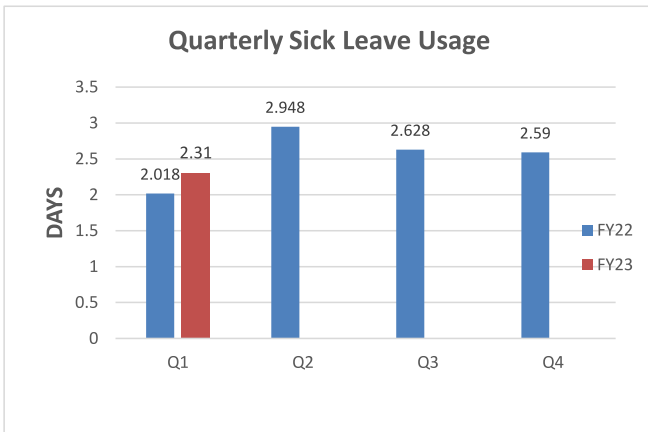


FY23 Target for FTE's = 1151.4
 FTE's as of September 2022= 1045.3
 Tunnel Redundancy as of Sept 2022 = 10

Position Filled by Hires/Promos & Transfer for YTD



	Pr/Trns	Hires	Total
FY21	81 (56%)	64 (44%)	145
FY22	138 (68%)	65 (32%)	203
FY23	42 (60%)	28 (40%)	70



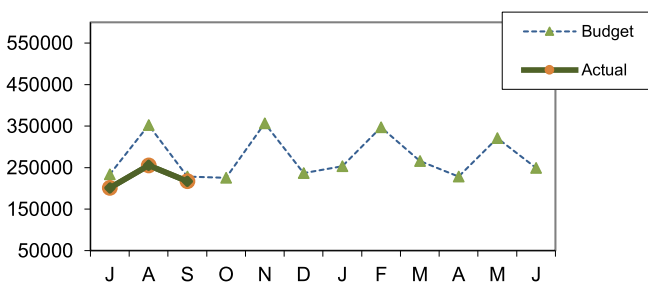
Average quarterly sick leave for the 1st Quarter of FY23 has increased as compared to the 1st Quarter of FY22 (2.31 from 2.018)

Sick Leave and FMLA Usage by Division

	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY22
Admin	131	2.64	10.55	36.4%	7.57
Aff. Action	5	1.85	7.40	0.0%	8.73
Executive	3	0.49	1.96	0.0%	3.11
Finance	46	1.48	5.91	18.2%	6.21
Int. Audit	4	2.16	8.63	0.0%	1.47
Law	12	1.97	7.87	31.1%	12.27
OEP	4	4.82	19.27	33.5%	5.56
Operations	835	2.33	9.33	16.4%	10.87
Tunnel Red	10	1.77	7.07	65.3%	3.94
Pub. Affs.	9	0.58	2.33	8.9%	11.41
MWRA Avg	1059	2.31	9.24	19.6%	10.16

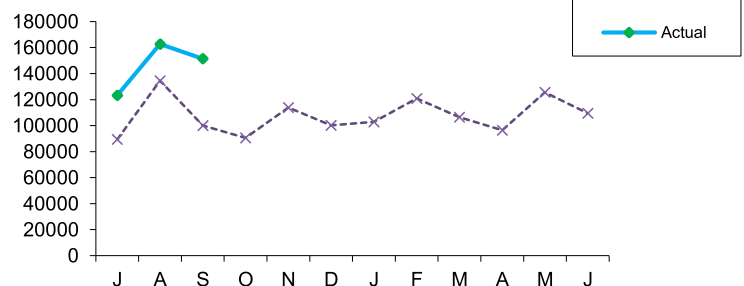
Percent of sick leave usage for FY23, attributable to Family and Medical Leave Act (FMLA) is 19.6%.

Field Operations Current Month Overtime \$



Total Overtime for Field Operations for first quarter was \$657k which is \$166k, or 19.7% under budget. Emergency overtime was \$234k, which was only \$316 under budget. Rain event emergencies were minimal due to drought in early part of 1st quarter (July & August). Coverage overtime was \$256k, which is \$62k, or 32% over budget, due to the shift coverage requirements of numerous vacancies. Planned overtime was \$167k, under budget \$30k, or 15.3%, due to a shortage of available fully complimented work crews.

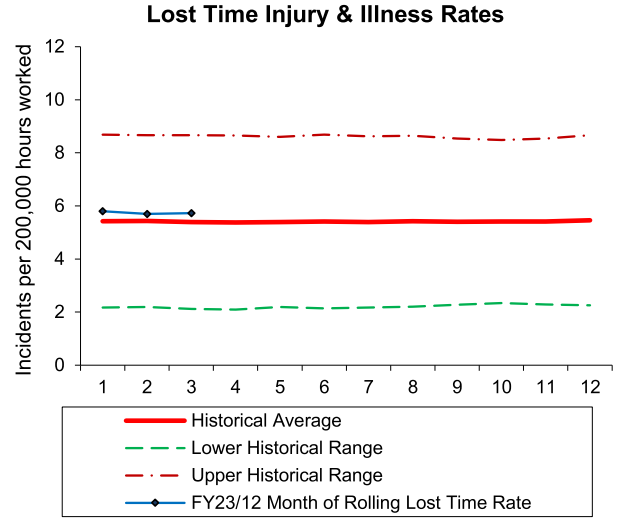
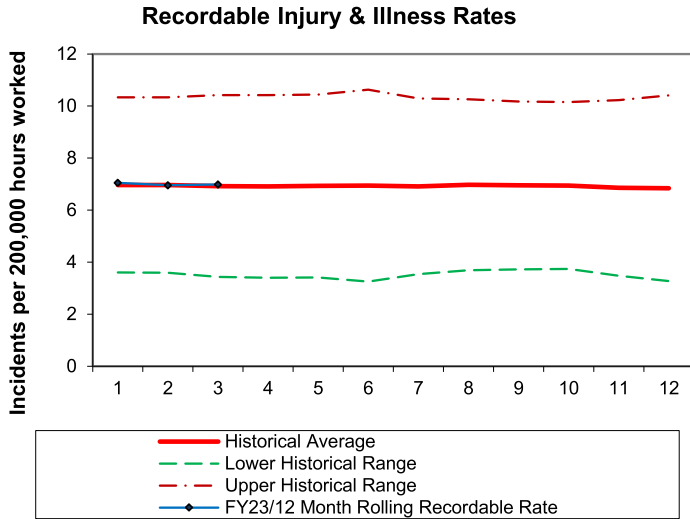
Deer Island Treatment Plant Current Month Overtime \$



Deer Island's total overtime expenditure first quarter was \$437K, which is \$87K or 24.9% over budget due to higher than anticipated shift coverage of \$78K and planned/unplanned overtime of \$24K. This is offset by lower than anticipated storm coverage of (\$15K).

Workplace Safety

1st Quarter - FY23



- "Recordable" incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid. Each month this rate is calculated using the previous 12 months of injury data.
- "Lost-time" incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness. Each month this rate is calculated using the previous 12 months of injury data.
- The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY22. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively.
- With Changes in state law, in February 1, 2019, MWRA began record keeping and reporting according to Federal OSHA standards for injury and illness record keeping. Strictly adhering to the federal OSHA reporting regulation has caused an increase in recorded injuries and illnesses. This increase is causing both the Recordable injury and illness Rate and the Lost Time Injury and Illness rate to trend higher than in past years but does not necessarily mean there is an increase in injuries or illnesses. OSHA injuries and illnesses, and lost time are recorded differently than the Massachusetts Workers' Compensation standards and could result in an increase in the OSHA rate while the Workers' Compensation claims are decreasing. Over time, the rise on the charts should stabilize as new data replaces the older data.

WORKERS COMPENSATION HIGHLIGHTS

	1st Quarter Information		Open Claims
	New	Closed	
Lost Time	9	7	67
Medical Only	14	15	14
Report Only	17	17	
	QYTD		FYTD
Regular Duty Returns	9		9
Light Duty Returns	0		0
Indemnity payments as of September 2022 included in open claims listed			17

COMMENTS:

Regular Duty Returns

July 3 Employees returned to full duty/no restrictions
Aug 3 Employees returned to full duty/no restrictions
Sept 3 Employees returned to full duty/no restrictions

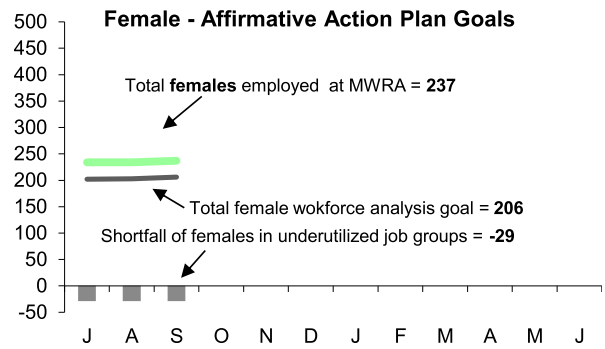
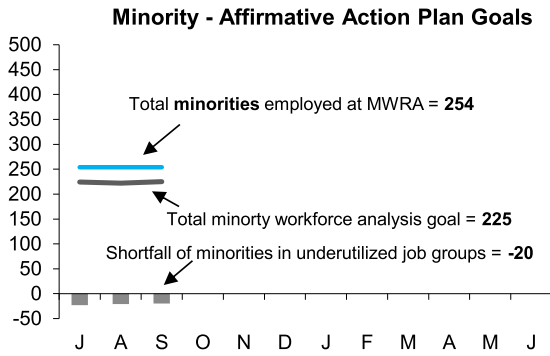
Light Duty Returns

July N/A
Aug N/A
Sept N/A

Note: Claims may initially be counted in one category and changed to another category at a later date. Examples include a medical treatment only claim (no lost time from work) but the employee may require surgery at a later date resulting in the claim becoming a lost time claim. At that time we would only count the claim as opened but not as a new claim. *Report only claims are closed the month they are filed.

MWRA Job Group Representation

1st Quarter - FY23



Highlights:

At the end of Q1 FY23, 4 job groups or a total of 20 positions are underutilized by minorities as compared to 5 job groups for a total of 21 positions at the end of Q1 FY22; for females 8 job groups or a total of 29 positions are underutilized by females as compared to 5 job groups or a total of 16 positions at the end of Q1 FY22. During Q1, 3 minorities and 8 females were hired. During this same period 6 minorities and 5 females were terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement	Minority	Females	Achievement	Female
	as of 9/30/2022	as of 9/30/2022	Level	Over or Under Underutilized	As of 9/30/2022	Level	Over or Under Underutilized
Administrator A	26	4	3	1	13	7	6
Administrator B	24	2	5	-3	6	6	0
Clerical A	23	8	3	5	19	17	2
Clerical B	23	7	6	1	3	11	-8
Engineer A	79	20	19	1	20	14	6
Engineer B	61	20	15	5	13	15	-2
Craft A	108	15	20	-5	0	5	-5
Craft B	122	21	23	-2	1	6	-5
Laborer	56	17	13	4	3	2	1
Management A	86	18	17	1	32	24	8
Management B	37	11	7	4	6	9	-3
Operator A	61	4	14	-10	2	4	-2
Operator B	64	19	6	13	3	1	2
Professional A	29	7	7	0	17	11	6
Professional B	148	44	44	0	67	38	29
Para Professional	48	16	10	6	24	25	-1
Technical A	55	18	11	7	6	9	-3
Technical B	8	3	2	1	2	2	0
Total	1058	254	225	49/-20	237	206	60/-29

AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/Transfers	AACU Ref. External	Position Status
Administrator B	Deputy Director, DIWWTP	1	Int./Ext.	1	0	PROMO = WM
Clerical B	Warehouse Materials Handler	1	Ext.	0	0	NH = WM
Engineer B	Staff Engineer	1	Ext.	0	0	NH = WM
Engineer B	Project Mngner, Process Control	1	Int.	1	0	TRANS = WM
Engineer B	Project Manager, Proc Eng & Ctrl	1	Int.	1	0	PROMO = WF
Engineer B	Assistant Civil Engineer	1	Int.	1	0	PROMO = WM
Craft A	Sr Med Volt Elect Specialist	1	Int.	0	0	NH = WM
Craft A	Fencing Foreman	1	Int.	1	0	PROMO = WM
Craft A	Unit Supervisor, Machinist	1	Int.	1	0	PROMO = WM
Craft A	Trades Foreman	1	Int.	1	0	PROMO = WM
Craft A	Med Volatage Elect Specialist	1	Int.	1	0	PROMO = WM
Craft B	Facilities Specialist	2	Int./Ext.	1	0	NH=WM PROMO=WM
Craft B	Electrician	1	Ext.	0	0	NH = WM
Craft B	Instrument Technician	2	Int./Ext.	2	0	PROMO = 1HM, 1WM
Operator A	Area Supervisor	2	Int.	2	0	PROMO = 2WM
Operator A	Transmission & Treatment Operator	2	Int./Ext.	2	0	PROMO = 2WM
Para Professional	Records Center Specialist	1	Ext.	0	0	NH = WF
Para Professional	Administrative Systems Coord	1	Ext.	0	1	NH = WF
Technical A	Systems Admin III (Systems)	1	Ext.	0	0	NH = BM
Technical A	Sr. Prog. Manager, Applicaton Group	1	Int./Ext.	1	0	PROMO = WM
Technical A	Communication & Control Tech	279	1 Int./Ext.	1	0	PROMO = HM
Technical A	Sr. Instrument Technician	2	Int.	2	0	PROMO = 1BM, 1WM

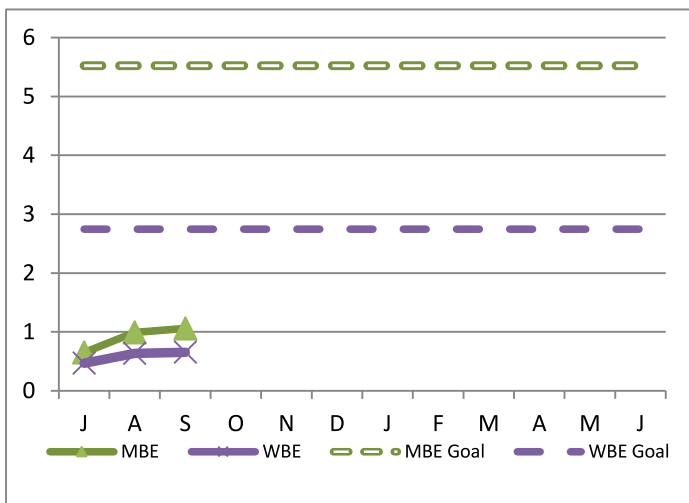
MBE/WBE Expenditures

1st Quarter - FY23

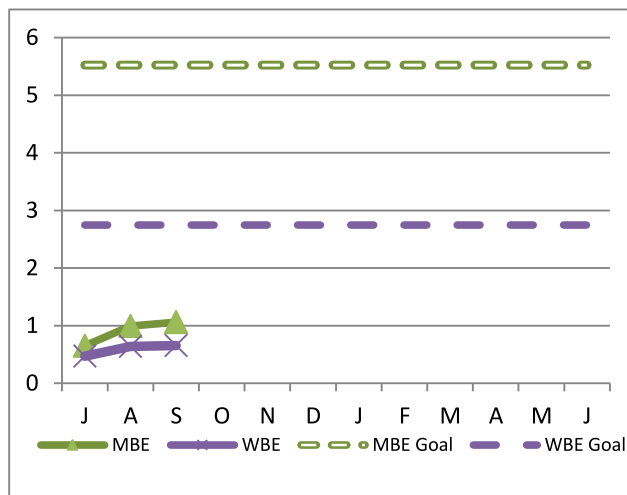
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY23 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

MBE/WBE percentages are the results from a 2002 Availability Analysis, and MassDEP's Availability Analysis. As a result of the Availability Analyses, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through September.

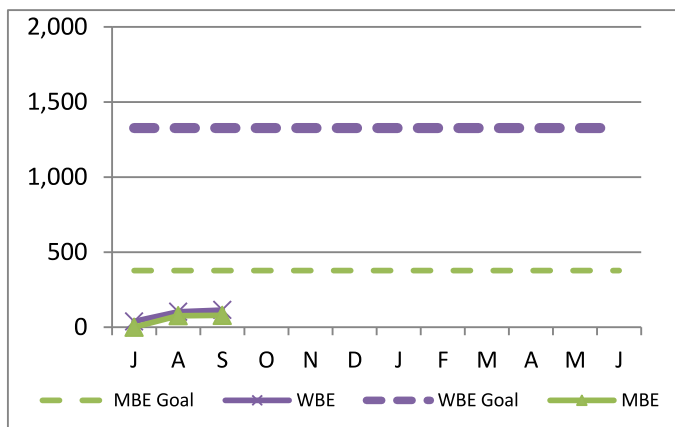
Construction



Professional Services



Goods/Services



FY22 spending and percentage of goals achieved, as well as FY21 performance are as follows:

MBE			
FY23 YTD		FY22	
Amount	Percent	Amount	Percent
124,073	1.5%	3,102,188	56.2%
1,055,496	36.0%	3,156,867	147.1%
14,124	3.4%	387,120	102.7%
1,193,693	10.4%	6,646,175	82.6%

WBE			
FY23 YTD		FY22	
Amount	Percent	Amount	Percent
134,334	3.3%	1,276,049	46.5%
342,431	14.5%	1,737,850	100.8%
62,122	4.8%	365,393	27.6%
538,887	7.0%	3,379,292	58.3%

Construction

Prof Svcs

Goods/Svcs

Totals

FY22 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

MWRA FY22 CEB Expenses through 1st Quarter – FY23

As of September 2022, total expenses are \$192.4 million, \$6.7 million or 3.3% lower than budget, and total revenue is \$210.3 million, \$1.1 million or 0.5% over budget, for a net variance of \$7.7 million.

Expenses –

Direct Expenses are \$61.0 million, \$4.9 million or 7.5% under budget.

- **Wages & Salaries** are \$2.9 million under budget or 10.7%. Regular pay is \$3.0 million under budget, due primarily to lower head count, and timing of backfilling positions. YTD through September, the average Full Time Equivalent (FTE) positions was 1,053, one hundred and fourteen fewer than the 1,167 FTE's budgeted.
- **Ongoing Maintenance** is \$2.3 million under budget or 23.5%. The variance reflects the actual timing of projects and in this case the biggest driver of the underspending is the delayed start of the Norumbega Tank cleaning project (\$1.3 million).
- **Other Services** expenses are \$344k under budget or 4.7%, primarily due to by lower Sludge Pelletization expense of \$274k and by telecommunication costs of \$202k, partially offset by higher spending of \$334k on Memberships, Dues, and Subscriptions due to timing.
- **Workers Compensation** expenses are \$238k under budget or 37.8%, primarily due to lower spending for Compensation Payments of \$165k and Medical Payments of \$60k.
- **Fringe Benefits** expenses are \$199k under budget or 3.4%, primarily due to lower health insurance expense, reflecting the lower headcount.
- **Utilities** expenses are \$651k over budget or 10.2%, due to higher electricity spending of \$686k. Higher electricity prices are due to higher real time energy costs. This reflects higher spending for electricity at Deer Island of \$558k due to lower than budgeted on-site generation which resulted in a 4.1% increase in purchased power.
- **Chemicals** are \$308k over budget or 7.3% due to higher spending for Sodium Hypochlorite, \$372k over budget, reflecting higher contract price at Carroll Water Treatment Plant and greater usage at DI due to lower flows and greater need for odor control.
- **Other Materials** expenses are \$178k over budget or 15.9%, as vehicle purchases were \$264k over budget due to timing of those purchases, partially offset by delayed computer software purchases which are \$80k under budget.

Indirect Expenses are \$20.1 million, \$154k or 0.8% under budget due to lower Watershed Reimbursement.

Capital Finance Expenses totaled \$111.2 million, \$1.6 million or 1.4% under budget, reflecting lower than budgeted variable interest expense.

Revenue and Income –

Total Revenue and Income is \$210.3 million, or \$1.0 million over budget. Investment income was the driver at \$1.1 million over budget, reflecting higher than budget interest rates.

	Sep 2022 Year-to-Date			
	Period 3 YTD Budget	Period 3 YTD Actual	Period 3 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	\$ 27,275,738	\$ 24,369,145	\$ (2,906,593)	-10.7%
OVERTIME	1,340,698	1,227,717	(112,981)	-8.4%
FRINGE BENEFITS	5,878,843	5,679,767	(199,076)	-3.4%
WORKERS' COMPENSATION	629,938	392,086	(237,852)	-37.8%
CHEMICALS	4,210,951	4,518,863	307,912	7.3%
ENERGY AND UTILITIES	6,408,929	7,059,772	650,843	10.2%
MAINTENANCE	9,667,385	7,397,249	(2,270,136)	-23.5%
TRAINING AND MEETINGS	118,685	53,970	(64,715)	-54.5%
PROFESSIONAL SERVICES	1,979,888	2,063,894	84,006	4.2%
OTHER MATERIALS	1,123,654	1,302,053	178,399	15.9%
OTHER SERVICES	7,315,384	6,971,362	(344,022)	-4.7%
TOTAL DIRECT EXPENSES	\$ 65,950,093	\$ 61,035,878	\$ (4,914,215)	-7.5%
INSURANCE	\$ 979,001	\$ 993,831	\$ 14,830	1.5%
WATERSHED/PILOT	4,112,924	3,944,177	(168,747)	-4.1%
HEEC PAYMENT	1,583,031	1,583,031	-	0.0%
MITIGATION	433,924	433,924	-	0.0%
ADDITIONS TO RESERVES	604,613	604,613	-	0.0%
RETIREMENT FUND	12,555,203	12,555,203	-	0.0%
POST EMPLOYEE BENEFITS	-	-	-	---
TOTAL INDIRECT EXPENSES	\$ 20,268,696	\$ 20,114,778	\$ (153,917)	-0.8%
STATE REVOLVING FUND	\$ 21,896,288	\$ 21,896,288	\$ -	0.0%
SENIOR DEBT	72,379,983	72,379,983	-	0.0%
DEBT SERVICE ASSISTANCE	(1,182,494)	(1,182,494)	-	0.0%
CURRENT REVENUE/CAPITAL	-	-	-	---
SUBORDINATE MWRA DEBT	18,941,471	18,941,471	-	0.0%
LOCAL WATER PIPELINE CP	-	-	-	---
CAPITAL LEASE	804,265	804,265	-	0.0%
VARIABLE DEBT	-	(1,596,318)	(1,596,318)	---
DEFEASANCE ACCOUNT	-	-	-	---
DEBT PREPAYMENT	-	-	-	---
TOTAL CAPITAL FINANCE EXPENSE	\$ 112,839,514	\$ 111,243,196	\$ (1,596,318)	-1.4%
TOTAL EXPENSES	\$ 199,058,303	\$ 192,393,852	\$ (6,664,450)	-3.3%
REVENUE & INCOME				
RATE REVENUE	\$ 203,662,000	\$ 203,662,000	\$ -	0.0%
OTHER USER CHARGES	2,694,427	2,662,567	(31,860)	-1.2%
OTHER REVENUE	800,490	811,144	10,654	1.3%
RATE STABILIZATION	245,000	245,000	-	0.0%
INVESTMENT INCOME	1,846,458	2,924,676	1,078,218	58.4%
TOTAL REVENUE & INCOME	\$ 209,248,375	\$ 210,305,387	\$ 1,057,012	0.5%

Cost of Debt

1st Quarter – FY23

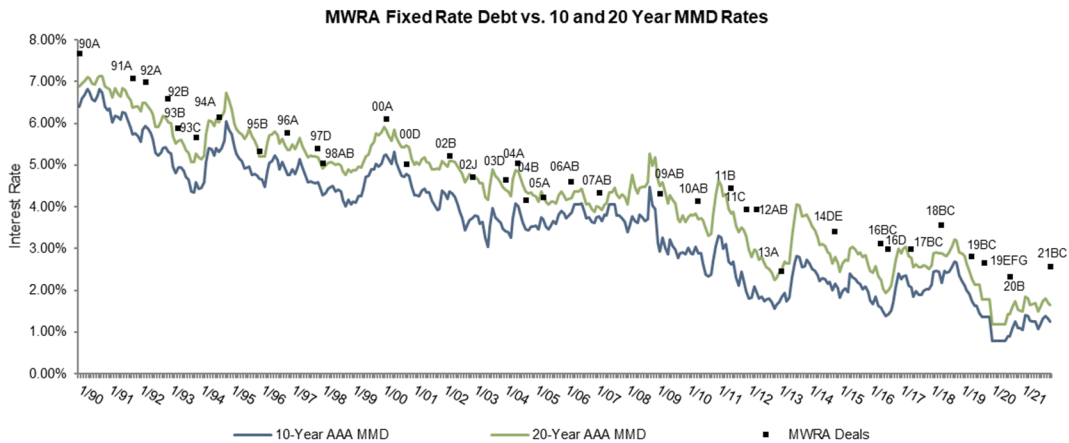
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt (\$3.20 billion)	3.28%
Variable Debt (\$269.01million)	1.84%
SRF Debt (\$758.6 million)	1.67%
Weighted Average Debt Cost (\$4.22 billion)	2.90%

Most Recent Senior Fixed Debt Issue December 2021

2021 Series B and C (\$748.0 million) 2.56%

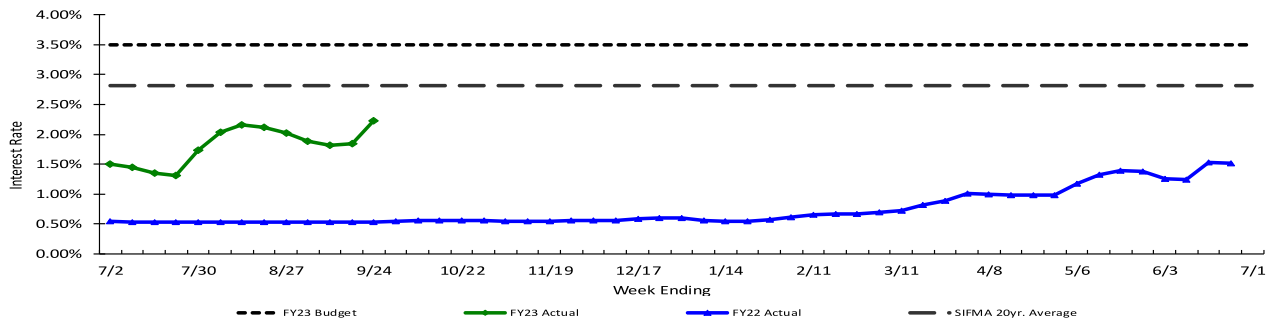


Bond Deal	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB
Rate	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%
Avg Life	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs	15.4 yrs

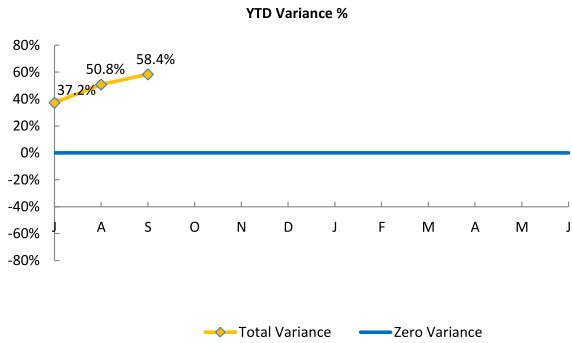
Bond Deal	2010AB	2011B	2011C	2012AB	2013A	2014D-F	2016BC	2016D	2017BC	2018BC	2019BC	2019EFG	2020B	2021BC
Rate	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%	2.98%	3.56%	2.82%	2.66%	2.33%	2.56%
Avg Life	16.4 yrs	18.8 yrs	16.5 yrs	17.9 yrs	9.9 yrs	15.1 yrs	17.4 yrs	18.8 yrs	11.2 yrs	11.7 yrs	11.9 yrs	9.73 yrs.	15.6 yrs	12.2 yrs

Weekly Average Variable Interest Rates vs. Budget

MWRA currently has eight variable rate debt issues with \$443.9 million outstanding, excluding commercial paper. Of the eight outstanding series, three have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In September, the SIFMA rate ranged from a high of 1.96% to a low of 1.3% for the month. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate risk as compared to fixed rate debt.

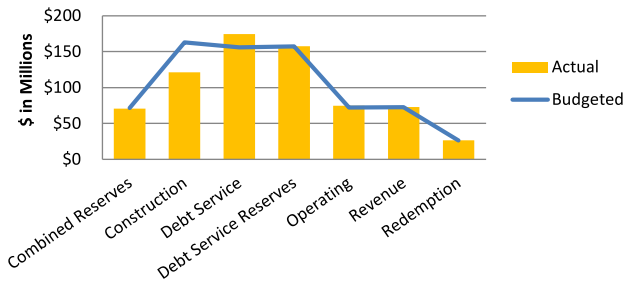


Investment Income 1st Quarter – FY23 Year To Date

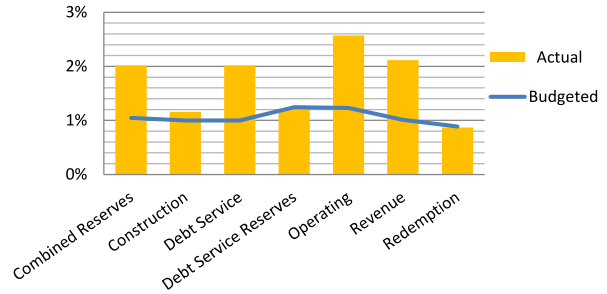


	YTD BUDGET VARIANCE				
	(\$000)				
	BALANCES IMPACT	RATES	IMPACT	TOTAL	%
Combined Reserves	(\$2)		\$101	99	81.7%
Construction	(\$188)		\$181	(6)	24.2%
Debt Service	\$43		\$287	330	101.7%
Debt Service Reserves	\$0		(\$7)	(7)	-2.2%
Operating	\$8		\$108	116	74.7%
Revenue	\$0		\$90	90	74.7%
Redemption	\$0		(\$1)	(1)	-2.0%
Total Variance	(\$139)		\$760	\$621	58.4%

YTD Average Balances Budgeted vs. Actual

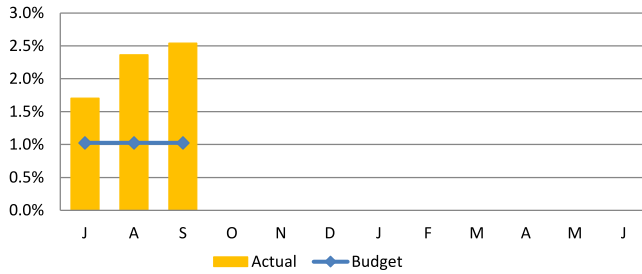


YTD Average Interest Rate Budgeted vs. Actual

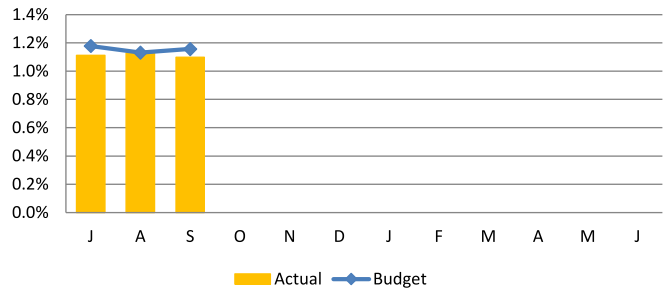


Monthly

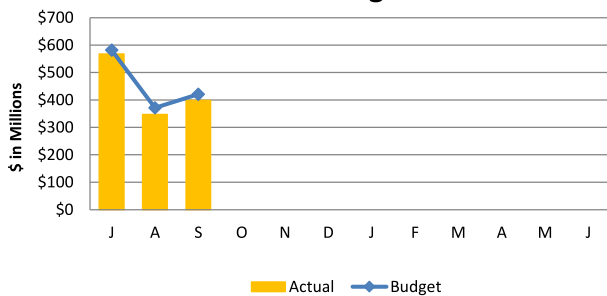
Short -Term Interest Rates



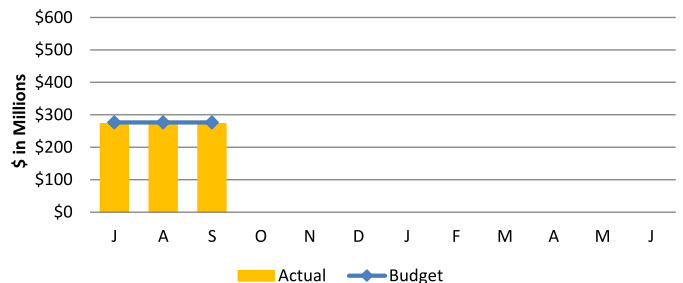
Long -Term Interest Rates



Short-Term Average Balances

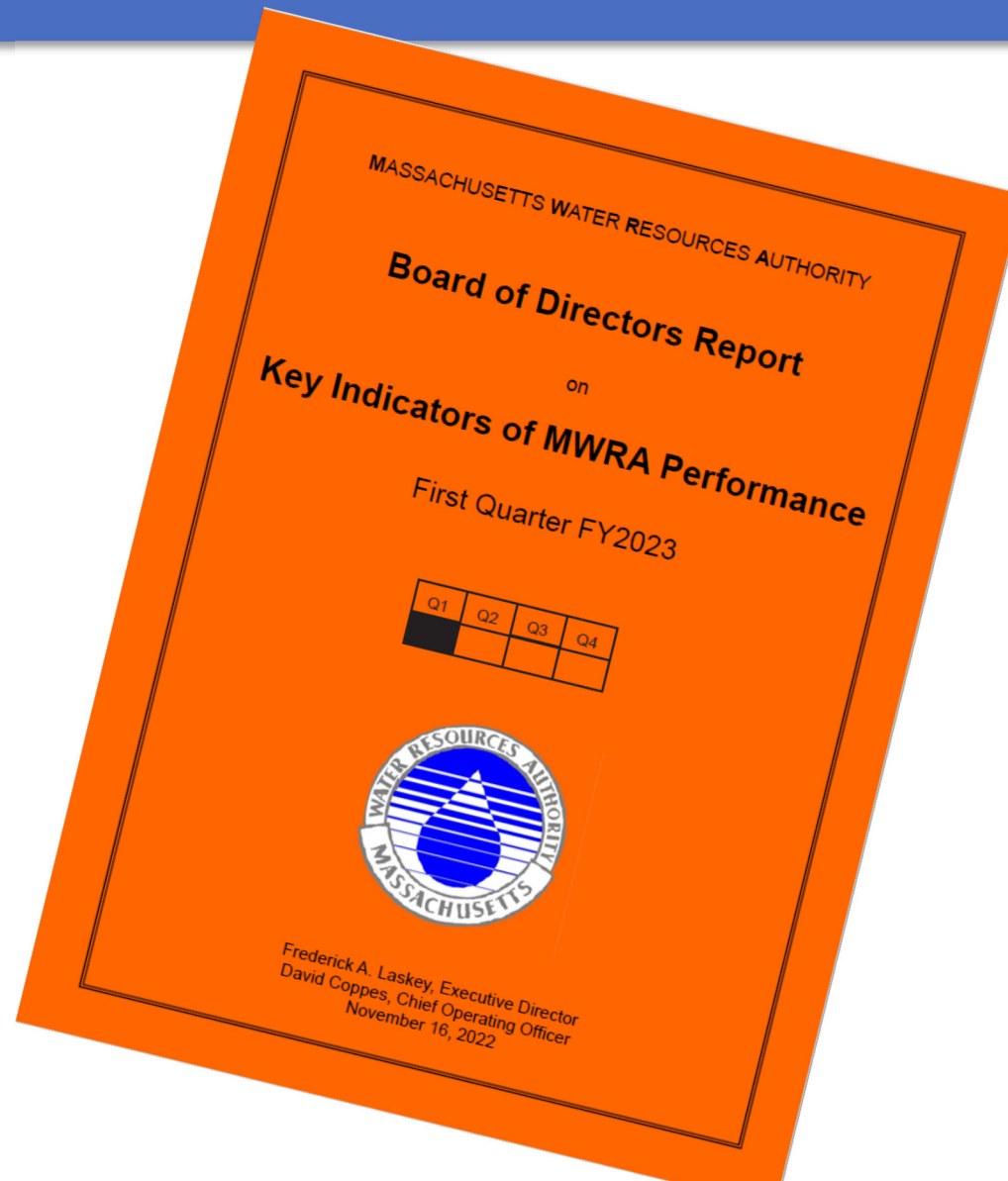


Long-Term Average Balances





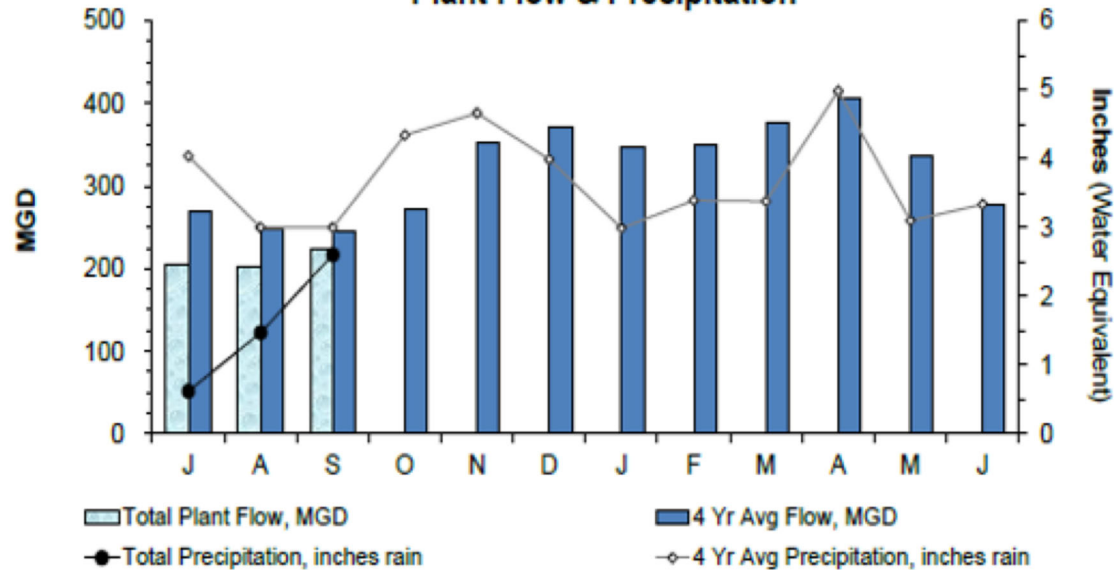
Massachusetts Water Resources Authority





Low Flows at Deer Island Treatment Plant

Plant Flow & Precipitation



- Q1 flows were 17.3% below four-year average (210.2 mgd vs. 254.3 mgd)
- Deer Island set new low flow records in July and August
- All-time monthly low flow record in August: 201.73 mgd



Clinton Treatment Plant Permit Violations

Four permit violations in Q1

NPDES Permit Limits

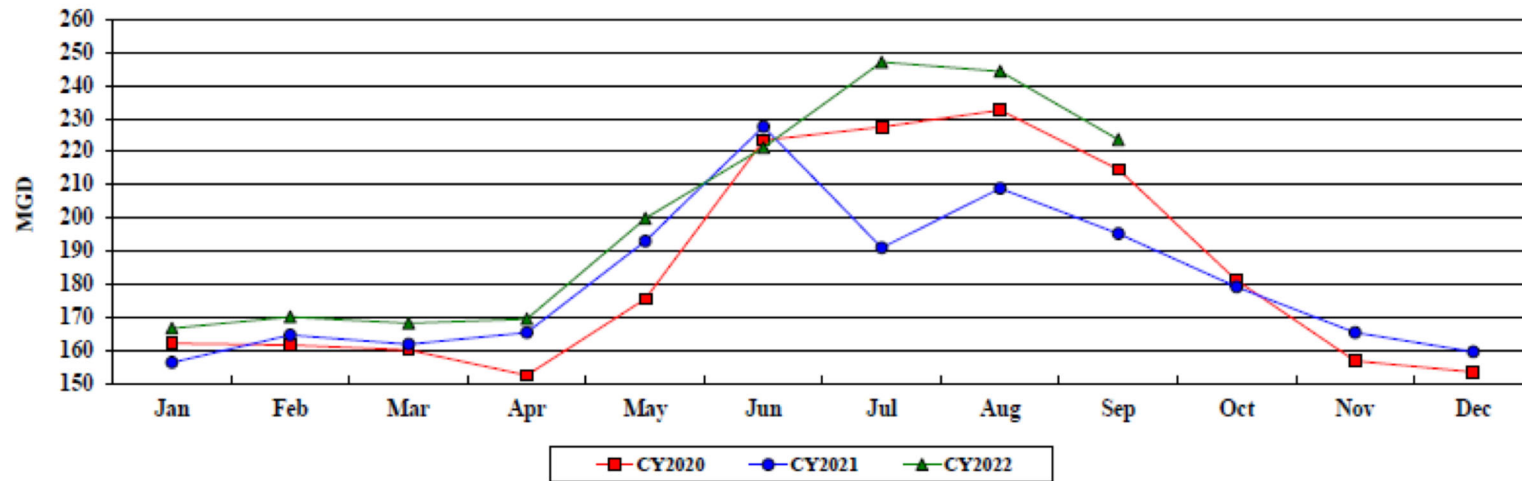
Effluent Characteristics		Units	Limits	July	August	September	1st Quarter Violations	FY23 YTD Violations
Flow:	12-month Rolling Average:	mgd	3.01	3.02	2.90	2.69	1	1
BOD:	Monthly Average:	mg/L	20	1.50	1.40	1.30	0	0
	Weekly Average:	mg/L	20	1.90	1.60	1.60	0	0
TSS:	Monthly Average:	mg/L	20	1.20	1.50	1.50	0	0
	Weekly Average:	mg/L	20	1.80	2.40	1.70	0	0
pH:		SU	6.5-8.3	7.3-7.8	7.2-7.8	7.3-7.8	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	8.10	8.10	8.30	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5	5	5	0	0
	Daily Geometric Mean:	cfu/100mL	409	5	7	23	0	0
TCR:	Monthly Average:	ug/L	17.6	0.13	0.11	0.00	0	0
	Daily Maximum:	ug/L	30.4	4.00	3.33	0.00	0	0
Copper:	Monthly Average:	ug/L	11.6	12.45	12.25	9.82	2	2
	Daily Maximum:	ug/L	14.0	12.70	12.30	10.70	0	0
Total Ammonia Nitrogen: June 1st - October 31st	Monthly Average:	mg/L	2.0	0.00	0.00	0.01	0	0
	Daily Maximum:	mg/L	3.0	0.00	0.00	0.07	0	0
Total Phosphorus: April 1st - October 31st	Monthly Average:	ug/L	150	97	71	49	0	0
	Daily Maximum:	ug/L	RPT	173	183	150	0	0
Acute Toxicity [†] :	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity [†] :	Daily Minimum:	%	≥62.5	N/A	N/A	12.5	1	1

- July and August copper monthly averages exceeded the permit limit due to dry conditions
- The quarterly chronic toxicity result of was below the minimum permit limit
- In July, plant flows exceeded the 12-month rolling average due to wet conditions from summer 2021



Increase in Customer Water Use

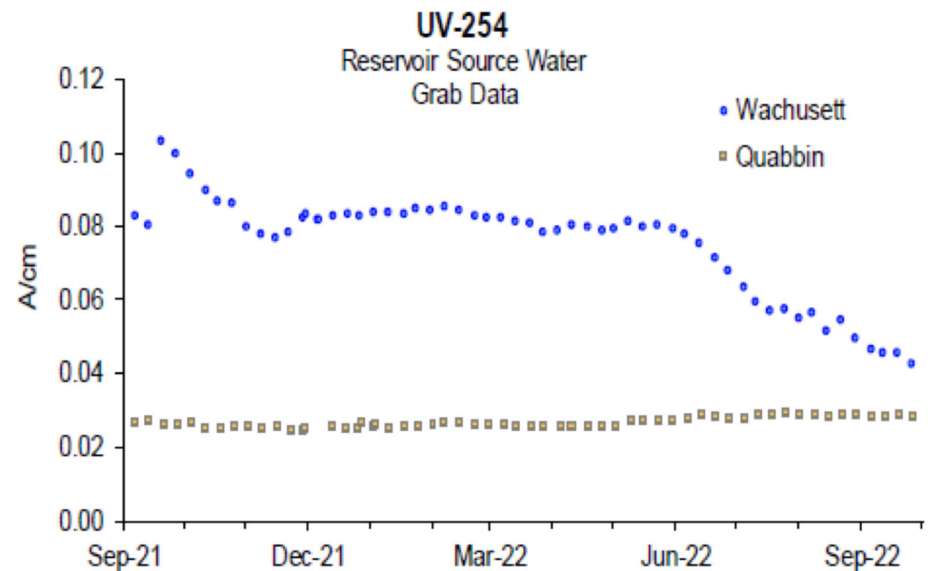
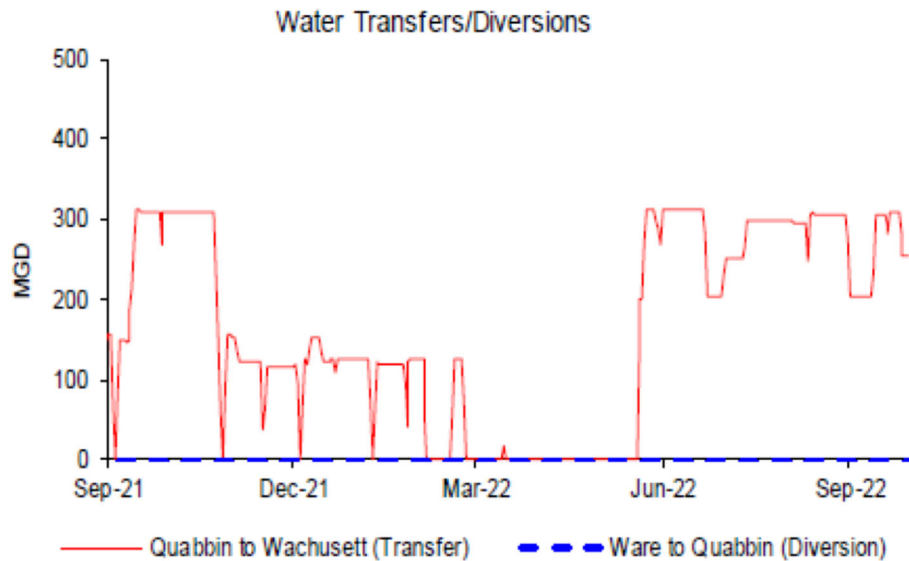
MWRA Water Supplied: All Revenue Customers



- Cambridge normally does not receive MWRA water, but used 438.31 million gallons in Q1 after temporarily switching to 100% MWRA water in August due to PFAS contamination in their supply
- Similarly, Wellesley has significantly increased its use of MWRA water due to limitations on its use of its local sources affected by elevated levels of PFAS



Improved Source Water Quality



- Reduced precipitation during this year's drought and reduced runoff into Wachusett Reservoir allowed staff to transfer larger quantities of Quabbin water to Wachusett
- UV254 (a measure of the reactive natural organic matter) was much lower this year, providing benefits of reduced chlorine demand and better disinfectant residuals throughout the system

APPENDIX J

GLOSSARY OF FINANCIAL AND OPERATING TERMS

8M permit: Permission granted by MWRA to persons who wish to construct property improvements on land either adjoining or overlapping MWRA property interests. Permission may be conditioned on various operational and/or engineering concerns.

Accrued Costs: Adjustments to paid expenditures to account for materials or services received but for which payment has not yet been made.

Activated Sludge: The sludge that results when primary effluent is mixed with bacteria-laden sludge and then agitated and aerated to promote biological treatment.

Advanced Waste Treatment: Wastewater treatment beyond the secondary or biological stage that includes the removal of nutrients such as phosphorus and nitrogen and the removal of a higher percentage of suspended solids and organic matter than primary treatment.

Advisory Board: The agency that represents the interests of MWRA's 61 user communities to the Board of Directors in an advisory capacity in accordance with the provisions of MWRA's Enabling Act. The Advisory Board elects three members of the Board of Directors, reviews and comments on MWRA's CIP and CEB, and approves the addition of new communities to the wastewater and water systems.

Aerobic: In the presence of free oxygen.

Anaerobic: Life or processes such as bacteria that digest sludge that require, or are not destroyed by, the absence of free oxygen.

AOC: Assimilable Organic Carbon - One measure of the "food" available to bacteria within a water system. More complex carbon compounds can become assimilable when oxidized by strong disinfectants.

ARRA: American Recovery and Reinvestment Act of 2009 – principal forgiveness loans distributed based on the Department of Environmental Protection's Intended Use Plan.

Ash: The inert material remaining after the combustion of wastewater sludge. Ash is either wet or dry depending on combustion system design.

Audit: An independent examination of the financial books and records of the organization. Typically, audit refers to the year-end examination and preparation of audited financial statements performed by an outside accounting firm hired under contract.

Bacteria: One-celled microscopic organisms commonly found in the environment. Bacteria can be harmful, such as pathogens, or helpful and perform a variety of biological treatment processes.

BDOC: Biologically Degradable Organic Carbon - Another, more precise, measure of the “food” available to bacteria within a water system.

BGD: Billion gallons per day.

Biofilm: Growth of various bacteria within a water distribution system on the pipe walls. Biofilm growth can contribute to iron corrosion, colored water, poor taste, excessive chlorine demand, and complications with coliform testing.

Blow-off valves: Valves operated during pipeline repair to de-water (drain) a portion of a pipeline.

BOD: Biochemical Oxygen Demand - An indicator of the amount of biodegradable contaminants in wastewater.

Board of Directors: The 11-member governing board of MWRA.

Bond: A general debt obligation. Typically, bonds are issued as a series of bonds of different amounts and interest rates maturing in different years.

Bond Resolution: A document adopted by the Board of Directors that governs MWRA's issuance of revenue bonds and sets forth its obligations to bondholders.

Boston Harbor Project: An extensive plan of activities which MWRA developed and implemented to construct new wastewater treatment facilities in response to a federal court order to comply with the provisions of the U.S. Clean Water Act.

Business Systems Plan (BSP): The strategic planning framework for MWRA’s management information systems. The BSP is updated annually to reflect ongoing business requirements, new opportunities identified by ongoing MWRA strategic planning efforts, technology changes, and user requests.

BWSC: Boston Water and Sewer Commission - The agency responsible for providing water and sewer services to the City of Boston, MWRA’s largest customer.

BWTF: William A. Brutsch Water Treatment Facility – Water treatment plant for the Chicopee Valley Aqueduct communities of Chicopee, South Hadley Fire District #1, and Wilbraham. The facility has a capacity of 24 mgd, and disinfects the water using a combination of UV light and chlorine.

CADD: Computer aided drafting and design.

Capital Improvement Program (CIP): A plan which identifies and estimates the nature, schedule, cost, and financing of long-term assets that MWRA intends to build or acquire during a specific period.

Capital Investment: Development of a facility or other asset that adds to the long-term value of an organization.

Carroll Water Treatment Plant (CWTP): Water treatment facility for waters from Quabbin and Wachusett Reservoirs with capacity of 405 mgd using ozonation as a primary disinfectant and UV as a secondary disinfectant beginning in February 2014.

CCR: Consumer Confidence Report – The 1996 Amendments to the Safe Drinking Water Act required public water suppliers to provide all consumers with an annual Consumer Confidence Report by July 1, 2005. The report includes water quality information and education for the consumer about their publicly supplied drinking water.

CDF: Cosgrove Disinfection Facility

Cathodic Protection: A form of corrosion protection that is particularly effective against galvanic corrosion. Galvanic corrosion occurs when pipe metal is in the presence of other metals while immersed in water. The interaction of these elements causes an electric current to flow away from the pipe, taking electrons with it and pitting the pipe as a result. Cathodic protection reverses the current, thereby stopping the corrosion.

Centrifuge: A machine that uses centrifugal force to separate substances of different densities and remove moisture. MWRA uses centrifuges at the Deer Island Wastewater Treatment Plant to de-water sludge.

CFM: Cubic Feet per Minute - A measure of the quantity of a material flowing through a pipe.

Chloramination: The process of adding chloramine to drinking water. Chloramine, a form of chlorine and ammonia, is used as a residual disinfectant because it lasts longer in the water distribution system than primary disinfectants.

Chloramine: A long lasting residual disinfectant created by combining measured amounts of chlorine and ammonia. Chloramine forms fewer disinfection by-products than chlorine.

Chlorination: The process of adding chlorine to drinking water to inactivate pathogens.

Chlorine: A relatively strong primary disinfectant, effective against bacteria, *giardia*, and viruses, but not *cryptosporidium*. Concerns exist about the health effects of its by-products, some of which are or will be regulated.

Clarifiers: Settling tanks or basins in which wastewater is held for a period of time, during which heavier solids settle to the bottom and lighter materials float to the surface.

Clean Water Act: A law passed by Congress in 1972, and subsequently amended, which sets national standards for pollution reduction, permits discharges from wastewater treatment plants, and promotes achievement of the national goal that all surface waters be "fishable and swimmable."

Cleaning and Lining: Cleaning and cement lining of unlined cast iron water mains to improve hydraulic capacity and extend useful life.

CMMS (Computerized Maintenance Management System): *Maximo* is the computerized maintenance management system which is an essential component of successful asset management. This system is an important tool used in refining the long-term maintenance strategy to ensure proper maintenance and replacement of plant assets.

Co-Digestion Process: Introduction of non-wastewater derived organic waste material into the wastewater anaerobic digestion process. Co-digestion could potentially increase digester gas production which would be utilized for heating and electricity generation at Deer Island.

Coliform bacteria: A group of lactose fermenting bacteria, which while not of direct health concern, are used as a first line indicator of potential problems. See fecal coliform and *E.coli*.

Combined Sewer and Combined Sewer Overflow: While modern systems transport rainwater and sewage from homes and businesses through separate pipes, some older systems like Boston's have "combined" sewers that carry both flows together. During normal conditions flows are delivered to treatment plants. During very heavy rains, these systems become overloaded. Built-in overflows (called combined sewer overflows or "CSOs") must then act as relief points by releasing excess flows into the nearest body of water. This prevents sewage backups into homes and onto area streets, but the discharges can impact water quality.

Comminutor - A machine or process that pulverizes and reduces solids to minute particles.

Commonwealth Debt Service Assistance (DSA): Funds appropriated by the Commonwealth to offset MWRA capital financing expenses.

Community Obligation and Revenue Enhancement (CORE) Fund: A fund established by MWRA's bond resolution that is used to provide insurance against delays by communities in paying charges due to MWRA.

Composting: The process of converting wastewater treatment residuals to a soil-like humus material often used in the horticultural industry. The process involves the aerobic breakdown of the residuals and the addition of sawdust or wood chips.

Corrosion Control: Adjustments to the chemistry of treated water to reduce its ability to dissolve lead, copper, other metals, or form hydrogen sulfide. Corrosion control can include adjustments to pH and alkalinity, as well as the addition of corrosion inhibitors such as phosphates or oxidizers.

Coverage Requirement: Requirement of MWRA's bond resolution which provides that each year, revenue less operating expenses (net revenue) must be more than the amount required for debt service payments on outstanding bonds.

CP (Construction Package): Major construction projects such as the Carroll Water Treatment Plant or the North Dorchester Bay CSO project will group areas of work into individual construction contracts.

Cross-Connection: A point at which potable water piping is connected to a non-potable water source creating an opportunity for the introduction of pollutants into the potable water.

Cryogenic oxygen plant: MWRA operates a cryogenic oxygen-based facility as part of its secondary wastewater treatment program at Deer Island.

Cryptosporidium: A protozoan parasite that can cause severe gastrointestinal disease in healthy individuals, and may be fatal to people with compromised immune systems. Cryptosporidia exist in the environment as hard walled oocysts that are very resistant to chlorination, but can be inactivated by disinfection with ozone or ultraviolet light.

CSO: Combined Sewer Overflow – An overflow point and the discharged flow from a combined sewer system intended to provide hydraulic relief to avoid system flooding and backups during large wet weather events. During large rainstorms, systems can become overloaded, with the excess discharged directly into surface waters. The discharged flow and the discharge location are called CSOs. In the metropolitan Boston area there are approximately 46 active, permitted CSOs that currently discharge into rivers or Boston Harbor.

CSO Facilities: MWRA has six facilities that intercept the flow from CSO pipes. Four of these facilities provide treatment and two provide storage prior to discharge. The CSO facilities have some capacity to store flow and pump it to the Deer Island plant after rainstorms end.

CT: Concentration x Contact Time - A measure of disinfection effectiveness established under the Surface Water Treatment Rule. CT is the product of the concentration of disinfectant [C] and the time it has been in contact with the water [T]. Required CT varies by type of disinfectant, organism, temperature, and pH.

CTG (Combustion Turbine Generator): CTGs are used to generate electricity during planned cable outages, wet weather operations and for participation in price response events.

Current Expense Budget: A financial plan that estimates the revenues and expenses associated with MWRA's operations for a fiscal year.

C-Value: The carrying capacity of a water main for a specified length and pressure drop that is determined by its diameter and resistance to flow. The friction coefficient "C" of the main is often used as a measure of flow resistance. C-values for new pipe are about 120 for water mains that are 6 to 16-inches in diameter, and 130 and 140 for larger diameter mains.

DAF: Dissolved Air Flotation - A process of adding super saturated air into water to cause coagulated solids to rise to the top to be skimmed off. DAF replaces conventional gravity sedimentation (clarification) and is particularly cost-effective for low turbidity waters subject to periodic algae blooms.

DBP: Disinfection By-products - Complex compounds formed by the use of oxidizing agents such as chlorine or ozone in waters containing organic matter.

D/DBP Stage 1: Disinfectants/Disinfection By-products, Stage 1 Rule - Promulgated 11/1998, and effective 1/2002, this rule set DBP limits at 80 parts per billion for Trihalomethanes and 60 parts per billion for Haloacetic Acids, averaging all samples over four quarters.

D/DBP Stage 2: Disinfectants/Disinfection By-products Stage 2 Rule - The rule further regulates the amount of DBPs allowed in water. The 80/60 values set in Stage 1 will now apply to each individual sample location in a "Locational Running Annual Average".

Debt Service: In a given fiscal year, the amount of money necessary to pay interest and principal on outstanding notes and revenue bonds.

Defeasance: The setting aside of cash or securities sufficient to make debt service payments allowing the reduction of the debt amount to the liabilities of a balance sheet and the reduction of the debt service amount to the Current Expense Budget.

DEP: Department of Environmental Protection - The Massachusetts agency that regulates water pollution control, water supplies, and waterways and dispenses federal and state grant funds to support these activities.

Department: A sub-unit of an MWRA division.

Department of Conservation and Recreation (DCR): Created in 2003 through the merger of the Metropolitan District Commission and the Department of Environmental Management, DCR manages the Commonwealth's diverse parks system and protects and enhances natural resources and outdoor recreational opportunities throughout Massachusetts.

De-watering: The process of removing water from wastewater treatment residuals. De-watered sludge has the appearance of mud or wet soil material.

Diffusers: A system of shafts, rising from the end of MWRA's effluent outfall tunnel to the seabed, which disperses treated wastewater over a large area. Technically, the diffusers are the "sprinkler heads" mounted on top of the riser shafts that lead from the outfall tunnel and disperse wastewater into Massachusetts Bay.

Digesters: Tanks for the storage and anaerobic or aerobic decomposition of organic matter present in sludge.

Direct Program Expenses: Costs directly associated with providing services or performing activities.

Disinfection, Primary: The inactivation (killing) of pathogenic organisms in a water system by the use of chemical or other disinfection agents.

Disinfection, Residual: The presence of a measurable residual of disinfectant within a water distribution system to help control bacterial re-growth and guard against contamination.

Dissolved Oxygen (DO): A measure of the amount of oxygen in a given amount of water. Adequate levels of DO are needed to support aquatic life. Low dissolved oxygen concentrations can result from inadequate wastewater treatment.

Division: A major organizational unit within MWRA, encompassing the activities and resources for providing a major service or function.

DLS (Department of Laboratory Services): Laboratory Services is a full service analytical testing and consulting group within the MWRA that primarily serves client groups primarily within the Operations Division. The analytical services that Laboratory Services provides include wet chemistry, metals, organics, and microbiology testing. Related services include field sampling, technical consultation, and contract laboratory management.

DMR (Discharge Monitoring Report): Monthly reports that are submitted to federal and state regulators. MWRA monitors the effluent (treated sewage) that is discharged into Massachusetts Bay, to ensure that it meets the standards set out in the NPDES permit. Analytical support to the effluent monitoring program is provided by the Department of Laboratory Services.

E.coli: A normal inhabitant of the digestive tract of mammals. The presence of *E.coli* indicates probable contamination by fecal matter.

Effluent: Treated wastewater discharged from a treatment plant.

EIR: Environmental Impact Report – A document prepared in adherence with the Massachusetts Environmental Policy Act (MEPA) to review the environmental impact of projects and ensure opportunities for public review and comment.

EIS: Environmental Impact Statement – A document prepared in adherence with the National Environmental Policy Act to review the environmental impact of projects and ensure opportunities for public review and comment.

Enabling Act: Legislation (Chapter 372 of the Acts of 1984) that established MWRA and define its purpose and authority as of January 1, 1985.

ENF: Environmental Notification Form - The first step in the MEPA process.

EOEEA: Executive Office of Energy and Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EOC: Emergency Operations Center

EOEA: Executive Office of Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EPA: Environmental Protection Agency - The federal government agency responsible for environmental enforcement and investigation.

ESWTR: Enhanced Surface Water Treatment Rule - A federal rule that is promulgated in three stages:

1) Interim Enhanced Surface Water Treatment Rule (IESWTR): The IESWTR was promulgated in 1998 and tightened the requirements for the operation of water filtration plants in large systems to take a first step toward controlling *cryptosporidium* in source waters. IESWTR also added *cryptosporidium* to the list of issues considered within watershed protection plans for unfiltered systems.

2) LT1ESWTR primarily extends the IESWTR to smaller systems

3) LT2ESWTR: further tightens the standards for the operation of filtration plants and adds requirements for 99% inactivation of *cryptosporidium* and the use of two primary disinfectants for unfiltered systems. The concept of proportional treatment, with less treatment required for cleaner sources, was implemented as part of the rule.

Enterococcus: A pathogen indicator, similar to fecal coliform, that is used in the Massachusetts Water Quality Standards for marine waters, consistent with the Federal Clean Water Act requirements, which indicates potential contamination from human or animal waste.

Enterprise Fund: A governmental accounting and budgeting Fund that is designed to be self-supporting with revenues equal to expenditures.

Eutrophication: Nutrient enrichment of a lake or other water body typically characterized by increased growth of planktonic algae and rooted plants. Eutrophication can be accelerated by wastewater discharges and polluted runoff.

Eversource: Formerly NStar, formerly Boston Edison Company, is a publicly traded, Fortune 500 energy company headquartered in Hartford, Connecticut and Boston, Massachusetts, with several regulated subsidiaries offering retail electricity and natural gas service to more than 3.6 million customers in Connecticut, Massachusetts and New Hampshire.

Expenditures: Payments for goods and services received.

Expenses: Costs associated with the operating activities of a period, including expenditures and accrued costs.

Facility Information System (FIS): The management information system at the Deer Island Treatment Plant.

Fecal coliform bacteria: A group of bacteria used as a primary indicator organism for potential contamination from human or animal waste. Also called thermo-tolerant bacteria. Specific organisms in the group may or may not be of health concern (see *E.coli*).

Filtration: A water treatment process involving the removal of suspended particulate matter by passing the water through a porous medium such as sand or carbon.

Fiscal Year: The 12-month financial period used by MWRA that begins July 1 and ends June 30 of the following calendar year. MWRA's fiscal year is numbered according to the calendar year in which it ends.

Flash coat: A light coat of shotcrete used to cover minor blemishes on a concrete surface.

FOD (Field Operations Department): Department within the Operations Division created to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Treatment Plant.

Force Main: A pressure pipe joining the pump discharge at a water or wastewater pumping station with a point of gravity flow.

FRSA (Fore River Staging Area): The site of the Sludge Pelletization Plant.

FTE (Full Time Equivalent): An FTE is the hours worked by one employee on a full-time basis. The concept is used to convert the hours worked by several part-time employees into the hours worked by full-time employees.

Fund: A separate accounting entity for a particular purpose facilitating the accounting of assets, liabilities, and net assets.

Giardia: A protozoan parasite that can cause severe gastrointestinal disease, although there is medical treatment available. *Giardia* exist in the environment as hard-walled cysts, and are moderately resistant to chlorine disinfection.

Geographic Information System (GIS) -- A geographic information system is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

Green Energy: Energy that comes from natural sources such as sunlight, wind, rain, tides, plants, algae and geothermal heat. These energy resources are renewable, meaning they're naturally replenished.

Goal: A statement in general terms of a desired condition, state of affairs, or situation. Goals, which are long-term in nature and not usually directly measurable, provide general direction for the activities of operating units.

Global Positioning System (GPS): Also known as an Automatic Vehicle Location system (GPS/AVL), this tool provides real-time transmission alerts utilizing a cell phone/satellite communication system and a web-based mapping system to track vehicles and operator-driven mobile equipment in MWRA's service area. The system allows MWRA to respond more quickly to emergencies, enhance driver and vehicle safety, reduce fuel costs, track mileage electronically, monitor unauthorized vehicle usage, and improve efficiency.

Graphitization: A corrosion mechanism that alters the molecular structure of the carbon/iron matrix of cast iron pipe. During the process, iron atoms are forced away from the metal leaving behind an unstable carbon matrix. The result is a weakened pipe, easily susceptible to ruptures. High frequency in the number of breaks causes leakage to be a major problem of graphitized pipe.

Grit: Sand-like materials that quickly settle out of wastewater.

Groundwater: A body of water beneath the surface of the ground. Groundwater is made up primarily of water that has seeped down from the surface.

HAA: Haloacetic Acids - A class of disinfection by-products related to chlorine disinfection. HAAs are regulated under D/DBP Stage 1 and 2 Rules at 60 ppb.

Harbor Electric Energy Company (HEEC): A subsidiary of Eversource which installed a cross harbor power cable and built a sub-station to provide power for construction and operation of the Deer Island Wastewater Treatment Plant.

Head House: A structure containing the control gates to a conduit such as a sewer pipeline.

Headworks: A preliminary treatment structure or device, usually including a screening and de-gritting operation, that removes large or heavy materials such as logs and sand from wastewater prior to primary treatment.

Heavy Metals: Metals such as lead, silver, gold, mercury, bismuth, and copper that can be precipitated by hydrogen sulfide in an acid solution.

HOM (Harbor and Outfall Monitoring): A comprehensive program to provide environmental data that helps to predict and measure the effect of Deer Island outfall discharge on the marine ecosystem.

Incentives and Other Charges: A fee system designed to help recover permitting, inspecting, and monitoring costs incurred by MWRA's TRAC Program and provide incentives to permitted users to reduce discharges.

Indirect Expenses: Costs not directly associated with providing services or performing activities.

Infiltration/Inflow (I/I): The problem of clean water flows entering sewers resulting in diminished pipe capacity for sanitary flows and in costly pumping and treatment of unnecessarily large wastewater volumes. Infiltration is groundwater that leaks into the sewerage system through pipe joints and defects. Inflow, primarily a wet-weather phenomenon, refers to water that enters sewers from improperly connected catch basins, sump pumps, land and basement drains, and defective manholes. Inflow also enters through improperly closed or defective tidegates during high tides.

Influent: The flow of water that enters the wastewater treatment process.

Insurance Reserve: A fund established to adequately reserve against risks for which MWRA does not currently maintain insurance.

Interceptors: The large pipes that convey wastewater from collection systems to treatment plants.

Investment Income: Income derived by investing certain operating and reserve fund balances in interest-yielding securities in accordance with the provisions of MWRA's bond resolution.

ISO - NE (Independent System Operator of New England): Non-profit wholesale operator of the regional grid system. The MWRA receives payment from ISO-NE when Deer Island, Carroll Water Treatment Plant, and the four Remote Headworks remove themselves from the grid. All six facilities participate in load response programs offered by ISO-NE which pays larger commercial and industrial electricity consumers to “shed load” during grid peaks. There are several programs available such as price, demand response and load response. MWRA constantly evaluates the options and participates in the most advantageous program.

Labor Costs: Direct costs of employing permanent and temporary personnel, including wages, salaries, overtime pay, fringe benefits, and workers' compensation.

Land Application: The use of wastewater treatment residuals on land for agricultural benefits.

Landfilling: The disposal of residuals by burial. Modern landfills have double liners, leachate collection systems, and other design features to protect against groundwater contamination.

LCR: Lead and Copper Rule – A federal rule that set an action level for lead and copper at “worst case” consumer taps. Optimized corrosion control, notification, education, and lead service replacements are all components of compliance plans.

Leachate: Water that drains from a landfill after having been in contact with, and potentially contaminated by, buried residuals. Modern landfills are designed to collect leachate for subsequent treatment.

Limnology: The scientific study of physical, chemical, meteorological, and biological conditions in fresh waters.

LIMS: Laboratory Information and Management System – An automated database system used to transfer information between MWRA’s Central Laboratory to its client groups and to process information obtained by the Central Laboratory to monitor substances that enter and leave the MWRA wastewater system. Use of LIMS removes the potential for human error in the sampling process by bar coding samples, eliminating the need to transcribe sample data, producing pre-printed project-specific sample check-off forms for field crews, and automating testing through pre-set test codes and project-specific parameters.

LOX (Liquid Oxygen): Liquid oxygen is used together with electrical energy to generate ozone at the Carroll Water Treatment Plant.

Mapping Protocols: Sets of specifications defining the content and format of data to be collected.

MCL: Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available control 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.

Massachusetts Environmental Policy Act (MEPA) Unit: A unit of the Commonwealth’s Executive Office of Environmental Affairs responsible for implementation of the state environmental review process.

Methane: A colorless, nonpoisonous, flammable gas produced as a by-product of anaerobic sludge processing. At Deer Island, MWRA uses methane as fuel to provide heat and hot water and to generate electricity.

MGD: Million gallons per day.

MIS: Management Information Systems

Mission: A description of the fundamental purposes and major activities of an operating unit or program.

Mitigation: Financial remuneration or non-financial considerations that MWRA provides to communities to alleviate the negative effects of major construction projects.

Molybdenum (Mo): A metallic element that resembles chromium and tungsten in many properties, and is used in strengthening and hardening steel. Mo is a trace element in plant and animal metabolism. The concentration of molybdenum in sludge products is strictly regulated.

NACWA (Nation Association of Clean Water Agencies): NACWA represents the interests of publicly owned wastewater treatment plants. NACWA is involved in all areas of water quality protection including the development of environmental legislation and assisting federal regulatory agencies in the implementation of environmental programs.

NEFCo: New England Fertilizer Company - The contractor responsible for the operation of processing sludge into fertilizer pellets at MWRA's residuals processing plant located in Quincy. NEFCo is also responsible for marketing and distributing the pellets and disposing of any product that is not marketable.

National Pollutant Discharge Elimination System (NPDES) Permit: A permit issued by EPA in conjunction with DEP that governs wastewater discharges into surface waters.

NHS (Northern High Service): Project that involves a series of water system pipeline improvements in the MWRA's Northern High Service Area.

Nitrification: An aerobic process in which bacteria changes the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate). Second-stage BOD is sometimes referred to as the nitrification stage (first-stage BOD is called the carbonaceous stage). Also, a similar process in the water distribution system, where ammonia from chloramine can be used by nitrifying bacteria, resulting in a reduced chlorine residual, and the potential for additional bacteria growth.

OCC: Metropolitan Operations Control Center, located at MWRA's Chelsea Facility.

OEP (Office of Emergency Preparedness): The Office of Emergency Preparedness has oversight over security, exercises, emergency operations, planning, the Emergency Services Unit and critical infrastructure protection.

OMS (Operations Management Systems): OMS correlates PICS data with laboratory analysis to track and analyze DITP's process performance with regard to the plant's discharge permit from EPA and DEP and with respect to cost effective operation.

Operating Reserve: A fund established to adequately reserve for operating contingencies, required by MWRA's bond resolution to be not less than one-sixth of its annual operating expenses.

Organic Matter: Material containing carbon, the cornerstone of plant and animal life. It originates from domestic and industrial sources.

Other User Charges: Revenue received per agreements MWRA has for provision of water, sewer, and other services to entities other than communities which are charged assessments.

Outfall: The pipe or structure where effluent is discharged into receiving waters.

Ozonation: The application of ozone to water, wastewater, or air, generally for the purposes of disinfection or odor control. The Carroll Water Treatment Plant (CWTP) employs the ozonation process to inactivate pathogens, including *cryptosporidium*, with lower levels of DBPs.

Ozone: A strong disinfectant made from oxygen and electrical energy. Ozone is effective against *cryptosporidium*.

Pathogens: Harmful organisms, often called germs that can cause disease. Waterborne pathogens (or the diseases they cause) include *giardia*, *cryptosporidium*, cholera, typhoid, *E.coli*, Hepatitis A, *legionella*, and MAC.

Payments in Lieu of Taxes (PILOT): Amounts which MWRA pays each fiscal year to cities and towns for land owned by the Commonwealth in the Quabbin, Ware River, Wachusett, and Sudbury watersheds. Consistent with the provisions of MWRA's Enabling Act, these payments are based on the past commitments of the Commonwealth of Massachusetts.

Penalty Revenue: Revenue derived from penalties assessed by MWRA to violators of its sewer use regulations.

Performance Measure: An indicator of the work and/or service provided, defined by output, work or service quality, efficiency, effectiveness, or productivity.

Performance Objective: A statement of proposed accomplishments or attainments that is short-term in nature and measurable.

PICS (Process Instrumentation and Control System): PICS provides real-time operations data from systems throughout Deer Island (including system status, flow, etc.).

PILOT (Payment in Lieu of Taxes): The Watershed PILOT program is the method that DCR compensates communities which contain the state owned land bought to protect one of the nation's largest unfiltered water supply systems. The law that defines this PILOT program, MGL c. 59 s.5G, guarantees regular and stable payment to 29 Massachusetts communities.

Plume: The rising discharge of treated wastewater effluent from a treatment plant outfall pipe.

Preliminary Treatment: The process of removing large solid objects, sticks, gravel, and grit from wastewater.

Pretreatment: The reduction or elimination of pollutant properties in wastewater prior to discharge into a sewer system.

Primacy: Primary enforcement authority for Federal Safe Drinking Water Act regulations delegated to a state by the Environmental Protection Agency (EPA).

Primary Treatment: A wastewater treatment process that takes place in a rectangular or circular tank and allows substances in wastewater that readily settle or float to be separated from the water being treated. Primary treatment results in 50-60% removal of suspended solids and 30-34% removal of BOD.

Program: An organized group of activities and the resources to carry them out aimed at achieving one or more related objectives.

Rate Revenue: Revenue received from annual assessments of communities within MWRA's service area for water and sewer services.

Rate Stabilization Reserve: A fund established by the Board of Directors that is used to reduce rate revenue requirements. MWRA finances this reserve with unexpended or surplus funds available from the Current Expense Budget at the end of each fiscal year.

RCM (Reliability Centered Maintenance): A maintenance strategy adopted at Deer Island in FY00 for critical systems. RCM is a failure modes and effects process that involves maintenance, operations and engineering staff in the development of preventative maintenance and operation plans for plant systems.

Relief Sewer: A sewer built to carry flows in excess of the capacity of an existing sewer.

Renewable Energy: Energy from a source that is not depleted when used, such as wind or solar power

RGGI: The Regional Greenhouse Gas Initiative is a mandatory, market-based program in the United States to reduce greenhouse gas emissions. The program involves selling emission allowances through auctions and investing the proceeds in demand-side management and clean energy technology projects.

Remote Headworks: The initial structures and devices of a treatment plant set apart by some distance from the plant site.

Renewal and Replacement Reserve: A fund established to adequately reserve for the cost of capital improvements not provided for by funds available through the Capital Improvement Program or the Current Expense Budget.

Residuals: The by-products of the wastewater treatment process, including scum (floatables), grit and screenings, primary sludge, and secondary sludge.

Revenue Bonds: Bonds payable from a specific source of revenue and which do not pledge the full faith and credit of the issuer.

RPS (Renewable Portfolio Standards): State policies which mandate a state to generate a percent of its electricity from renewable resources. Qualified renewable generation facilities for the MWRA include: the Steam Turbine Generator (STG) and a variety of Hydroelectric, Wind and Solar units. The MWRA is issued electronic certificates for each megawatt hour of electricity produced from the digester gas, which is considered renewable energy. RPS credits are a source of revenue for the MWRA.

Safe Yield Model: The equation used to determine the maximum dependable draft that can be made continuously on a water supply source during a period of years during which the probable driest period or period of greatest deficiency in water supply is likely to occur.

SAMS: Sewerage Analysis and Management System – A database which contains specifications of the location, size, and condition of MWRA wastewater interceptors and appurtenances and which produces maps for use by MWRA and outside parties. Now referred to as Wastewater GIS.

Sanitary Sewers: In a separate system, pipes that carry only domestic wastewater.

SCADA: Supervisory Control and Data Acquisition - Equipment for monitoring and controlling water or wastewater facilities remotely.

SCBA: Self-contained breathing apparatus.

Screenings: Large items such as wood and rags that are collected from wastewater in coarse screens prior to primary treatment.

Scum: Floatable materials such as grease, oil, and plastics that are skimmed from the surface of wastewater as it flows through large settling tanks.

SDWA: Safe Drinking Water Act - A Federal law enacted in 1986 and amended in 1996 that requires EPA to establish national primary drinking water regulations for water suppliers which consist of MCLs or treatment techniques.

Secondary Treatment: Usually following primary treatment, secondary treatment employs microorganisms to reduce the level of BOD and suspended solids in wastewater.

Sedimentation Tanks: Settling tanks where solids are removed from sewage. Wastewater is pumped to the tanks where the solids settle to the bottom or float on the top as scum. The scum is skimmed off the top, and solids on the bottom are pumped out for further treatment and/or final disposal.

Seeding: The initial filling of sludge into digesters.

Sensitive user: A member of a group within the general population likely to be at greater risk than the general population of adverse health effects due to exposure to contaminants in drinking water. Sensitive users include infants, children, pregnant women, the elderly, and individuals with histories of serious illness.

Septic Tanks: Tanks used for domestic wastes when a sewer line is not available to carry them to a treatment plant. Periodically, the septage is pumped out of the tanks, usually by commercial firms, and released into a wastewater treatment system.

Shotcrete: Mortar or concrete conveyed through a hose and projected at high velocity onto a surface; also known as air-blown mortar, pneumatically applied sprayed mortar, or gunned concrete.

Siphon: A closed conduit, a portion of which lies above the hydraulic grade line, resulting in a pressure less than atmospheric and requiring a vacuum within the conduit to start flow. A siphon utilizes atmospheric pressure to effect or increase the flow of water through the conduit.

Slip Lining: Insertion by pushing or pulling of lines fabricated of plastic, concrete cylinder pipe, reinforced concrete, or steel through existing conduits from access pits.

Sludge: Material removed by sedimentation during primary and secondary treatment. Sludge includes both settled particulate matter and microorganisms and is the single largest component of wastewater residuals. At the time sludge is removed during the treatment process, it contains only 0.5% to 5% solid content by weight. It has the appearance of muddy water.

Sodium Hypochlorite (NaOCl): A liquid form of chlorine that MWRA uses in the disinfection and/or odor processes at the Deer Island Treatment Plant, various other Wastewater facilities, and the Carroll Water Treatment Plant (CWTP).

Storm Sewers: Separate systems of pipes that carry only water runoffs from roofs, streets, and parking lots during storms.

Surcharging: Loads on a system beyond those normally anticipated; also, the height of wastewater in a sewer manhole above the crown of the sewer when the sewer is flowing completely full.

Suspended Solids: The particulate matter contained in wastewater.

SWTR: Surface Water Treatment Rule – A Federal rule promulgated in 1989 that affects all utilities using surface waters or waters under the influence of surface waters. SWTR requires filtration unless certain criteria on source water quality, watershed control, and disinfection effectiveness can be met (see also ESWTR).

Telemetry: Remote measuring or monitoring devices connected to a central monitoring station via telephone lines.

TCR: Total Coliform Rule – A federal rule that requires monitoring of water distribution systems for coliform bacteria and chlorine residual. No more than 5% of the coliform samples in a month can be positive.

TOC: Total Organic Carbon - A measure of the amount of organic material in water. Often used as a surrogate for disinfectant demand or DBP precursors.

Transition: A short section of conduit used as a conversion section to unite two conduits having different hydraulic elements.

TTHM: Total Trihalomethanes - A class of disinfection by-products, related to primarily chlorine disinfection (see D/DBP Rule).

TRAC: Toxic Reduction and Control – The department responsible for MWRA’s industrial pretreatment program.

TSS (Total Suspended Solids): A measure of the settleable solids and non-settleable solids in wastewater. During the primary treatment process, flows are routed to primary treatment clarifiers that remove about half of the pollutants brought to the plant in typical wastewater (50-60% of total suspended solids and up to 50% of pathogens and toxic contaminants are removed).

Ultraviolet (UV) Treatment: Ultraviolet light is an effective method of disinfection in drinking and wastewater applications. UV light damages the DNA of microbes, and is particularly effective against cryptosporidium. Federal regulations require two primary disinfectants for unfiltered water systems. The Carroll Water Treatment Plant added UV as a second disinfectant (in addition to ozonation) in February 2014 and the Quabbin Disinfection Facility (now named the William A. Brusch Water Treatment Facility) in Ware added UV (as a second disinfection in addition to chlorine) in October 2014.

United States Geological Survey (USGS): The federal agency that collects Geographic Information System (GIS) data for developing mapping protocols.

Vector Jet Truck: A vehicle used to clean and/or remove blockages from sewer lines by pushing and/or pulling fluids in the sewer.

VMM: Vehicle Management and Maintenance – The program responsible for management and maintenance of MWRA’s vehicles and heavy equipment.

WASM (Weston Aqueduct Supply Mains): Project involving the rehabilitation of the four Weston Aqueduct Supply Mains that carry potable water to MWRA’s service area. When complete, they will transmit about one-third of the water to MWRA’s service area and the City tunnel will carry the remaining two-thirds.

Wastewater: The water carried by sewers serving residences and businesses that enters wastewater facilities for treatment. Wastewater is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, and/or agricultural and can encompass a wide range of potential contaminants and concentrations.

Wastewater Treatment Plant (WTP): A facility containing a series of tanks, screens, filters, and other equipment and processes for removing pollutants from wastewater.

Water Supply Trust: The legislature further enhanced the ability of the Department of Conservation and Recreation (DCR) Office of Watershed Management to protect the source waters of the MWRA drinking water supply by establishing a Water Supply Protection Trust in 2004. The

trust provides a more efficient mechanism for MWRA's direct funding of the Office of Watershed Management. The Water Supply Protection Trust has a five person board of trustees responsible for approving the Annual Work Plan and Budget each spring for the following fiscal year.

Watershed Reimbursement: An amount that MWRA pays to the Department of Conservation and Recreation (DCR) each fiscal year for maintaining and managing the primary sources of MWRA's water supply (watersheds) in accordance with the laws of the Commonwealth of Massachusetts. The amount of the reimbursement is determined by prevailing legislation.

Wholesale Water and Sewer Services: Potable water and wastewater collection, transport, delivery, and treatment services that MWRA provides to communities. Communities provide the same services directly to retail customers or end users.

WOCC: Western Operations Control Center, located at the Carroll Water Treatment Plant.