



Massachusetts Water Resources Authority
**ANNUAL COMPREHENSIVE
FINANCIAL REPORT**

For the Fiscal Years Ended June 30, 2023 and 2022

Massachusetts Water Resources Authority



Annual Comprehensive Financial Report

For the Fiscal Years Ended June 30, 2023 and 2022

Frederick A. Laskey
Executive Director

Prepared by
Thomas J. Durkin, Director, Finance
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This document is available at the MWRA website: www.mwra.com



Solar panels at Carroll Water Treatment Plant

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INTRODUCTORY SECTION



Fells Reservoir, Stoneham



Frederick A. Laskey
Executive Director

MASSACHUSETTS WATER RESOURCES AUTHORITY

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November 11, 2023

To the members of the MWRA Board of Directors

We are pleased to submit to you this Annual Comprehensive Financial Report (Annual Report) of the Massachusetts Water Resources Authority (MWRA) for the years ended June 30, 2023 and 2022. This document has been submitted to the Government Finance Officers Association to be awarded a Certificate of Achievement for Excellence in Financial Reporting. The financial section of this Annual Report includes management's discussion and analysis, the basic financial statements and the combining financial statements and schedules, as well as the independent auditors' report on these financial statements.

As required by generally accepted accounting principles (GAAP), MWRA management is responsible for the accuracy, completeness, and fairness of the presentation, including all disclosures. Management's discussion and analysis provides an overview of the MWRA's financial results. This letter of transmittal is designed to complement management's discussion and analysis and should be read in conjunction with it. Management's discussion and analysis can be found immediately following the Independent Auditors' Report.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control that it has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute assurance that the financial statements are free of any material misstatements.

MISSION

The MWRA is an independent authority 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.

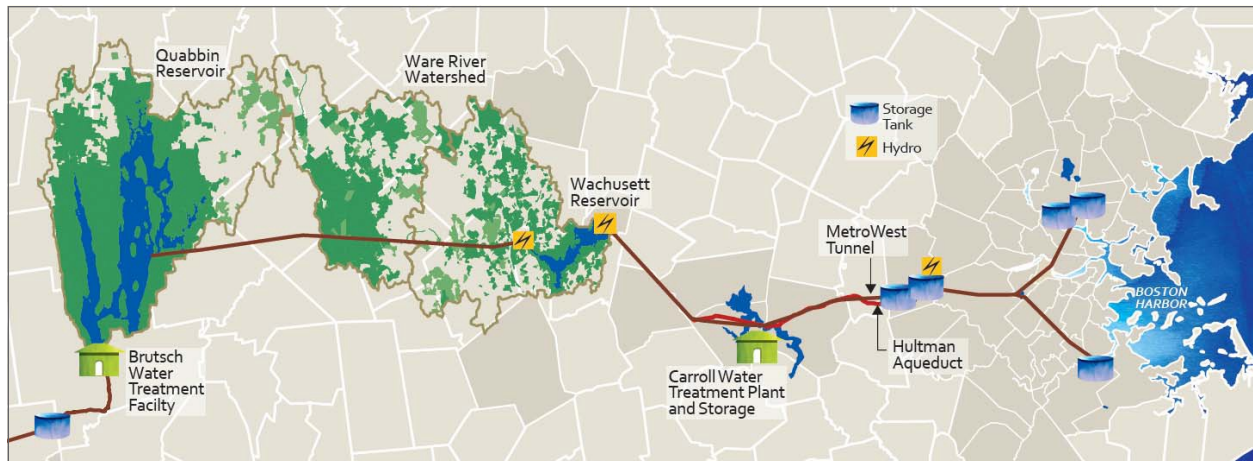
HISTORY

Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984, as amended, "the Enabling Act"), MWRA assumed 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 ("the Commonwealth") 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 all real property comprising the water and sewer systems, 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 system, and over the years, the number of water communities has increased to 53. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2023, the systems served approximately 3 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.

WATER SYSTEM



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 five-year supply of water.

The Quabbin and Wachusett Reservoirs are well 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 the watersheds are well-protected, the water in the Quabbin and Wachusett Reservoirs is of very high quality. MWRA has won numerous awards for quality, taste, and sustainability.



Ozone And UV Generators at the John J. Carroll Water Treatment Plant

Water for most MWRA communities is treated at the John J. Carroll Water Treatment Plant in Marlborough with two state-of-the-art methods – ozone and UV light. The treated water leaves the plant through the MetroWest Water Supply Tunnel and the Hultman Aqueduct. Along the way, it is stored in covered tanks. From there it is drawn into distribution mains and many smaller community pipes. Three member communities receive water directly from the Quabbin Reservoir: Chicopee, South Hadley Fire District #1 and Wilbraham. That water is treated at the Brutsch Water Treatment Facility in Ware and leaves the plant through the Chicopee Valley Aqueduct.

Meters installed by the member communities measure the amount of water delivered to each home or business.

Over 85% of the water delivered is via gravity, and, as the water travels through the system, electricity is generated at four hydroelectric facilities.

To maintain and ensure water quality, MWRA conducts hundreds of thousands of analyses each year as water travels from the well-protected reservoirs all the way to household taps, including over 1,600 bacteria samples per month. In addition, MWRA uses real-time water quality monitoring throughout the system to immediately identify any issues with water quality.

Since its inception, MWRA has promoted water conservation among its member communities, requiring each to perform bi-annual leak detection surveys and providing educational materials to residents and students. Since 1985, the average annual water demand in the MWRA service area has decreased by over 130 million gallons.

WASTEWATER SYSTEM



Deer Island Wastewater Treatment Plant

Because of inadequate sewage treatment facilities, Boston Harbor was known as the dirtiest harbor in the country in the 1980s. The Deer Island Treatment Plant was constructed in the 1990s as part of the federal court mandated Boston Harbor Clean-up Project, which is widely recognized as a national environmental success story. The Charles River—once the inspiration for the song “Love that Dirty Water” now receives high marks for water quality, and Boston’s beaches are among the cleanest urban beaches in the nation.

Wastewater is flushed through a building’s pipes into the community’s sewers. More than 5,100 miles of local sewers transport the flows from 43 communities in the greater Boston area into 240 miles of MWRA interceptor sewers. The interceptor sewers carry the region’s wastewater flows to MWRA’s Deer Island Treatment Plant.

Before the flows reach the plant, they receive preliminary treatment at five headworks facilities that screen out larger objects, such as bricks and logs. These flows are then pumped through tunnels to the plant and receive Primary Treatment in settling tanks where up to 60% of the solids settle out as a mixture of sludge and water.

During Secondary Treatment, 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, or effluent, is disinfected and discharged through a 9.5-mile underwater tunnel into Massachusetts Bay. The effluent is dispersed over the last mile and a quarter of the tunnel through 55 “diffusers.” With water depths up to 120 feet, the outfall provides a much higher rate of mixing and dilution than was possible with discharges into the shallow waters of Boston Harbor prior to construction of the new Deer Island Plant.

The remaining sludge from primary and secondary treatment is processed further in digesters, where it is mixed and heated to reduce its volume and stabilize biosolids. It is then transported through the Inter-Island Tunnel to the pelletizing plant in Quincy where it is dewatered, heat-dried, killing disease-causing bacteria, and reused as a fertilizer for use in agriculture, forestry and land reclamation.

MWRA also utilizes renewable energy at the Deer Island Treatment Plant, with wind, solar, hydroelectric and biogas systems. The plant currently generates over 50% of its total energy needs.

MWRA also operates the smaller Clinton Wastewater Treatment Plant, which serves the Town of Clinton and the Lancaster Sewer District.



Pleasure Bay Beach, South Boston

RATES AND CHARGES

Over 97% of MWRA's budgeted revenues are derived from wholesale

rates and charges assessed to member communities. The Enabling Act requires MWRA to set its rates and charges at levels sufficient to pay, among other things, its current expenses and its debt service, and to provide debt service coverage required by MWRA's General Bond Resolution ("the Resolution").

In accordance with the Enabling Act, MWRA's rate setting is exercised independently by its Board of Directors without being subject to the approval of any department, agency or other instrumentality of the Commonwealth of Massachusetts or any other governing body. MWRA establishes charges of general application separately for the services provided by the Waterworks System and the Sewer System. Rates and charges are adopted annually in June, after notice and public hearing, and review of non-binding recommendations by the MWRA Advisory Board. MWRA's charges for services are billed directly to the member communities on a wholesale basis. Member communities include cities, towns, and other governmental entities tasked with providing retail water and/or sewer services.

In setting water rates, the total amount of revenue that must be raised through water rates in a given fiscal year is identified through a budgeting process, net of other sources of anticipated revenue, such as investment income, receipts from water supply contracts and other special arrangements. Generally, charges for water services are computed on the basis of the proportioned metered water use of each member community for the immediately preceding calendar year.

Sewer charges are computed on a proportional allocation basis utilizing, among other things, total flow, contributing population and census population for each member community. Consistent with the initial step in setting water rates, MWRA first determines the total amount of revenue required to be raised from sewer charges. The total amount of required revenue for the Sewer System is allocated either to operating costs or capital costs, based on a three-year average of total flows for operating costs and total flows, census information and other factors for capital costs.

MWRA has adopted policies to enforce collection of member community assessments, including use of local aid intercept. Local aid intercept would allow MWRA, after certification to the State Treasurer of any unpaid assessment, to instruct the State Treasurer to deduct unpaid assessment amounts from any state reimbursement, grant or local aid to cities and towns that are member communities and remit that amount to the MWRA. The local aid intercept is not available, however, for any non-municipal member community. Fortunately, MWRA has not needed to use local aid intercept in more than 20 years.



Wind turbines and solar panels at the Deer Island Wastewater Treatment Plant

CAPITAL IMPROVEMENT PROGRAM

Since its establishment, MWRA has invested over \$9 billion to improve the wastewater and waterworks systems. MWRA was created in response to and has been subject for most of its existence to a Clean Water Act enforcement action (Boston Harbor Case) 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). In 1982 and 1983, civil suits were filed against the MDC and other state agencies claiming that the Massachusetts Clean Waters Act had been violated as a result of discharges of untreated and partially treated sewage from Nut and Deer Islands. The Commonwealth, the Boston Water and Sewer Commission that provides retail water and sewer services within the city of Boston, the City of Quincy and the Town of Winthrop are also parties to the case.

The order of the federal court in the Boston Harbor Case set forth the schedules of activities to be undertaken to achieve compliance with the law. Since 1985, MWRA has complied with 420 milestones, which included the completion of extensive new wastewater treatment facilities at Deer Island in Boston and Nut Island in Quincy, a residuals processing facility in Quincy, and 35 separate CSO control projects in Boston, Brookline, Cambridge, Chelsea and Somerville which comprise the long-term CSO control plan (LTCP), the last of which was completed in December 2015, in compliance with the Court Ordered milestone.

The Authority is required to conduct a post-construction monitoring and performance assessment of the LTCP to verify whether the levels of CSO control included in the LTCP have been achieved. On December 30, 2021, the Authority filed its Performance Assessment Report and Interim Update with the Court. As of the end of 2021, the LTCP goals were met or materially met at 70 of the 86 CSO outfalls that were active at the start of the MWRA CSO program (See foot note 12 Commitments and Contingencies). An agreement was ultimately reached on a three-year extension in the Boston Harbor Case, which the federal court approved, resulting in an amendment to the court schedule to add additional milestones through December 2024.

The Authority filed annual reports under the agreement on April 29, 2022, and April 28, 2023. The next annual report is due in April 2024. The most recent annual report explained that as of the end of 2022, the Authority has achieved the overall CSO discharge volume reduction goal of 88% from 1988 levels as the system-wide total discharge volume decreased to 396 MG (95% of which is treated) or eight million gallons (MG) below the LTCP target of 404 MG. Further, the Authority reported that as of the end of 2022, two additional CSO outfalls were meeting LTCP goals and projects forecasted to enable eight outfalls to meet LTCP goals were in design or construction, with construction expected to be complete by the end of 2024. Finally, the report explained that although investigations continue, six outfalls are not expected to meet their respective LTCP volume and/or activation goals by December 2024 (See foot note 12 Commitments and Contingencies).

During the same time, MWRA also complied with regulatory mandates to improve and modernize the waterworks facilities, including the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and seven covered water storage facilities.



Norumbega Covered Storage Facility in Weston

The mandated projects account for most of the Capital Improvement Program (CIP) spending to date. The five initiatives below account for over \$6.3 billion, or 69.2% of spending to date:

- Boston Harbor Clean-up Project - \$4 billion
- CSO Control Plan - \$923 million
- MetroWest Water Supply Tunnel - \$697 million
- Carroll Water Treatment Plant - \$429 million
- Covered Storage Facilities - \$239 million

As MWRA matures as an agency, the majority of the infrastructure modernization and new facilities construction phase is nearing completion, and barring new mandates, most of the 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 capital assets. Water System Redundancy aims to reduce the risks of service interruption and allow for planned maintenance of the water system assets.

Long-term water redundancy is expected to be the largest future CIP initiative and includes two new tunnels with estimated spending in excess of \$2 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.

Capital initiatives to date have been primarily funded through long-term borrowings in the form of tax-exempt bonds, and the debt service on these outstanding bonds represents a significant and growing portion of the MWRA's operating budget. As of June 30, 2023, MWRA's total debt was \$4.6 billion. The capital finance obligation as a percent of total expenses has increased from 36% in 1990 to 60.2% in the Final FY2023 Current Expense Budget.

MWRA's senior 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.

The long-term strategy for capital work is identified in the MWRA's Water and Wastewater Master Plans, which were published in 2006, and updated in 2013, and in 2018. 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.

AWARDS AND ACKNOWLEDGMENTS

The Government Finance Officers Association of the United States and Canada awarded a Certificate of Achievement for Excellence in Financial Reporting to MWRA for its Annual Comprehensive Financial Report (Annual Report) for the fiscal year ended June 30, 2022. This was the fourth year that MWRA applied for and received this prestigious award. In order to be awarded a Certificate of Achievement, MWRA had to publish an easily readable and efficiently organized Annual Report that satisfied both generally accepted accounting principles and applicable program requirements.

A Certificate of Achievement for Excellence in Financial Reporting is valid for a period of one year only. However, we believe that our current Annual Report continues to meet the Certificate of Achievement for Excellence in Financial Reporting Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

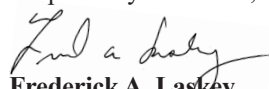
MWRA also received the Government Finance Officers Association's Distinguished Budget Presentation Award for its annual budget document dated September 2022. To qualify for the Distinguished Budget Presentation Award, the government's budget document had to be judged proficient as a policy document, a financial plan, and operations guide, and communications device.

The preparation of this report would not have been possible without the skill, effort, and dedication of the entire staff of MWRA's Finance Division. We wish to thank all MWRA departments for their assistance in providing the data necessary to prepare this report. Credit is also due to the MWRA Board of Directors for their unfailing support for maintaining the highest standards of professionalism in the management of the MWRA's finances.

INDEPENDENT AUDIT

The Enabling Act requires that the MWRA's financial statements be audited annually by an independent certified public accounting firm. The MWRA General Bond Resolution and certain loan agreements, by reference, specify that the audit be conducted by independent accountants of nationally recognized standing and be satisfactory to the Trustee. The financial section of the 2023 Annual Comprehensive Financial Report begins with the report of our independent auditors, CliftonLarsonAllen LLP. This report expresses an unmodified opinion as to the fairness of the presentation of our financial statements.

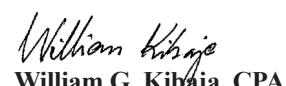
Respectfully submitted,



Frederick A. Laskey
Executive Director



Thomas J. Durkin
Director of Finance



William G. Kibaja, CPA
Controller



Government Finance Officers Association

Certificate of
Achievement
for Excellence
in Financial
Reporting

Presented to

Massachusetts Water Resources Authority

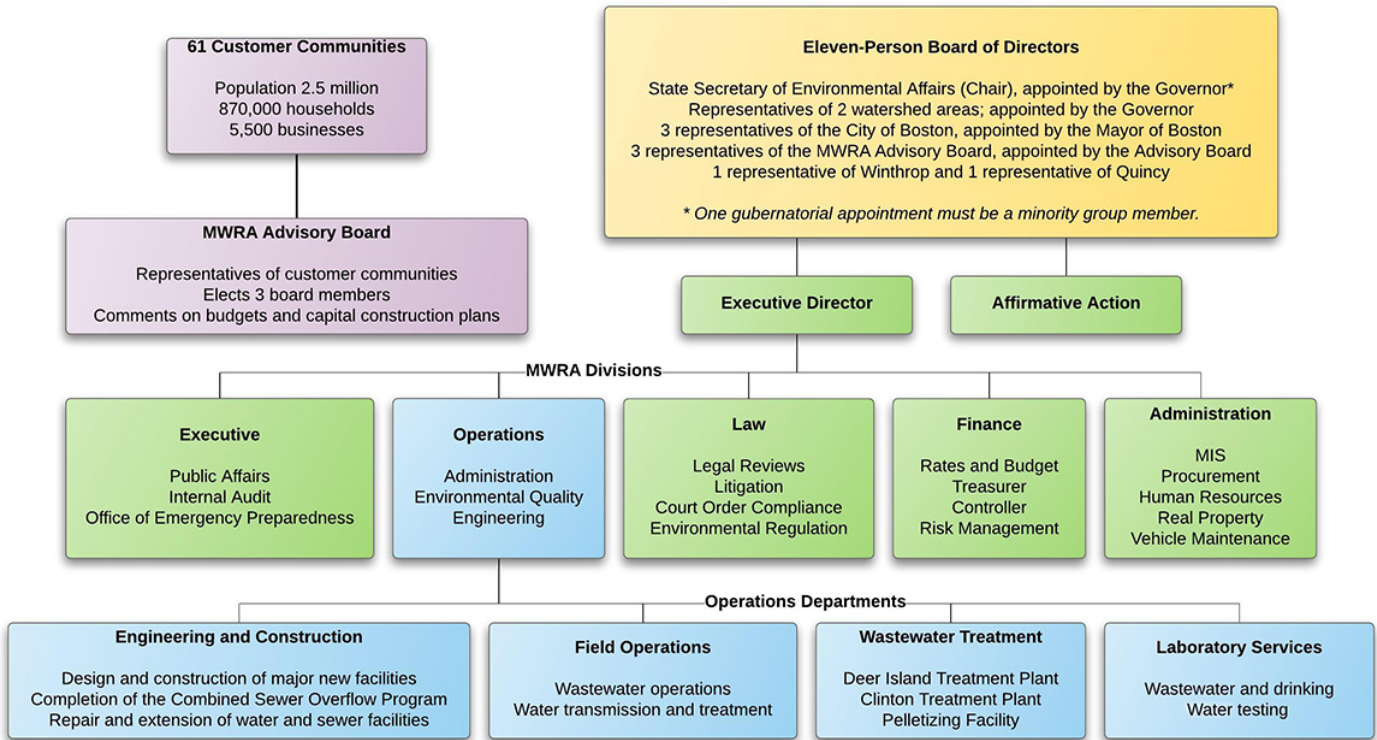
For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

June 30, 2022

Christopher P. Morrill

Executive Director/CEO

MWRA ORGANIZATIONAL CHART



PRINCIPAL OFFICIALS



Deer Island Fish Pier

BOARD OF DIRECTORS

Rebecca Tepper, Chair
Andrew M. Pappastergion, Vice Chair
Brian Pena, Secretary
Paul E. Flanagan
Joseph C. Foti
Louis M. Taverna, P.E.
Henry F. Vitale
John J. Walsh
Patrick J. Walsh
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Jennifer L. Wolowicz

Executive Officers

Frederick A. Laskey, Executive Director
David W. Coppes, Chief Operating Officer
Thomas J. Durkin, Director, Finance
Michele S. Gillen, Director, Administration
Carolyn Francisco Murphy, General Counsel

Controller Department

William Kibaja, CPA, Controller
Elizabeth Feloni, CPA, Accounting Manager
June Kwan, Senior Staff Accountant
Samantha Wilson, Senior Staff Accountant
Brenda Guerra, Senior Staff Accountant

FINANCIAL SECTION



Quabbin Reservoir Spillway



INDEPENDENT AUDITORS' REPORT

Board of Directors
Massachusetts Water Resources Authority
Boston, Massachusetts

Report on the Audits of the Financial Statements

Opinions

We have audited the accompanying financial statements of the business-type activities and fiduciary activities of the Massachusetts Water Resources Authority (Authority) as of and for the years ended June 30, 2023 and 2022, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements as listed in the table of contents.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and fiduciary activities of the Authority as of June 30, 2023 and 2022, and the respective changes in financial position, and, where applicable, cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Authority and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Authority's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Authority's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and certain pension and other postemployment benefits schedules, as listed in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audits were conducted for the purpose of forming opinions on the financial statements that collectively comprise the Authority's basic financial statements. The Schedule of Accounts Established by the General Revenue Bond Resolution, Combining Statements of Net Position, Combining Statements of Revenues, Expenses, and Changes in Net Position, Combining Statements of Fiduciary Net Position, and Combining Statements of Changes in Fiduciary Net Position (Supplemental Schedules) are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audits of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the Supplemental Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual report. The other information comprises the Introductory and Statistical Sections but does not include the basic financial statements and our auditors' report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated September 29, 2023, on our consideration of the Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control over financial reporting and compliance.



CliftonLarsonAllen LLP

Boston, Massachusetts
September 29, 2023

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

This section of the Authority's annual financial report presents our discussion and analysis of the Authority's financial performance during the fiscal years ended June 30, 2023 and 2022. Please read it in conjunction with the Authority's financial statements, which immediately follow this section.

Financial Highlights – Fiscal Year 2023

The fiscal year 2023 customer service revenues were approximately \$831.9 million. Of this amount, rate revenues represent approximately 97.9%, or \$814.6 million, and were \$22.6 million higher than fiscal year 2022. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately \$313 million in fiscal year 2023. The 11.3% increase in total operating expenses over fiscal year 2022 is the result of increases in pension expense of \$27.1 million, chemical costs of \$6.2 million, maintenance costs of \$5.5 million, utility costs of \$3.2 million, and personnel costs of \$2.4 million. These increases were offset by decreases in watershed reimbursements of \$5.1 million.

Net non-operating expenses decreased by \$49 million, or 28.5%, primarily due to a \$42 million increase in investment gains and a \$6.9 million decrease in interest expense. Interest income increased due to a decrease in the unrealized loss on investments (\$21.9 million) combined with an increase in actual interest earned on investments (\$20.1 million). Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt.

Total assets at June 30, 2023 were approximately \$6.8 billion, a \$3.2 million, or 0.05%, increase over total assets at June 30, 2022.

On April 27, 2023, the Authority issued General Revenue Bonds, 2023 Series B for \$133,975 and General Revenue Refunding Bonds, 2023 Series C for \$100,340.

The proceeds from the Series B bonds were used to permanently finance outstanding tax-exempt commercial paper of \$50,000 and 2015C revolving loans of \$90,000. The interest rate on these bonds are 5% and 5.25%.

The proceeds from the Series C bonds were used to refund \$710 of General Revenue Bonds 2016 Series B, \$2,260 of General Revenue Bonds 2017 Series B, \$5,815 of General Revenue Bonds 2018 Series B, \$370 of General Revenue Bonds 2019 Series B, \$8,105 of General Revenue Refunding Bonds 2016 Series C, \$13,905 of General Revenue Refunding Bonds 2017 Series C and \$88,920 of General Revenue Refunding Bonds 2019 Series F.

Total capital assets (net of depreciation) were approximately \$5.5 billion at June 30, 2023, a \$43.2 million, or 0.8%, decrease over June 30, 2022. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Financial Highlights – Fiscal Year 2022

The fiscal year 2022 customer service revenues were approximately \$805.7 million. Of this amount, rate revenues represent approximately 98.3%, or \$792.1 million, and were \$22.7 million higher than fiscal year 2021. This was due to an increase in assessments.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

Total operating expenses, excluding depreciation, were approximately \$281.3 million in fiscal year 2022. The 3.5% decrease in total operating expenses over fiscal year 2021 is the result of decreases in pension expense of \$5.7 million, OPEB expense of \$5.8 million, personnel cost of \$3.6 million and Harbor Energy Electric Company (HEEC) capacity and O & M charges of \$3.5 million. These decreases were offset by increases in utility costs of \$7.5 million.

Net non-operating expenses increased \$8.8 million, or 5.4%, primarily due to a \$11.4 million reduction in interest expense offset by a \$20.1 million decrease in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt. Interest income decreased due to a decrease in the unrealized gain on investments (\$21.1 million) offset by an increase in actual interest earned on investments (\$1.0 million).

Total assets at June 30, 2022 were approximately \$6.8 billion, a \$242.3 million, or 3.4%, decrease over total assets at June 30, 2021.

On December 9, 2021, the Authority issued General Revenue Bonds, 2021 Series B for \$60,635 and General Revenue Refunding Bonds (Federally Taxable), 2021 Series C for \$687,395.

The proceeds from the Series B bonds were used to permanently finance outstanding tax-exempt commercial paper of \$75,000. The interest rate on these bonds are 5%.

The proceeds from the Series C bonds were used to refund \$53,885 of General Revenue Bonds 2014 Series D, \$47,590 of General Revenue Bonds 2016 Series B, \$43,830 of General Revenue Refunding Bonds 2013 Series A and \$72,870 of General Revenue Refunding Bonds 2014 Series F, \$317,700 of General Revenue Refunding Bonds 2016 Series C, \$52,190 of General Revenue Refunding Bonds 2016 Series D. The interest rate of these bonds range from 0.53% to 2.97%.

Total capital assets (net of depreciation) were approximately \$5.6 billion at June 30, 2022, an \$89.8 million, or 1.6%, decrease over June 30, 2021. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Overview of the Financial Statements

The financial section of this annual report consists of four parts: management's discussion and analysis (this section), the financial statements and related notes to the financial statements, required supplementary information, and other supplementary information.

The financial statements provide both long-term and short-term information about the Authority's overall financial status. The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of required supplementary information and other supplementary information that further explains and supports the information in the financial statements.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

Financial Analysis of the Authority

Net Position

The Authority's total net position at June 30, 2023 was approximately \$1.8 billion, a \$226 million increase from June 30, 2022. Total assets increased \$5.2 million, or 0.08%, to \$6.8 billion, and total liabilities decreased \$55.1 million, or 1.1%, to \$5.1 billion.

The Authority's total net position at June 30, 2022 was approximately \$1.6 billion, a \$79.0 million increase from June 30, 2021. Total assets decreased \$242.3 million, or 3.4%, to \$6.8 billion, and total liabilities decreased \$400.6 million, or 7.2%, to \$5.1 billion.

Net Position					
(Dollars in thousands)					
	2023	2022	2021	Percentage change 2023–2022	Percentage change 2022–2021
Current assets	\$ 958,172	\$ 903,848	\$ 1,015,387	6.0%	(11.0%)
Capital assets	5,525,902	5,569,082	5,658,876	(0.8)	(1.6)
Other noncurrent assets	340,872	346,849	387,852	(1.7)	(10.6)
Total assets	<u>6,824,946</u>	<u>6,819,779</u>	<u>7,062,115</u>	<u>0.1</u>	<u>(3.4)</u>
Deferred outflows from pension	80,550	30,846	44,083	161.1	(30.0)
Deferred outflows from OPEB	3,933	4,223	-	(6.9)	(100.0)
Deferred outflows from derivative instruments	2,820	8,832	29,923	(68.1)	(70.5)
Deferred outflows from refunded debt	7,981	8,467	8,965	(5.7)	(5.6)
Current liabilities	438,428	428,672	482,637	2.3	(11.2)
Noncurrent liabilities	4,647,224	4,712,110	5,058,796	(1.4)	(6.9)
Total liabilities	<u>5,085,652</u>	<u>5,140,782</u>	<u>5,541,433</u>	<u>(1.1)</u>	<u>(7.2)</u>
Deferred inflows from pension	4,062	66,076	39,360	(93.9)	67.9
Deferred inflows from OPEB	31,392	48,128	36,018	(34.8)	33.6
Deferred inflows from regulated activities	-	52,124	42,251	(100.0)	23.4
Deferred inflows from refunded debt	7,912	-	-	100.0	-
Net position:					
Net investment in capital assets	1,184,479	1,057,624	957,356	12.0	10.5
Restricted					
Construction	145,029	115,765	228,037	25.3	(49.2)
Debt service	276,719	263,956	156,771	4.8	68.4
Operating	6,802	8,102	8,283	(16.0)	(2.2)
Revenue	41,356	38,256	48,146	8.1	(20.5)
Rate Stabilization	39,314	40,295	41,544	(2.4)	(3.0)
Unrestricted	97,514	41,039	45,887	137.6	(10.6)
Total net position	<u>\$ 1,791,213</u>	<u>\$ 1,565,037</u>	<u>\$ 1,486,024</u>	<u>14.5%</u>	<u>5.3%</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

Changes in Net Position

The increase in net position at June 30, 2023 was \$226 million, or 14.5%, as compared with June 30, 2022. The Authority's total operating revenues increased by 3.1% to \$836.9 million and total operating expenses increased by 11.3% to \$312.9 million.

The increase in net position at June 30, 2022 was \$79.0 million, or 5.3%, as compared with June 30, 2021. The Authority's total operating revenues increased by 3.3% to \$811.9 million and total operating expenses decreased 3.5% to \$281.3 million.

Changes in Net Position					
(Dollars in thousands)					
	2023	2022	2021	Percentage change 2023–2022	Percentage change 2022–2021
Operating revenues:					
Customer service revenues	\$ 831,932	\$ 805,741	\$ 781,399	3.3%	3.1%
Other revenues	5,023	6,113	4,720	(17.8)	29.5
Total operating revenues	<u>836,955</u>	<u>811,854</u>	<u>786,119</u>	<u>3.1</u>	<u>3.3</u>
Operating expenses:					
Operations	133,377	126,065	116,455	5.8	8.3
Maintenance	34,318	28,842	30,661	19.0	(5.9)
Payments in lieu of taxes	8,479	8,469	8,368	0.1	1.2
Engineering, general, and administrative	136,797	117,916	135,886	16.0	(13.2)
Total operating expenses	<u>312,971</u>	<u>281,292</u>	<u>291,370</u>	<u>11.3</u>	<u>(3.5)</u>
Depreciation and amortization	230,810	215,079	214,478	7.3	0.3
Operating income	<u>293,174</u>	<u>315,483</u>	<u>280,271</u>	<u>(7.1)</u>	<u>12.6</u>
Nonoperating items:					
Regulatory accounting provisions	52,124	(70,700)	(164,293)	(173.7)	(57.0)
Net nonoperating expenses	(125,459)	(172,009)	(163,187)	(27.1)	5.4
Changes in derivative related accounts	2,940	2,940	2,940	-	-
Total nonoperating items	<u>(70,395)</u>	<u>(239,769)</u>	<u>(324,540)</u>	<u>(70.6)</u>	<u>(26.1)</u>
Capital grants and contributions	3,397	3,299	4,314	3.0	(23.5)
Change in net position	226,176	79,013	(39,955)	186.3	(297.8)
Total net position – beginning of year	<u>1,565,037</u>	<u>1,486,024</u>	<u>1,525,979</u>	<u>5.3</u>	<u>(2.6)</u>
Total net position – end of year	<u>\$ 1,791,213</u>	<u>\$ 1,565,037</u>	<u>\$ 1,486,024</u>	<u>14.5%</u>	<u>5.3%</u>

During fiscal year 2023, the increases in customer service revenues were primarily due to the 2.85% increase in the rate revenue requirement (\$22.6 million).

During fiscal year 2022, the increases in customer service revenues were primarily due to the 2.95% increase in the rate revenue requirement (\$22.7 million).

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management’s Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

Operating Costs by Functionality
(Dollars in thousands)

	2023	2022	2021	Percentage change 2023–2022	Percentage change 2022–2021
Wastewater treatment and transport	\$ 116,317	\$ 107,476	\$ 101,884	8.2%	5.5%
Water treatment and transport	45,527	39,922	39,982	14.0	(0.2)
Water and wastewater quality	10,348	9,975	10,678	3.7	(6.6)
Metering and monitoring	7,580	6,672	6,694	13.6	(0.3)
Facilities planning, design, and construction	11,674	11,388	12,289	2.5	(7.3)
Management information systems	13,057	12,573	13,219	3.8	(4.9)
Administration and support	48,375	54,109	54,721	(10.6)	(1.1)
Total direct operating costs	252,878	242,115	239,467	4.4	1.1
Indirect operating costs	60,093	39,177	51,903	53.4	(24.5)
 Total operating costs	 <u>\$ 312,971</u>	 <u>\$ 281,292</u>	 <u>\$ 291,370</u>	 <u>11.3%</u>	 <u>(3.5%)</u>

Increases in wastewater treatment and transport were mainly due to increased chemical costs and the increase in the contracted O & M costs at the pelletization plant. Water treatment and transport costs increased due to increases in electricity, chemicals and maintenance – mainly cost incurred to clean a cell of the Norumbega Covered Storage facility. Metering and monitoring cost increased due to increased purchases of electrical supplies. Administration and support costs decreased due to adjustment of costs related to the leased asset - building.

Retirement Benefits

The Massachusetts Water Resources Authority Employees’ Retirement System (System) was established to provide pension benefits to Massachusetts Water Resources Authority (Authority) employees and their beneficiaries. The System is governed by a five-member board comprised of the Secretary of the Authority’s Board (ex-officio), two members elected by the System’s participants, one member appointed by the Authority’s Board and one member appointed by the System’s Board members.

The System has total plan assets of \$630.5 million and \$729 million at December 31, 2022 and 2021, respectively.

Other Post-Employment Benefits (OPEB) Irrevocable Trust

In April 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. It is intended that the Trust shall constitute a “Qualified OPEB Trust” according to the standards set forth in GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions* and the standards of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The Authority’s Board of Directors appointed a five-member Board of Trustees, made up of Authority senior managers, to control and manage the trust.

An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust at June 30, 2023 and 2022 was \$72.4 million and \$63.9 million, respectively.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2023 and 2022

(Unaudited)

Capital Assets and Debt Administration

Capital Assets

As of June 30, 2023 and 2022, the Authority had \$5.5 and \$5.6 billion of capital assets (net of depreciation), respectively. This includes land, construction in progress, plant and equipment for the water and sewer systems, leased asset - building, furniture and fixtures, leasehold improvements, and motor vehicles and equipment. The Authority's net capital assets decreased approximately \$43.2 million, or 0.8%, during fiscal year 2023, primarily due to the rate of depreciation being higher than the rate of capitalization.

Capital Assets					
(Net of depreciation, dollars in thousands)					
	2023	2022	2021	Percentage change 2023–2022	Percentage change 2022–2021
Land	\$ 30,060	\$ 30,058	\$ 30,058	0.0%	-
Construction in progress	298,535	172,476	228,033	73.1	(24.4)
Plant and equipment, water, and sewer systems	5,172,729	5,347,916	5,380,198	(3.3)	(0.6)
Leased asset - building	18,735	12,377	13,615	51.4	(9.1)
Furniture and fixtures	24	30	36	(20.0)	(16.7)
Leasehold improvements	219	231	243	(5.2)	(4.9)
Motor vehicles and equipment	5,600	5,994	6,693	(6.6)	(10.4)
Total	<u>\$ 5,525,902</u>	<u>\$ 5,569,082</u>	<u>\$ 5,658,876</u>	<u>(0.8%)</u>	<u>(1.6%)</u>

Additional information on the Authority's capital assets can be found in Note 8 of this financial report.

Debt Administration

The Authority's bond sales must be approved by its board of directors (the Board) and must comply with rules and regulations of the United States Treasury Department. Neither the Commonwealth of Massachusetts (the Commonwealth) nor any political subdivision thereof shall be obligated to pay the principal of, or premium or interest on, any debt outstanding and neither the faith and credit nor the taxing power of the Commonwealth or any political subdivision thereof is pledged to such payment.

Bond Resolutions

Pursuant to its general bond resolution, the Authority must comply with a rate covenant that requires it to set rates to maintain revenues sufficient to pay current expenses; debt service on indebtedness; required deposits to reserves; costs of maintenance, replacement, and/or improvements to the wastewater and water systems that are considered current expenses and any additional amounts the Authority may be required to pay by any law or contract.

In addition to the rate covenant, the Authority is required to meet two covenants with respect to debt service coverage. The primary debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.2 times that is required for debt service on all outstanding bonds, not including subordinated bonds. The subordinated debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.1 times that is required for debt service on all outstanding bonds, including subordinated bonds.

Additional information on the Authority's long-term debt can be found in Note 6 of this financial report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

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(Unaudited)

Credit Rating

The Authority's \$3.1 billion Senior Lien General Revenue Bonds are rated Aa1 from Moody's Investors Service, AA+ by S&P Global Ratings and AA+ from Fitch Ratings. The \$435.6 million Subordinate Lien General Revenue Bonds are rated Aa2 from Moody's Investors Service, AA by S&P Global Ratings and AA from Fitch Ratings. Some of the Authority's revenue bonds are enhanced by bond insurance. The credit ratings of these bond series will be the higher rating of either the Authority or the firm providing the enhancement. In the case of bonds enhanced by a letter of credit, the rating will be the highest of the Authority's, the provider or, if available, a joint rating. The subordinated debt of \$804 million with the Massachusetts Clean Water Trust is not rated as the Authority's debt.

Economic Factors and Next Year's Budget

In June 2023, the Board approved the fiscal year 2024 Current Expense Budget (CEB), which totals \$874.1 million in expenses.

The \$874.1 million expense total is comprised of \$487.7 million (55.8%) in capital financing costs and \$386.4 million (44.2%) in operating expenses, of which \$316 million (81.8%) is for direct expenses and \$70.4 million (18.2%) is for indirect expenses. The total represents an increase of \$51 million from fiscal year 2023 spending, which is comprised of \$67 million in higher operating costs and \$16 million in lower debt service costs.

The fiscal year 2024 rate revenue requirement approved by the Board is \$834.3 million; an increase of 2.4% compared with the fiscal year 2023 budget.

Fiscal year 2024 budgeted nonrate revenue totals \$39.8 million, a decrease of \$9.9 million from actual fiscal year 2023 nonrate revenue. The nonrate revenue budget is comprised of \$23.3 million in investment income, \$15.8 million in other user charges and other revenue, \$0.3 million in use of rate stabilization and \$0.4 million in entrance fees.

CIP 10 Year Plan

The Authority's planned spending for capital improvements in future years reflects the Authority's ongoing efforts to upgrade and maintain the system and to align its project prioritization process with the Master Plan.

Major planned and ongoing projects include:

- Commitment to long-term redundancy plan for the metropolitan water tunnel system.
- Improvement and replacement of equipment on Deer Island and at major headworks facilities to ensure continued efficient and effective operations.
- Continued asset protection projects for both wastewater and water systems (pump stations and pipelines)
- Dedication to using resources efficiently, responding to climate change and reducing the environmental impacts of the Authority's daily operations by installing alternative energy sources and promotion of improved self-generation.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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June 30, 2023 and 2022

(Unaudited)

- Enhanced commitment to the community assistance programs for both the sewer and water systems to improve local infrastructure, including an initiative to provide interest-free loans to assist communities in replacing lead service lines.
- Continued investment for the upgrade of Management Information Systems to ensure the availability, integrity and security of data.
- Continue the Residuals Asset Protection program for maintaining and improving the operations and infrastructure of the biosolids processing in the long term.
- Improvement and replacement of equipment at CWTP to ensure continued efficient and effective operations.

Contacting the Authority's Financial Management

This report is designed to provide our bondholders, member communities and other interested parties with a general overview of the Authority's finances and to demonstrate the Authority's accountability for the revenue it receives. If you have questions about this report or need additional information, contact the Massachusetts Water Resources Authority, Finance Division, 33 Tafts Avenue, Boston, MA 02128.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Net Position

June 30, 2023 and 2022

(Dollars in thousands)

Assets	<u>2023</u>	<u>2022</u>
Current assets:		
Cash and cash equivalents (note 4)	\$ 79,056	\$ 73,231
Investments (note 4)	5,278	4,226
Restricted investments (note 4)	831,549	786,109
Intergovernmental loans (note 7)	38,157	37,581
Accounts receivable	3,323	1,892
Interest receivable	809	809
Total current assets	<u>958,172</u>	<u>903,848</u>
Noncurrent assets:		
Capital assets:		
Capital assets – not being depreciated (note 8)	328,595	202,534
Capital assets – being depreciated – net (note 8)	5,178,572	5,354,171
Leased asset - building (note 8)	18,735	12,377
Other assets, net (note 7)	340,872	346,849
Total noncurrent assets	<u>5,866,774</u>	<u>5,915,931</u>
Total assets	<u>6,824,946</u>	<u>6,819,779</u>
Deferred Outflows of Resources		
Deferred outflows from pension (note 10)	80,550	30,846
Deferred outflows from OPEB (note 11)	3,933	4,223
Deferred outflows from derivative instruments (note 6)	2,820	8,832
Deferred outflows from refunding debt	7,981	8,467
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	50,408	47,063
Accounts payable for construction	30,474	27,309
Current portion of long-term debt (note 6)	297,454	288,903
Accrued interest on bonds payable	60,092	65,397
Total current liabilities	<u>438,428</u>	<u>428,672</u>
Noncurrent liabilities:		
Reserves (note 5)	67,696	65,278
Retainage on construction in progress	11,155	5,958
Long-term debt – less current portion (note 6)	4,346,599	4,540,047
Lease liability (note 9)	20,600	22,138
Net pension liability (note 10)	152,974	20,029
Net OPEB liability (note 11)	45,380	49,828
Liability for derivative instruments (note 6)	2,820	8,832
Total noncurrent liabilities	<u>4,647,224</u>	<u>4,712,110</u>
Total liabilities	<u>5,085,652</u>	<u>5,140,782</u>
Deferred Inflows of Resources		
Deferred inflows from pension (note 10)	4,061	66,076
Deferred inflows from OPEB (note 11)	31,392	48,128
Deferred inflows from regulated activities (note 3)	-	52,124
Deferred inflows from refunding debt	7,912	-
Net Position		
Net investment in capital assets	1,184,479	1,057,624
Restricted		
Construction	145,029	115,764
Debt service	276,719	263,959
Operating	6,802	8,102
Revenue	41,356	38,254
Rate Stabilization	39,314	40,295
Unrestricted	97,514	41,039
Total net position	<u>\$ 1,791,213</u>	<u>\$ 1,565,037</u>
Commitments and contingencies (notes 9,10,11,12 and 13)		

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Revenues, Expenses, and Changes in Net Position

Years ended June 30, 2023 and 2022

(Dollars in thousands)

	<u>2023</u>	<u>2022</u>
Operating revenues (note 2):		
Customer services	\$ 831,932	\$ 805,741
Other	5,023	6,113
Total operating revenues	<u>836,955</u>	<u>811,854</u>
Operating expenses:		
Operations	133,377	126,065
Maintenance	34,318	28,842
Payments in lieu of taxes	8,479	8,469
Engineering, general, and administrative	<u>136,797</u>	<u>117,916</u>
Total operating expenses	<u>312,971</u>	<u>281,292</u>
Income from operations before depreciation	523,984	530,562
Depreciation and amortization	<u>230,810</u>	<u>215,079</u>
Operating income	293,174	315,483
Regulatory accounting provisions:		
Change in reserves (note 5)	(2,418)	(1,412)
Change in regulatory provisions, net (note 3)	<u>52,124</u>	<u>(69,288)</u>
Total regulatory accounting provisions	<u>49,706</u>	<u>(70,700)</u>
Nonoperating revenues (expenses):		
Debt service grant	1,187	1,182
Investment gain (loss)	19,313	(22,743)
Interest expense	(143,541)	(150,448)
Changes in derivative related accounts	2,940	2,940
Total nonoperating expenses	<u>(120,101)</u>	<u>(169,069)</u>
Net gain before capital grants and contributions	222,779	75,714
Capital grants and contributions	<u>3,397</u>	<u>3,299</u>
Increase in net position	226,176	79,013
Total net position - beginning of year	<u>1,565,037</u>	<u>1,486,024</u>
Total net position - end of year	<u>\$ 1,791,213</u>	<u>\$ 1,565,037</u>

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Cash Flows

Years ended June 30, 2023 and 2022

(Dollars in thousands)

	<u>2023</u>	<u>2022</u>
Cash flows from operating activities:		
Cash received from customers	\$ 832,491	\$ 805,316
Cash paid to suppliers for goods and services	(132,768)	(173,659)
Cash paid to employees for services	(176,103)	(137,262)
Cash paid in lieu of taxes	(8,479)	(8,469)
Other operating receipts	4,870	6,134
Net cash provided by operating activities	<u>520,011</u>	<u>492,060</u>
Cash flows from capital and related financing activities:		
Proceeds from sale of revenue bonds, loans, and notes	280,423	94,961
Capital grants for construction	3,397	3,299
Debt service grant	1,187	1,182
Principal paid on leases payable	(1,538)	(1,423)
Interest paid on leases payable	(1,678)	(1,794)
Repayment of debt	(438,869)	(368,679)
Interest paid on debt	(164,322)	(164,783)
Plant expenditures	<u>(165,608)</u>	<u>(140,366)</u>
Net cash used for capital and related financing activities	<u>(487,008)</u>	<u>(577,603)</u>
Cash flows from investing activities:		
Purchases of short-term investments	(25,970)	(33,541)
Sales and maturities of short-term investments	26,000	31,950
Changes in restricted money market investments	(52,669)	85,008
Interest received	25,461	5,426
Net cash provided (used) for investing activities	<u>(27,178)</u>	<u>88,843</u>
Net increase (decrease) in cash and cash equivalents	5,825	3,300
Cash and cash equivalents - beginning of year	<u>73,231</u>	<u>69,931</u>
Cash and cash equivalents - end of year	<u>\$ 79,056</u>	<u>\$ 73,231</u>
Reconciliation of operating income to net cash provided by operating activities:		
Operating income	293,174	315,483
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation and amortization	230,810	215,079
Change in net pension liability	132,945	(44,458)
Change in deferred outflows from pension	(49,703)	13,237
Change in deferred inflows from pension	(62,015)	26,716
Change in net OPEB liability	(4,448)	(25,213)
Change in deferred outflows from OPEB	290	(4,223)
Change in deferred inflows from OPEB	(16,736)	12,110
Change in other accounts	(7,899)	4,909
Change in accounts payable	<u>3,593</u>	<u>(21,580)</u>
Net cash provided by operating activities	<u>\$ 520,011</u>	<u>\$ 492,060</u>

NONCASH CAPITAL AND RELATED FINANCING ACTIVITIES

In fiscal 2023, general revenue refunding bonds in the aggregate principal amount of \$110,340 were issued to refund \$120,085 of bonds outstanding.

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Changes in Fiduciary Net Position

Years ended June 30, 2023 and 2022

(Dollars in thousands)

	<u>2023</u>	<u>2022</u>
	Pension (and Other Employee Benefit) Trust Funds	Pension (and Other Employee Benefit) Trust Funds
Additions		
Contributions:		
Employer	\$ 22,616	\$ 20,734
Plan members	10,551	9,892
Total contributions	<u>33,167</u>	<u>30,626</u>
Investment income:		
Interest and dividends	9,096	14,672
Net realized and unrealized gains (losses)	(87,701)	77,804
Less: investment fees	<u>(6,373)</u>	<u>(5,966)</u>
Net investment income (loss)	<u>(84,978)</u>	<u>86,510</u>
Reimbursements and transfers from other systems	<u>3,224</u>	<u>1,994</u>
Total additions	<u>(48,587)</u>	<u>119,130</u>
Deductions		
Benefits paid to participants or beneficiaries	40,726	35,855
Reimbursements and transfers to other systems	1,086	487
Administrative expenses	<u>585</u>	<u>326</u>
Total deductions	<u>42,397</u>	<u>36,668</u>
Change in fiduciary net position	(90,984)	82,462
Total fiduciary net position - beginning of year	<u>792,602</u>	<u>710,140</u>
Total fiduciary net position - end of year	<u>\$ 701,618</u>	<u>\$ 792,602</u>

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(1) Organization

The Massachusetts Water Resources Authority (the Authority) was established in January 1985 pursuant to Chapter 372 (the Enabling Act) of the Act of 1984 of the Commonwealth of Massachusetts (the Commonwealth). The Authority, a successor agency to certain functions of the Metropolitan District Commission (the MDC) (which became part of the Department of Conservation and Recreation (the DCR) in July 2003), is a public instrumentality and, effective July 1, 1985, provides water supply services and sewage collection, treatment, and disposal services to areas of the Commonwealth.

The Authority is governed by an 11-member board of directors (the Board) chaired by the Secretary of Energy and Environmental Affairs for the Commonwealth. The Secretary and two other members are appointed by the Governor. Three members of the Board are appointed by the Mayor of Boston and three are appointed by the Authority's Advisory Board. One member is appointed by the Mayor of Quincy and one by the Winthrop Council President.

The Authority has also considered all component units for which it is financially accountable as well as other organizations for which the nature and /or significance of their relationship with the Authority are such that exclusion would cause the Authority's basic financial statements to be misleading or incomplete. As required by GAAP, these basic financial statements present the Authority (primary government) and its component units.

The Authority has included entities as fiduciary fund component units in the reporting entity because of the significance of their operational and financial relationship with the Authority. Component units are entities that are legally separate from the Authority, but are so closely related that they are, in substance, the same as the Authority or entities providing services entirely or almost entirely for the benefit of the Authority.

Fiduciary Fund Component Units

The Massachusetts Water Resources Authority Employees' Retirement System (Pension Trust) was established to provide pension benefits to Authority employees and their beneficiaries. The Pension Trust is governed by a five-member board comprised of the Secretary of the Authority's Board (ex-officio), two members elected by the Pension Trust's participants, one member appointed by the Authority's Board and one member appointed by the Pension Trust's Board members. The Pension Trust is presented using the accrual basis of accounting and is reported in the Pension (and Other Employee Benefit) Trust Funds in the fiduciary funds financial statement. The Pension Trust's year end is December 31st.

The Massachusetts Water Resources Authority Irrevocable OPEB Trust (OPEB Trust) is a single-employer other post-employment benefits (OPEB) plan, for the purpose of accumulating and investing assets to fund certain post-retirement medical and life insurance for retirees of the Authority. The Board of Trustees is composed of five members including the following Authority employees: Executive Director, Director of Finance, Treasurer, Budget Director and Director of Human Resources. The OPEB Trust is presented using the accrual basis of accounting and is reported in the Pension (and Other Employee Benefit) Trust Funds in the fiduciary funds financial statement. The OPEB Trust's year end is June 30th.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

Complete financial statements for the Trusts can be obtained from the Authority's administrative offices at 33 Tafts Avenue, Boston, MA 02129.

(2) Summary of Significant Accounting Policies

The accounting policies of the Authority conform to U.S. generally accepted accounting principles as applicable to government enterprises. The following is a summary of the Authority's significant accounting policies:

(a) Basis of Presentation

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. The Authority's 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 Authority distinguishes operating revenues and expenses from non-operating 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 non-operating revenues and expenses, with the exception of regulatory provisions as discussed below. All operating revenues are pledged for repayment of outstanding debt service.

In addition, the Authority 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 the Authority'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. The effects of the Authority's accounting policies are discussed further in Note 3.

In fiscal year 2022, the Authority implemented GASB Statement No. 87, *Leases*. This standard requires the recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and as inflows of resources or outflows of resources recognized based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this standard, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources.

The Authority adopted the requirements of the guidance effective July 1, 2021 and has applied the provisions of this standard to the beginning of the earliest comparative period presented.

In fiscal year 2023, the Authority implemented GASB Statement No. 96, *Subscription-Based Information Technology Arrangements*. This statement did not have an impact on the Authority.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(b) Capital Assets

On July 1, 1985, ownership of the MDC’s sewer and waterworks personal property was transferred to the Authority. Pursuant to the Enabling Act, ownership of the real property of the MDC sewer and waterworks systems was not transferred from the Commonwealth to the Authority; however, the Authority has the right to use, improve, maintain, and manage that property. In addition, ownership of the real and personal property of the watershed system remains with the Commonwealth; however, the Authority has the right to utilize the water therefrom for water supply purposes.

The personal property, together with the rights to the real property and watershed system, was recorded at its estimated fair value of \$2,331,465 (including certain construction projects which were in progress as of July 1, 1985), based upon an appraisal performed by valuation specialists. Property, plant, and equipment acquired or constructed since July 1, 1985, is stated at acquisition cost, and includes the expenditure of capital grants in aid of construction.

Betterments and major renewals are capitalized and included in capital asset accounts, while expenditures for maintenance and repairs are charged to expense when incurred. The cost of depreciable assets and related accumulated depreciation is eliminated from the accounts when such items are disposed of or otherwise retired.

The Authority’s capitalization threshold is \$100.

(c) Depreciation

The Authority provides for depreciation by use of the straight-line method. Depreciation is intended to distribute the cost of depreciable properties, including those financed by capital grants in aid of construction, over the following estimated average useful lives:

	<u>Years</u>
Plant and Equipment, Water and Sewerage Systems	5–100
Motor Vehicles and Equipment	5
Furniture and Fixtures	7
Leasehold Improvements	3–5

(d) Revenue Recognition

The Authority recognizes revenue as amounts become collectible from its customers for water and sewer services provided. The majority of the Authority’s billings to cities and towns are subject to, in the event of nonpayment, the local aid intercept allowed by the Enabling Act.

(e) Net Position

When both restricted and unrestricted resources are available for use, it is the Authority’s policy to use the restricted resources first, then unrestricted as they are needed.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(f) Cash and Cash Equivalents

Authority:

The Authority's policy is to treat unrestricted investments with a maturity date of three months or less when purchased as cash equivalents for purposes of the statements of cash flows. Restricted cash and cash equivalents are combined with investments on the statements of net position and shown separately on the statements of cash flows as an investing activity.

Pension and OPEB Trust:

Cash and cash equivalents is considered to be cash on hand, demand deposits and short-term investments with an original maturity of three months or less from the date of acquisition.

(g) Payments in Lieu of Taxes

The Enabling Act authorizes and directs the Authority to pay to the DCR (formerly the MDC) Division of Watershed Management, who in turn remits payment to each city or town in which land of the Quabbin watershed and Ware River watershed is located. Each such payment is equal to the amount which the respective city or town would receive in property taxes, based upon the fair value of such land if such land were not tax exempt.

(h) Investments

Authority:

Investments are recorded at fair value, other than certain investments that are recorded at net asset value (NAV). The Authority uses an independent pricing source to determine the fair value of investments at quoted market prices. Changes in fair value are included in non-operating investment income in the Statements of Revenues, Expenses, and Changes in Net Position. Investments that are measured at NAV are the investments in the Massachusetts Municipal Depository Trust (MMDT) which is a 2a7-like external investment pool that is overseen by the Massachusetts State Treasurer and whose fair value of each share is equal to the number of shares; thus NAV is equal to \$1.00 per share.

Pension and OPEB Trusts:

Investments are reported at fair value. Fair values of investments are based on quotations from a national securities exchange, except for the Systems' investment in the Pension Reserves Investment Trust (PRIT), hedge funds, private equity and real estate investments, for which fair values are estimated as detailed below.

External Investment Pool (PRIT)

PRIT is an external investment pool comprised of securities measured at various fair value measurements. The investment pool is managed by the Pension Reserves Investment Management (PRIM) Board and the System's share of the pool is reported at fair value in the System's financial statements. A complete copy of PRIT's separately issued financial statements can be obtained from PRIM Board at 84 State Street, Boston, MA 02109, or by visiting the PRIM Board's website at <http://www.mapension.com/public-records/records-of-interest/>.

Hedge Funds, Private Equity, and Real Estate Investments

The fair values of these types of investments have been determined by third party investment managers using Net Asset Value (NAV) per share (or its equivalent) on the System's ownership interest in the pool or partner's capital.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(i) *Compensated Absences*

Employees of the Authority may accumulate unused sick time of which 30% will be paid in cash upon retirement from the Authority. The liability for vacation leave is based on the amount earned but not used; for sick leave, it is based on a percentage of the amount accumulated at the statement of net position dates. The liability for both amounts is calculated based on the pay or salary rates in effect at the statements of net position dates.

(j) *Pensions*

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the Plan and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the Authority. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

(k) *Postemployment Benefits Other Than Pensions (OPEB)*

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the fiduciary net position of the OPEB Trust and additions to/deductions from the OPEB Trust's fiduciary net position have been determined on the same basis as they are reported by the Authority. For this purpose, the Authority recognizes benefit payments when due and payable in accordance with the benefit terms. Investments are reported at fair value, except for money market investments and participating interest-earning investment contracts that have a maturity at the time of purchase of one year or less, which are reported at cost.

(l) *Use of Estimates*

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenditures during the reporting period. Actual results could differ from those estimates.

(m) *Reclassifications*

Certain reclassifications were made to the fiscal year 2022 financial statements to conform to the fiscal year 2023 presentation.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(3) Deferred Inflows from Regulatory Activities

In accordance with GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, the Authority previously reported regulatory assets and deferred inflows from regulatory activities that result primarily from differences between depreciation on property, plant, and equipment not financed by grants or capital contributions, which is recovered through rates. It was determined in fiscal year 2023 that the accounting for regulatory activity no longer applied to the Authority and was discontinued.

The net balance at June 30, 2023 and 2022 is presented on the statements of net position as follows:

	<u>2023</u>	<u>2022</u>	<u>Current year change</u>
Deferred Inflows from Regulatory Activities	\$ -	\$ (52,124)	\$ 52,124

(4) Deposits and Investments

(1) Authority (Excluding the Pension and OPEB Trusts):

The following represents essential risk information about the Authority's deposits and investments:

(a) *Custodial Credit Risk – Deposits*

The custodial credit risk for deposits and certificates of deposit is the risk that, in the event of a bank failure, the Authority's deposits may not be recovered. Per the Authority's policy, credit risk is minimized by diversifying portfolio of funds and ensuring the amounts held in deposits is adequate to accommodate the reasonable cash needs of the Authority.

The bank deposits at June 30, 2023 and 2022 were \$71,058 and \$73,634, respectively. Of these amounts, \$70,808 and \$73,384, were exposed to custodial credit risks as uninsured and uncollateralized.

(b) *Investments*

The Authority is authorized by its general bond resolution to invest in obligations of the U.S. Treasury, its agencies and instrumentalities, bonds, or notes of public agencies or municipalities, bank time deposits, guaranteed interest contracts, Massachusetts Municipal Depository Trust (MMDT) accounts, interest rate swap agreements, and repurchase agreements. All investments are held by a third-party in the Authority's name. These investments are recorded at fair value.

(c) *Credit Ratings*

All debt securities purchased, such as FNMA, FHLMC, and FHLB issues have historically had a credit rating of AAA or they have been collateralized to AAA. On August 8, 2011, Standard & Poor's reduced the credit rating for these agencies to AA+. The reduction in credit rating did not affect the Authority's bond covenants or escrow requirements.

The Massachusetts Municipal Depository Trust funds are not rated.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

The general bond resolution limits the Authority to investing in securities that are rated in the three highest rating categories as defined by S&P and Moody's or other rating agencies.

(d) Concentration Risk

At June 30, 2023 and 2022, the Authority had investments with the issuer, Federal Home Loan Bank (FHLB), which totaled 7.6% and 5.9%, respectively, of the total investments.

At June 30, 2023 and 2022, the Authority had investments with the issuer, Federal Farm Credit Banks (FFCB), which totaled 8.4% and 8.3%, respectively, of the total investments.

At June 30, 2023 and 2022, the Authority had investments with the issuer, Federal National Mortgage Association (FNMA), which totaled 8.6% and 9.3%, respectively of total investments.

(e) Interest Rate Risk

The following is a listing of the Authority's fixed income investments and related maturity schedule as of June 30, 2023 and 2022:

June 30, 2023					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 598,626	\$ 598,626	\$ -	\$ -	\$ -
U.S. Agency Obligations	238,201	18,594	67,836	151,771	-
Total	<u>\$ 836,827</u>	<u>\$ 617,220</u>	<u>\$ 67,836</u>	<u>\$ 151,771</u>	<u>\$ -</u>

June 30, 2022					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 549,956	\$ 549,956	\$ -	\$ -	\$ -
U.S. Agency Obligations	218,423	-	49,872	168,551	-
U.S. Treasury Bills	21,956	21,956	-	-	-
Total	<u>\$ 790,335</u>	<u>\$ 571,912</u>	<u>\$ 49,872</u>	<u>\$ 168,551</u>	<u>\$ -</u>

The majority of the Authority's investments are held in short-term money market funds and long-term investments in U.S. agency obligations that are held in the debt service reserve funds where the intent is to hold until maturity.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(f) *Investment Values*

The Authority categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Debt securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. The Authority has no securities classified in Level 3. The investment in MMDT, an external investment pool, is measured at \$1.00 per share – the net asset value determined by the pool.

The Authority has the following recurring fair value measurements as of June 30, 2023 and 2022: U.S. Government agency obligations \$238,201 and \$218,423 (Level 2), respectively, U.S. Treasury Bills \$0 and \$21,956 (Level 2), respectively, and MMDT \$598,626 and \$549,956 (NAV), respectively. There are no withdrawal restrictions or unfunded commitments related to the MMDT investment.

(g) *Restricted Investments by Fund*

The following summarizes restricted investments as of June 30, 2023 and 2022 by various funds and accounts established by the Authority for debt covenants and other purposes:

	<u>2023</u>	<u>2022</u>
Restricted Investments:		
Construction	\$ 145,028	\$ 115,765
Debt Service Reserves	148,384	138,932
Debt Service Principal and Interest	359,426	351,900
Debt Service - Revenue Redemption	21,911	22,588
Operating Reserve	49,692	47,274
Rate Stabilization Reserve	39,314	40,294
Revenue	41,356	38,257
Combined Reserves - Renewal and Replacement Reserve	10,000	10,000
Combined Reserves - Insurance Reserve	10,445	13,806
Insurance Related Escrow Deposits	5,993	7,293
Total Restricted Investments	<u>\$ 831,549</u>	<u>\$ 786,109</u>

No funds were withdrawn from the Operating Reserve, Renewal and Replacement Reserve or Insurance Reserve during the fiscal year. Changes in investment balances reflect changes in fair value.

(2) Pension Trust:

(a) *Deposits – Custodial Credit Risk*

Custodial credit risk for deposits is the risk that, in the event of a bank failure, the Pension Trust's deposits may not be recovered. The Pension Trust's policy for custodial credit risk of deposits is to rely on FDIC insurance. As of December 31, 2022 and 2021, the Pension Trust was not exposed to custodial credit risk. The carrying value of the Pension Trust's deposits totaled \$10 and \$10 at December 31, 2022 and 2021, respectively.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(b) Investment Summary

The Pension Trust's investments at December 31, 2022 and 2021 are presented below. All investments are presented by investment type, with debt securities presented by maturity (using segmented time distribution).

December 31, 2022					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-5	6-10	>10
<u>Debt Securities:</u>					
Money market mutual funds	\$ 14,206	\$ 14,206	\$ -	\$ -	\$ -
Fixed income securities	126,381	94,971	-	10,489	20,921
Total Debt Securities	<u>140,587</u>	<u>\$ 109,177</u>	<u>\$ -</u>	<u>\$ 10,489</u>	<u>\$ 20,921</u>
<u>Other Investments:</u>					
Equity Securities	286,128				
External Investment Pools (PRIT)	34,501				
Hedge Funds	26,675				
Real Estate	70,330				
Private Equity	71,726				
Total Other Investments	<u>489,360</u>				
Total Investments	<u>\$ 629,947</u>				

December 31, 2021					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-5	6-10	>10
<u>Debt Securities:</u>					
Money market mutual funds	\$ 19,159	\$ 19,159	\$ -	\$ -	\$ -
Fixed income securities	163,159	134,587	2,088	8,147	18,337
Total Debt Securities	<u>182,318</u>	<u>\$ 153,746</u>	<u>\$ 2,088</u>	<u>\$ 8,147</u>	<u>\$ 18,337</u>
<u>Other Investments:</u>					
Equity Securities	366,453				
External Investment Pools (PRIT)	33,426				
Hedge Funds	28,071				
Real Estate	59,604				
Private Equity	52,703				
Total Other Investments	<u>540,257</u>				
Total Investments	<u>\$ 722,575</u>				

(c) Investments – Interest Rate Risk of Debt Securities

Interest rate risk for debt securities is the risk that changes in interest rates of debt securities will adversely affect the fair value of an investment. The Pension Trust's policy for interest rate risk is the duration of the portfolio should be consistent with the appropriate indices. Unless otherwise agreed to, the duration of the portfolio must be within 25% of the appropriate benchmark.

(d) Investments – Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty, the Pension Trust will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The Pension Trust's policy for custodial credit risk of investments intends that all investments are either insured and/or registered in the name of the Pension Trust. As of December 31, 2022 and 2021, the Pension Trust was not exposed to custodial credit risk.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(e) Investments – Credit Risk of Debt Securities

Credit risk for debt securities is the risk that an issuer or other counterparty to a debt security will not fulfill its obligations. The Pension Trust’s policies for credit risk of debt securities include the minimum quality rating at the time of purchase cannot be below a rating of CCC. Non-rated securities may comprise 10% of the portfolio, provided that the applicable manager determines that, if such an issue was rated, it would be allowed under the above limitation and that the non-rated issue is deemed to be below BAA (investment grade). Compliance with credit ratings provided by Moody’s, Standard & Poor’s and Fitch is not sufficient for an issue to be deemed an appropriate investment. The managers are responsible for making an independent analysis of the credit-worthiness of securities.

As of December 31, 2022 and 2021, the credit quality ratings of the Pension Trust’s money market mutual funds are unrated by any nationally recognized statistical rating organization. As of December 31, 2022 and 2021, the credit quality ratings of the Pension Trust’s fixed income securities, excluding U.S. Treasury securities of \$25,903 and \$27,328 respectively, are as follows:

Quality Ratings *	Fixed income securities	
	2,022	2,021
A+	\$ -	\$ 781
A	-	734
A-	3,050	2,723
BBB+	2,456	6,778
Unrated	94,971	124,815
Total	\$ 100,477	\$ 135,831

*Per Standard and Poors, a nationally recognized statistical rating organization.

(f) Deposits and Investments – Foreign Currency Risk

Foreign currency risk is the risk that fluctuations in exchange rates will adversely affect the fair value of an investment or a deposit. The Pension Trust does not have a policy regarding foreign currency risk. As of December 31, 2022 and 2021, the Pension Trust had indirect exposure to foreign currency risk for certain equity investments issued by foreign countries in the amount of \$0 and \$131,027, respectively.

(g) Investments – Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Pension Trust’s investment in a single issuer. The Pension Trust’s policy for concentration of credit risk is that not more than 5% of the fair value of the Pension Trust’s portfolio can be invested in the debt obligations of any one issuer, with the exception of securities issued by the U.S. Government, or its agencies, which may be held without limitation. As of December 31, 2022 and 2021, the Pension Trust was not exposed to concentration of credit risk.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

(h) Fair Value Measurements

The Pension Trust categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs. The Pension Trust has the following recurring fair value measurements as of December 31, 2022 and 2021:

December 31, 2022		<u>Fair Value Measurements Using</u>	
<u>Investments by Fair Value Level</u>	<u>Fair Value</u>	<u>Quoted Prices in Active Markets for Identical Assets (Level 1)</u>	<u>Significant Other Observable Inputs (Level 2)</u>
<u>Debt Securities:</u>			
Money market mutual funds	\$ 14,206	\$ 14,206	\$ -
Fixed income securities	31,410	25,903	5,507
Total Debt Securities	<u>45,616</u>	<u>40,109</u>	<u>5,507</u>
Equity Securities	125,418	125,418	-
Total Investments by Fair Value Level	<u>171,034</u>	<u>\$ 165,527</u>	<u>\$ 5,507</u>
<u>Investments measured at Net Asset Value (NAV)</u>			
Pooled Equity Funds	160,710		
Pooled Fixed Income Funds	94,971		
Private Equity	71,726		
Real Estate	70,330		
Hedge Funds	26,675		
Investments measured at NAV	<u>424,412</u>		
<u>Other investments measured at fair value</u>			
External Investment Pool (PRIT)	34,501		
Total Investments	<u>\$ 629,947</u>		

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

December 31, 2021		<u>Fair Value Measurements Using</u>	
<u>Investments by Fair Value Level</u>	<u>Fair Value</u>	<u>Quoted Prices in Active Markets for Identical Assets (Level 1)</u>	<u>Significant Other Observable Inputs (Level 2)</u>
<u>Debt Securities:</u>			
Money market mutual funds	\$ 19,159	\$ 19,159	\$ -
Fixed income securities	38,344	27,328	11,016
Total Debt Securities	<u>57,503</u>	<u>46,487</u>	<u>11,016</u>
Equity Securities	159,254	159,254	-
Total Investments by Fair Value Level	<u>216,757</u>	<u>\$ 205,741</u>	<u>\$ 11,016</u>
<u>Investments measured at Net Asset Value (NAV)</u>			
Pooled Equity Funds	207,199		
Pooled Fixed Income Funds	124,815		
Private Equity	52,703		
Real Estate	59,604		
Hedge Funds	28,071		
Investments measured at NAV	<u>472,392</u>		
<u>Other investments measured at fair value</u>			
External Investment Pool (PRIT)	33,426		
Total Investments	<u>\$ 722,575</u>		

Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Equity securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices.

The valuation method for investments measured at the net asset value (NAV) per share (or its equivalent) is presented on the following table.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2023 and 2022

(Dollars in thousands)

December 31, 2022				
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity (1)	\$ 71,726	28,735	N/A ⁽¹⁾	N/A ⁽¹⁾
Real estate (2)	70,330	3,658	N/A ⁽²⁾	N/A ⁽²⁾
Hedge funds (3)	26,675	-	Quarterly	90-100 days
Pooled Equity Funds (4)	160,710	-	1-30 days	1 - 60 days
Pooled Fixed Income Funds (5)	94,971	115	1-30 days	1 - 15 days
Total Investments Measured at the NAV	\$ 424,412			
December 31, 2021				
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity (1)	\$ 52,703	27,944	N/A ⁽¹⁾	N/A ⁽¹⁾
Real estate (2)	59,604	4,639	N/A ⁽²⁾	N/A ⁽²⁾
Hedge funds (3)	28,071	-	Quarterly	90-100 days
Pooled Equity Funds (4)	207,199	-	1-30 days	1 - 60 days
Pooled Fixed Income Funds (5)	124,815	-	1-30 days	1 - 15 days
Total Investments Measured at the NAV	\$ 472,392			

- (1) Private Equity Funds: This type includes 21 (24 at December 31, 2021) private equity funds that consist primarily of limited partnership interests in corporate finance and venture capital funds. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. The investments can never be redeemed with the funds. Distributions from each of these funds will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds will be liquidated over the next 1 to 10 years.
- (2) Real Estate Funds: This type includes 11 (10 at December 31, 2021) real estate funds that invest primarily in U.S. commercial real estate and value added opportunities. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. There are two investments with approximate values of \$26,800 and \$26,000 at December 31, 2022, and \$25,600 and \$24,500 at December 31, 2021, for which the investments can be redeemed quarterly, with a redemption notice period of 90 days. The remaining investments can never be redeemed with the funds. Distributions from each of these funds will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds will be liquidated over the next 1 to 10 years.
- (3) Hedge Funds: This type includes 3 hedge funds that pursue multiple strategies to diversify risks and reduce volatility. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. There are three investments with approximate values of \$66, \$12,600 and \$14,000 at December 31, 2022 and \$700, \$13,200 and \$14,100 at December 31, 2021. The investments can be redeemed quarterly, with a redemption notice period of 90 days, 90 days, and 100 days, respectively.

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(Dollars in thousands)

- (4) Pooled Equity Funds: This type includes 7 funds with capital pooled from multiple investors in order to achieve mutual return objectives through investments in various types of equity securities. The fair value of pooled equity funds is measured at NAV by multiplying the pool's share price by the number of shares held.
- (5) Pooled Fixed Income Funds: This type includes 4 (5 at December 31, 2021) funds with capital pooled from multiple investors in order to achieve mutual return objectives through investments in fixed income securities. The fair value of pooled fixed income funds is measured at NAV by multiplying the pool's share price by the number of shares held.

(3) OPEB Trust:

(a) Deposits – Custodial Credit Risk

The custodial credit risk for deposits and certificates of deposit is the risk that, in the event of a bank failure, the OPEB Trust's deposits may not be recovered.

The bank deposits at June 30, 2023 and 2022 were \$5,022 and \$4,857, respectively. Of these amounts, \$4,772 and \$4,607, were exposed to custodial credit risks as uninsured and uncollateralized.

(b) Investments Summary

The Trustees have adopted a formal cash and investment policy. All funds will be invested with the Commonwealth of Massachusetts Pension Reserves Investment Trust (PRIT) fund through the State Retiree Benefits Trust Fund.

The investment in the PRIT fund is not subject to custodial or concentration risk and the Trust does not have policies to address such risks. The investment in PRIT is subject to foreign currency risk to the extent exchange rates will adversely affect the fair value of PRIT's international investments. The Trust does not have a policy to address this risk. The PRIT fund is unrated. PRIT does not place any limitations or restrictions on withdrawals.

Investments are recorded at fair value. The Trust categorizes its fair value measurements with the fair value hierarchy established by generally accepted accounting principles. Debt securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. The Trust has no debt securities classified in Level 3.

The OPEB Trust's investment in the PRIT fund, totaling \$67,356 and \$59,072 at June 30, 2023 and 2022, respectively, is classified as Level 2.

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(5) Bond Resolution Reserves

The components of the reserves funded from revenues and required by the general and supplemental bond resolutions at June 30, 2023 and 2022 are as follows:

<u>Reserves</u>	<u>Sewer</u>	<u>Water</u>	<u>Total</u>	
			<u>2023</u>	<u>2022</u>
Renewal and Replacement	\$ 2,544	\$ 1,457	\$ 4,001	\$ 4,001
Insurance	7,000	7,000	14,000	14,000
Operating	31,897	17,798	49,695	47,277
Total	<u>\$ 41,441</u>	<u>\$ 26,255</u>	<u>\$ 67,696</u>	<u>\$ 65,278</u>

A renewal and replacement reserve of \$6,000 was established through grant receipts transferred from the Commonwealth in 1985 and is included in restricted net position at June 30, 2023 and 2022.

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(6) Notes Payable and Long-Term Debt

Long-term debt at June 30, 2023 and 2022 consisted of the following:

	<u>2023</u>	<u>2022</u>
General Revenue Bonds:		
2002 Series J, 5 1/2%, issued December 18, 2002,	\$ -	\$ 22,395
2012 Series A, 5%, issued April 19, 2012	-	3,505
2016 Series B, 4% to 5%, issued May 12, 2016, due 2023 to 2030	9,280	13,180
2017 Series B, 5%, issued May 18, 2017, due 2028 to 2042	53,515	60,470
2018 Series B, 5%, issued May 16, 2018, due 2025 to 2043	86,465	99,705
2019 Series B, 5%, issued May 22, 2019, due 2024 to 2044	115,895	118,765
2019 Series E, 1 9/10% to 3 1/5%, issued November 1, 2019, due 2024 to 2044	50,000	50,000
2020 Series B, 5% issued August 20, 2020, due 2023 to 2045	151,705	154,675
2021 Series B, 5%, issued December 22, 2021, due 2023 to 2041	58,635	60,635
2023 Series B, 5% to 5.25%, issued April 27, 2023, due 2024 to 2048	133,975	-
Total	<u>659,470</u>	<u>583,330</u>
General Revenue Refunding Bonds:		
2007 Series B, 5 1/4%, issued February 1, 2007, due 2023 to 2038	647,950	647,950
2013 Series A, 5%, issued March 27, 2013, due 2023	29,645	50,185
2014 Series F, 5%, issued November 19, 2014, due 2024	4,350	17,370
2016 Series C, 4% to 5%, issued May 12, 2016, due 2023 to 2040	320,140	343,610
2016 Series D, 3% to 5%, issued August 24, 2016, due 2029 to 2042	43,525	48,745
2017 Series C, 4% to 5%, issued May 18, 2017, due 2023 to 2032	166,710	206,380
2018 Series C, 5%, issued May 16, 2018, due 2023 to 2026	13,100	17,500
2019 Series C, 5%, issued May 22, 2019	-	7,630
2019 Series F, 1 7/10% to 3 1/10%, issued November 1, 2019, due 2023 to 2039	423,500	529,750
2021 Series C, 1/2% to 2 9/10%, issued December 22, 2021, due 2023 to 2044	671,575	687,395
2023 Series C, 5%, issued April 27, 2023, due 2026 to 2033	100,340	-
Total	<u>2,420,835</u>	<u>2,556,515</u>

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	<u>2023</u>	<u>2022</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings:		
1999 Series E Sewer, 4 3/4%, issued		
October 6, 1999, due 2023 to 2029	\$ 3,527	\$ 3,967
1999 Series F, 5 3/4% to 6%, issued		
November 3, 1999, due 2023 to 2029	84,410	105,050
2000 Series E Sewer, 5 1/2%, issued		
November 1, 2000, due 2023 to 2030	29,524	32,693
2001 Series D Sewer, 5 3/8% to 5 1/2%, issued		
July 26, 2001, due 2023 to 2029	359	403
2002 Series H Sewer, 5%, issued		
October 31, 2002, due 2023 to 2032	41,165	44,585
2002 Series H Water, 5%, issued		
October 31, 2002	-	2,205
2002 Series I Sewer, 5 1/2%, issued		
October 31, 2002, due 2023 to 2030	1,031	1,142
2003 Series A Water, 5%, issued		
October 31, 2002,	-	102
2003 Series C Sewer, 5% to 5 1/4%, issued		
November 6, 2003, due 2023 to 2033	15,703	16,838
2003 Series C Water, 4 3/4% to 5%, issued		
November 6, 2003, due 2023 to 2023	1,410	2,795
2004 Series C Sewer, 5% to 5 1/4%, issued		
October 26, 2004, due 2023 to 2033	5,309	5,697
2004 Series C Water, 5%, issued		
October 26, 2004	-	57
2004 Series D Sewer, 5%, issued		
November 29, 2004, due 2023 to 2034	29,820	31,715
2004 Series D Water, 5%, issued		
November 29, 2004, due 2023 to 2024	1,925	2,810
2005 Series C Sewer, 5% to 5 1/4%, issued		
November 3, 2005, due 2023 to 2033	2,820	3,160
2005 Series C Water, 5%, issued		
November 3, 2005, due 2023 to 2023	74	146
2005 Series D Sewer, 2 3/10%, issued		
November 16, 2005, due 2023 to 2035	33,188	35,352
2005 Series D Water, 0% to 2%, issued		
November 16, 2005, due 2023 to 2025	2,347	3,120
2005 Series E Sewer, 2%, issued		
November 16, 2005, due 2023 to 2025	71	94

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(Dollars in thousands)

	<u>2023</u>	<u>2022</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings (Continued):		
2005 Series E Water, 2%, issued		
November 16, 2005, due 2023 to 2025	\$ 17	\$ 22
2006 Series C Sewer, 5%, issued		
October 26, 2006, due 2023 to 2034	3,722	4,123
2006 Series D Sewer, 2 3/10%, issued		
December 14, 2006, due 2023 to 2036	32,494	34,432
2006 Series D Water, 0% to 2%, issued		
December 14, 2006, due 2023 to 2026	6,248	7,788
2006 Series E Sewer, 2%, issued		
December 14, 2006, due 2023 to 2026	87	109
2006 Series E Water, 2%, issued		
December 14, 2006, due 2023 to 2026	39	48
2007 Series C Sewer, 2% to 2 3/10%, issued		
November 9, 2007, due 2023 to 2035	1,154	1,347
2007 Series C Water, 2%, issued		
November 9, 2007, due 2023 to 2025	465	618
2007 Series D Sewer, 2 3/10%, issued		
November 9, 2007, due 2023 to 2036	13,325	14,122
2007 Series E Sewer, 2 2/5%, issued		
December 18, 2007, due 2023 to 2037	32,971	34,773
2007 Series E Water, 2%, issued		
December 18, 2007, due 2023 to 2027	5,774	6,861
2008 Series G Sewer, 2%, issued		
December 9, 2008, due 2023 to 2026	1,387	1,731
2008 Series G Water, 2%, issued		
December 9, 2008, due 2023 to 2026	302	375
2009 Series C Sewer, 2% to 2 2/5%, issued		
March 18, 2009, due 2023 to 2038	41,841	44,522
2009 Series C Water, 2%, issued		
March 18, 2009, due 2023 to 2028	10,411	12,028
2009 Series D Sewer, 2% to 2 2/5%, issued		
December 15, 2009, due 2023 to 2037	5,219	5,719
2009 Series D Water, 2%, issued		
December 15, 2009, due 2023 to 2027	398	473
2010 Series D Sewer, 2% to 2 2/5%, issued		
July 8, 2010, due 2023 to 2040	15,768	16,762
2010 Series D Water, 2%, issued		
July 8, 2010, due 2023 to 2030	10,355	11,537
2011 Series A Sewer, 2% to 2 2/5%, issued		
March 15, 2011, due 2023 to 2038	2,835	3,066
2011 Series A Water, 2%, issued		
March 15, 2011, due 2023 to 2028	1,995	2,308
2012 Series C Sewer, 2% to 2 2/5%, issued		
June 6, 2012, due 2023 to 2040	3,763	4,189
2012 Series C Water, 2%, issued		
June 6, 2012, due 2023 to 2030	1,857	2,068

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	<u>2023</u>	<u>2022</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings (Continued):		
2012 Series D Sewer, 2% to 2 2/5%, issued		
June 13, 2012, due 2023 to 2042	\$ 23,854	\$ 26,085
2012 Series D Water, 2%, issued		
June 13, 2012, due 2023 to 2032	4,754	5,176
2013 Series B Sewer, 2% to 2 2/5%, issued		
May 22, 2013, due 2024 to 2043	15,652	17,451
2013 Series B Water, 2%, issued		
May 22, 2013, due 2024 to 2033	4,766	5,189
2014 Series C Sewer, 2% to 2 2/5%, issued		
May 30, 2014, due 2023 to 2042	3,250	3,452
2014 Series C Water, 2%, issued		
May 30, 2014, due 2023 to 2032	3,195	3,505
2015 Series A Sewer, 2% to 2 2/5%, issued		
January 7, 2015, due 2024 to 2045	35,097	36,837
2015 Series A Water, 2%, issued		
January 7, 2015, due 2024 to 2035	10,285	11,029
2015 Series B Sewer, 2% to 2 2/5%, issued		
May 14, 2015, due 2023 to 2043	1,877	2,045
2015 Series B Water, 2%, issued		
May 14, 2015, due 2023 to 2033	1,248	1,370
2016 Series A Sewer, 2% to 2 2/5%, issued		
March 11, 2016, due 2024 to 2046	30,582	31,916
2016 Series A Water, 2%, issued		
March 11, 2016, due 2024 to 2036	9,547	10,177
2017 Series A Sewer, 2%, issued		
April 13, 2017, due 2024 to 2036	6,502	6,896
2017 Series A Water, 2%, issued		
April 13, 2017, due 2024 to 2037	18,456	19,574
2018 Series E Sewer, 2%, issued		
September 12, 2018, due 2023 to 2038	14,480	15,230
2018 Series E Water, 2%, issued		
September 12, 2018, due 2023 to 2038	27,163	28,570
2019 Series D Sewer, 2%, issued		
October 24, 2019, due 2023 to 2039	28,706	30,090
2019 Series D Water, 2%, issued		
October 24, 2019, due 2023 to 2039	17,274	18,107
2021 Series A Sewer, 2%, issued		
May 11, 2021, due 2024 to 2041	23,092	24,131
2021 Series A Water, 2%, issued		
May 11, 2021, due 2024 to 2041	23,222	24,267
2022 Series A Sewer, 2%, issued		
December 14, 2022, due 2024 to 2043	8,986	-
2022 Series A Water, 2%, issued		
December 14, 2022, due 2024 to 2043	9,799	-
2023 Series A Sewer, interim loans, issued		
January 26, 2023	29,197	-
2023 Series A Water, interim loans, issued		
January 26, 2023	9,872	-
	<u>805,966</u>	<u>822,049</u>
Total		

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	<u>2023</u>	<u>2022</u>
General Revenue Bonds (Variable Rates):		
1999 Series B, 0.61% to 4.42%, issued January 29, 1999, due 2023 to 2028	\$ 32,800	\$ 37,500
Total	<u>32,800</u>	<u>37,500</u>
General Revenue Refunding Bonds (Fixed Rates):		
2012 Series G, 1.38%, issued November 15, 2012, due 2023 (Direct Borrowing)	2,265	5,590
Total	<u>2,265</u>	<u>5,590</u>
General Revenue Refunding Bonds (Variable Rates):		
2008 Series A, 0.64% to 4.29%, issued May 29, 2008, due 2023 to 2037	108,860	142,050
2008 Series C, 0.68% to 4.30%, issued May 29, 2008, due 2023 to 2026	34,350	39,330
2008 Series E, 0.65% to 4.38%, issued May 29, 2008, due 2022 to 2037	65,395	94,940
2012 Series E, 1.18% to 4.88%, issued November 15, 2012, due 2023 to 2031 (Direct Borrowing)	50,060	52,685
2014 Series A, 1.09% to 4.79%, issued May 20, 2014, due 2023 to 2025 (Direct Borrowing)	44,365	50,000
2014 Series B, 1.05% to 1.31%, issued May 20, 2014	-	13,130
2018 Series A, 1.19% to 4.62%, issued March 26, 2018, due 2023 to 2031 (Direct Borrowing)	47,530	47,530
2018 Series D, 1.05% to 4.75%, issued May 31, 2018, due 2025 to 2029 (Direct Borrowing)	50,000	50,000
Total	<u>400,560</u>	<u>489,665</u>
Revolving Loan:		
2015 Series C, issued November 1, 2015, due 2045	55,000	73,000
Total	<u>4,376,896</u>	<u>4,567,649</u>
Less:		
Unamortized Bond Premiums and Discounts	244,963	236,167
Current Portion of Long-Term Debt	(297,454)	(288,903)
Borrowings Associated with Derivative Instruments	22,194	25,134
Total	<u>(30,297)</u>	<u>(27,602)</u>
Long-Term Debt, Net	<u>\$ 4,346,599</u>	<u>\$ 4,540,047</u>

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(Dollars in thousands)

Long-term obligations at June 30, 2023 and 2022 consisted of the following:

	2023			2023	Due
	Beginning	Additions	Reductions	Ending	Within
	Balance			Balance	One Year
General Revenue Bonds	\$ 620,830	\$ 133,975	\$ 62,535	\$ 692,270	\$ 13,140
General Revenue Refunding Bonds	2,832,835	100,340	325,125	2,608,050	186,035
Refunding from Direct Borrowings	218,935	-	3,325	215,610	24,721
General Revenue Bonds with the Massachusetts Clean Water Trust					
- Direct Borrowings	822,049	57,854	73,937	805,966	73,558
Borrowings Associated with Derivative Instruments	25,134	-	2,940	22,194	-
Revolving Loan	73,000	72,000	90,000	55,000	-
Total	\$ 4,592,783	\$ 364,169	\$ 557,862	\$ 4,399,090	\$ 297,454
	2022			2022	Due
	Beginning	Additions	Reductions	Ending	Within
	Balance			Balance	One Year
General Revenue Bonds	\$ 725,565	\$ 60,635	\$ 165,370	\$ 620,830	\$ 33,820
General Revenue Refunding Bonds	2,762,060	687,395	616,620	2,832,835	156,430
Refunding from Direct Borrowings	243,052	-	24,117	218,935	24,715
General Revenue Bonds with the Massachusetts Clean Water Trust					
- Direct Borrowings	893,938	-	71,889	822,049	73,938
Borrowings Associated with Derivative Instruments	28,074	-	2,940	25,134	-
Revolving Loan	53,000	20,000	-	73,000	-
Total	\$ 4,705,689	\$ 768,030	\$ 880,936	\$ 4,592,783	\$ 288,903

The Authority is required to establish water and sewer rates and charges at a level sufficient to provide, among other things, primary and subordinated debt service coverage ratios of 120% and 110%, respectively. For the year ended June 30, 2023, the Authority had primary and subordinated debt service coverage ratios of 196% and 126%, respectively.

Under the Authority's General Revenue Bond Resolution, all revenues, together with the investment earnings thereon, except to the extent that such earnings are required to be deposited in the Rebate Fund pursuant to a Supplemental Resolution, are pledged for payment of the Bonds.

The Act of 1984 imposes a limitation of \$600,000 on the total amount of bonds and notes which may be outstanding at any one time. The Authority has requested increases in its debt limit as necessary to allow for issuances of bonds in amounts required to finance the capital program. The state legislature increased the debt limit to \$6,450,000.

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On April 27, 2023, the Authority issued General Revenue Bonds, 2023 Series B for \$133,975 and General Revenue Refunding Bonds, 2023 Series C for \$100,340.

The proceeds from the Series B bonds were used to permanently finance outstanding tax-exempt commercial paper of \$50,000 and 2015C revolving loan of \$90,000. The interest rate on these bonds are 5% and 5.25%.

The proceeds from the Series C bonds were used to refund \$710 of General Revenue Bonds 2016 Series B, \$2,260 of General Revenue Bonds 2017 Series B, \$5,815 of General Revenue Bonds 2018 Series B, \$370 of General Revenue Bonds 2019 Series B, \$8,105 of General Revenue Refunding Bonds 2016 Series C, \$13,905 of General Revenue Refunding Bonds 2017 Series C and \$88,920 of General Revenue Refunding Bonds 2019 Series F.

The interest rate of these bonds are 5%. The cash flow required to make principal and interest payments on the funding bonds is approximately \$19,914 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$11,964.

On December 22, 2021, the Authority issued General Revenue Bonds, 2021 Series B for \$60,635 and General Revenue Refunding Bonds (Federally Taxable), 2021 Series C for \$687,395.

The proceeds from the Series B bonds were used to permanently finance outstanding tax-exempt commercial paper of \$75,000. The interest rate on these bonds are 5%.

The proceeds from the Series C bonds were used to advance refund \$53,885 of General Revenue Bonds 2014 Series D, \$47,590 of General Revenue Bonds 2016 Series B, \$43,830 of General Revenue Refunding Bonds 2013 Series A and \$72,870 of General Revenue Refunding Bonds 2014 Series F, \$317,700 of General Revenue Refunding Bonds 2016 Series C, \$52,190 of General Revenue Refunding Bonds 2016 Series D. The refunded bonds are considered defeased in-substance.

The interest rate of these bonds range from 0.53% to 2.97%. The cash flow required to make principal and interest payments on the funding bonds is approximately \$82,027 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$65,908.

On November 1, 2015, the Authority entered into a revolving credit agreement with a bank. The Authority shall repay the loan at the Commitment Termination Date, December 29, 2023. The revolving loan automatically converts into a term loan if the Authority does not extend or refund the agreement by this date. Interest is payable at the Securities Industry and Financial Markets Association (SIFMA) index rate, beginning January 19, 2021 and, prior to this date, at 80% of the 1 month LIBOR rate. These rates were 4.18% and 0.98% at June 30, 2023 and 2022, respectively. Initial drawdown was \$100,000, which was reduced to \$79,000 at June 30, 2016. The balance was further reduced in fiscal year 2018 to \$53,000 using the proceeds from the General Revenue Bonds, 2018 Series B. During fiscal year 2022, the balance was increased to \$73,000. During fiscal year 2023, the balance was increased to \$90,000 before the total balance was paid off in April 2023. In May 2023 an additional \$55,000 was issued.

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Synthetic Fixed Rate Swap Transactions

In connection with several of its bond issues, the Authority has entered into various interest rate swap agreements to reduce the impact of changes in interest rates on its variable rate debt. Under these agreements, the Authority pays a fixed interest rate (ranging from 4.0% to 6.9%) and receives interest from the swap counterparties at a variable rate (either SIFMA rate or a percentage of LIBOR). The SIFMA rate is based on the seven-day high-grade market index of tax-exempt variable rate demand obligations.

Item	Objective	Effective Date	Current Notional Amount	Termination Date	Fixed Payable Swap Rate	Variable Receivable Swap Rate	Fair Value at June 30,	
							2023	2022
A	Hedge changes in cash flows on the 2008 Series A Bonds	April 4, 2011	\$ 65,050	August 1, 2030	6.585%	67% LIBOR Plus 0.13%	\$ 376	\$ (1,945)
B	Hedge changes in cash flows on the 2008 Series E Bonds	October 28, 2008	65,050	August 1, 2030	6.935	SIFMA	(1,567)	(4,122)
C	Hedge changes in cash flows on the 2008 Series A and 2008 Series E Bonds	August 1, 2030	70,400	August 1, 2037	6.585	67% LIBOR Plus 0.13%	(2,002)	(2,264)
D	Hedge changes in cash flows on the 2008 Series C Bonds	May 29, 2008	21,775	November 1, 2026	3.994	SIFMA	(102)	(734)
E	Hedge changes in cash flows on the 2008 Series C and 2012 Series G Bonds	May 29, 2008	14,520	November 1, 2026	4.033	SIFMA	475	233
Total							\$ (2,820)	\$ (8,832)

All of the above are pay-fixed interest rate swap agreements. Under these interest rate swap agreements, the Authority incurred net interest expense of \$5,982 and \$14,025 in fiscal year 2023 and fiscal year 2022, respectively.

For the swap effective on April 4, 2011, with a current notional amount of \$65,050, the fixed rate paid by the Authority is as follows: 4.120% from execution until August 2013, 5.144% from August 2013 until August 2019, and 6.585% from August 2019 until August 2030.

For the swap execution on October 28, 2008, with a current notional amount of \$65,050, the fixed rate paid by the Authority is as follows: 4.470% from execution until August 2013, 5.494% from August 2013 until August 2019, and 6.935% from August 2019 until August 2030.

The aggregate fair value balance of the derivative instruments at June 30, 2023 and 2022 is \$(2,820) and \$(8,832), respectively, and is reflected on the Authority's statements of net position as a liability for derivative instruments. This liability is offset by deferred outflows from derivative instruments. The original notional amounts of the interest rate swaps totaled \$535,895.

The fair values of the interest rate swaps were estimated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps. The interest rate swaps are classified in Level 2 of the fair value hierarchy, as outlined in Government Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*, as valued using a market approach that considers benchmark interest rates.

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(Dollars in thousands)

Risk Disclosure

Credit Risk - Because all of the Authority's swaps rely upon the performance of the third parties who serve as swap counterparties, the Authority is exposed to credit risk, or the risk that a swap counterparty fails to perform according to its contractual obligations. The appropriate measurement of this risk at the reporting date is the fair value of the swaps, as shown in the columns labeled Fair Value in the tables above. To mitigate credit risk, the Authority maintains strict credit standards for swap counterparties. The Authority monitors swap counterparties' credit ratings by the three rating agencies (Fitch Ratings, Moody's Investors Service, and S&P Global Ratings). Collateral may be obtained from any counterparty that does not maintain a set credit rating. Since all derivatives are in a liability position, there is no amount exposed to credit risk.

The following represents the credit ratings of the counterparties as of June 30, 2023:

<u>Derivative instrument</u>	<u>Counterparty credit rating</u>
Derivative A	A+
Derivative B	Aa2
Derivative C	A+
Derivative D	A+
Derivative E	A1

Basis Risk - The Authority is exposed to basis risk because the floating index the Authority receives on the swaps (SIFMA or 67% of LIBOR) may be different than the basis of the variable rate on the associated bonds. Should this occur, the expected savings may not be realized.

Termination Risk - The Authority or its counterparties may terminate a derivative instrument if the other party fails to perform under the terms of the contract. If, at the time of termination, a derivative is in a liability position, the Authority would be liable to the counterparty for a payment equal to the liability, subject to netting arrangements.

Rollover Risk - The Authority can be exposed to rollover risk on hedging derivative instruments that are hedges of debt that terminate prior to the maturity of the debt. The Authority currently has no rollover risk. When derivative instruments A and B terminate in 2030, those bond series will then be hedged by derivative instrument C.

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Swap Payments and Associated Bonds Outstanding

Bonds outstanding include certain variable rate bonds where the Authority pays a fixed interest rate and receives interest at a variable rate from the counterparty. The table below presents the debt service requirements and related net swap payments for these bonds. As rates vary, variable rate interest payments will vary.

Using rates as of June 30, 2023, debt service requirements of the hedged variable rate bonds and net swap payments, assuming current interest rates remain constant, were as follows:

<u>Fiscal Year Ending June 30:</u>	<u>Variable-rate</u>		<u>Interest Rate</u>	<u>Total</u>
	<u>Principal</u>	<u>Interest</u>	<u>Swaps, Net</u>	
2024	\$ 15,100	\$ 1,208	\$ 5,791	\$ 22,099
2025	16,000	1,086	6,112	23,198
2026	16,600	958	5,316	22,874
2027	40,495	765	4,165	45,425
2028	7,800	2,091	3,068	12,959
2029–2033	55,600	10,288	14,515	80,403
2034–2038	14,800	4,150	7,033	25,983
Total	<u>\$ 166,395</u>	<u>\$ 20,546</u>	<u>\$ 46,000</u>	<u>\$ 232,941</u>

Demand Bonds

Included in variable rate long-term debt of \$433,360 is \$241,405 of subordinated variable rate demand obligations (VRDOs). The bonds were issued on various dates from 1999 through 2008. Subordinated VRDOs are subject to purchase on the demand of the holder at a price equal to principal plus accrued interest. The ability of the Authority to purchase such bonds, if not remarketed, is secured through letters of credit and standby bond purchase agreements with various nationally recognized financial institutions that expire between December 2023 and November 2026. The VRDOs are classified as long-term debt because the liquidity agreement for each series contains term out provisions that, if demand is made to repurchase the bonds, calls for a two to three year amortization to repay the bonds.

In 2014, \$114,755 of 2014 Series A and B General Revenue Refunding Bonds were issued as direct-purchase bonds, to be held by the purchaser for a specific period of time and are not subject to purchase or remarketing at the demand of the holder and therefore do not require a letter of credit or standby bond purchase agreement. The \$44,365 of Series A has been purchased through August 2025. In addition, the 2012 Series E General Revenue Refunding Bonds, totaling \$50,060, has a three year term out provision beginning at the expiration date and the 2018 Series A & D General Revenue Refunding Bonds, totaling \$97,530, have three year term out provisions beginning at the expiration dates.

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Defeased Debt

At June 30, 2023, the following bonds outstanding are considered defeased in-substance:

<u>Description</u>	<u>Redemption date</u>	<u>Redemption price</u>	<u>Outstanding Principal amount</u>
2013 Series A	2023	100	\$ 48,175
2014 Series D	2024	100	62,780
2014 Series F	2023 - 2024	100	113,160
2016 Series B	2025 - 2026	100	51,490
2016 Series C	2023 and 2026	100	348,855
2016 Series D	2024 and 2026	100	60,735
2017 Series B	2023 and 2025-2027	100	10,690
2017 Series C	2023 and 2025-2027	100	32,280
2018 Series B	2024 - 2025 and 2028	100	19,940
2018 Series C	2024 and 2026	100	8,800
2019 Series B	2023 - 2027 and 2029	100	9,105
2019 Series F	2026 -2027 and 2029	100	88,920
2020 Series B	2024 and 2026	100	5,575

The proceeds and available funds were deposited in irrevocable trusts with escrow agents in an amount which will provide for payment of interest due to the redemption date and redemption of the defeased bonds outstanding on such date. The defeased portion of such debt, accrued interest thereon, and related unamortized issuance and discount costs were removed from the statements of net position in an in-substance defeasance transaction.

In June 2023, the Authority used funds on hand to defease \$1,525 of the 2016 Series B, \$4,695 of the 2017 Series B, \$7,425 of the 2018 Series B and \$1,000 of the 2019 Series B General Revenue Bonds outstanding and \$4,350 of the 2016 Series C, \$5,220 of the 2016 Series D and \$4,570 of the 2017 Series C General Revenue Refunding Bonds outstanding.

In October 2022, the Authority used funds on hand to defease \$1,665 of the 2016 Series B, \$1,500 of the 2019 Series B and \$1,750 of the 2020 Series B General Revenue Bonds, \$13,020 of the 2014 Series F, \$4,815 of the 2016 Series C and \$4,400 of the 2018 Series C General Revenue Refunding Bonds outstanding.

In June 2022, the Authority used funds on hand to defease \$15,740 of the 2014 Series F, \$11,135 of the 2016 Series C, \$2,490 of the 2016 Series D and \$1,305 of the 2017 Series C General Revenue Refunding Bonds outstanding.

In September 2021, the Authority used funds on hand to defease \$2,500 of the 2019 Series B General Revenue Bonds and \$8,875 of the 2014 Series F General Revenue Refunding Bonds outstanding.

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At June 30, 2023, outstanding bonds that are redeemable before their scheduled due dates are as follows:

<u>Description</u>	<u>Redemption date</u>	<u>Redemption price</u>	<u>Outstanding Principal amount</u>
2016 Series B	August 2026	100	\$ 4,810
2016 Series C	August 2026	100	284,845
2016 Series D	August 2026	100	43,525
2017 Series B	August 2027	100	53,515
2017 Series C	August 2027	100	100,890
2018 Series B	August 2025	100	12,050
2018 Series B	August 2028	100	71,080
2019 Series B	August 2029	100	69,895
2019 Series E	August 2029	100	10,985
2019 Series E	August 2039	100	12,640
2019 Series E	August 2044	100	14,770
2019 Series F	August 2029	100	54,735
2019 Series F	August 2039	100	88,870
2020 Series B	August 2030	100	118,325
2021 Series B	August 2031	100	21,500
2021 Series C	August 2041	100	312,520
2021 Series C	August 2044	100	11,920
2023 Series B	August 2033	100	76,340

The variable rate General Revenue Bonds are subject to redemption prior to maturity at the option of the Authority in whole or in part, on any interest payment date for bond Series 1999B and on any business day for bond Series 2008A, 2008C, 2008E, 2012G, 2014A, 2018A and 2018D, respectively. Series 2012E is subject to redemption prior to maturity on any interest payment date after November 15, 2014.

During fiscal 2023, the Authority executed interim loan agreements with Massachusetts Clean Water Trust providing for 2023 Series A Sewer and Water loans in the principal amounts of \$29,197 and \$9,872, respectively. All proceeds for these loans were received by June 30, 2023.

During fiscal 2023, the Authority also executed loan agreements with Massachusetts Clean Water Trust providing for 2022 Series A Sewer and Water loans in the principal amounts of \$8,986 and \$9,799, respectively. All proceeds for these loans were received by June 30, 2023, except \$1,988, principal for 2022 Series A Water.

Federal and Commonwealth subsidies for purposes of offsetting principal payments aggregating \$14,960 will be recognized as capital grants in aid of construction over the term of the loans.

Interest is payable semiannually on all debt, except on the commercial paper, on which interest is payable upon maturity and the General Revenue Bonds and General Revenue Refunding Bonds with variable interest rates on which interest is payable monthly. The Senior General Revenue Bonds and the Senior General Revenue Refunding Bonds are collateralized equally and ratably by a lien and pledge on substantially all of the Authority's cash and revenues, except the operating fund.

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The subordinated debt series, including the commercial paper interest are collateralized equally and ratably by a subordinated pledge on substantially all of the Authority's revenues and cash and investments, except the operating, senior debt service, and debt service reserve funds. Premiums, discounts, issuance costs, and the excess of reacquisition price over the carrying amount of the defeased debt are being amortized over the lives of the respective issues.

The amounts of long-term debt, principal, and interest payable in future fiscal years are as follows:

<u>Year Ending June 30:</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2024	\$ 297,454	\$ 154,119	\$ 451,573
2025	283,334	145,536	428,870
2026	286,469	135,092	421,561
2027	281,150	123,364	404,514
2028	291,251	112,596	403,847
2029–2033	1,256,067	413,161	1,669,228
2034–2038	906,346	216,189	1,122,535
2039–2043	578,098	64,047	642,145
2044–2048	187,692	9,409	197,101
2049	9,035	237	9,272
Total	<u>\$ 4,376,896</u>	<u>\$ 1,373,750</u>	<u>\$ 5,750,646</u>

At June 30, 2023, the Authority had no commercial paper notes outstanding.

Commercial paper activity during fiscal years 2023 and 2022 consisted of the following:

	<u>2023</u>			<u>2023</u>
	<u>Beginning</u>	<u>Additions</u>	<u>Reductions</u>	<u>Ending</u>
	<u>balance</u>			<u>balance</u>
1.28% Commercial Paper	\$ -	\$ 50,000	\$ 50,000	\$ -
Total	\$ -	\$ 50,000	\$ 50,000	\$ -
	<u>2022</u>			<u>2022</u>
	<u>Beginning</u>	<u>Additions</u>	<u>Reductions</u>	<u>Ending</u>
	<u>balance</u>			<u>balance</u>
1.14% Commercial Paper	\$ 75,000	\$ -	\$ 75,000	\$ -
Total	\$ 75,000	\$ -	\$ 75,000	\$ -

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(7) Intergovernmental Loans

The Authority has entered into various interest-free loan agreements with certain member communities. Under these agreements, the Authority loaned these communities \$54,560 and \$69,689 in fiscal years 2023 and 2022, respectively, to be received in five or ten equal annual installments.

The long-term portion of these loans at June 30, 2023 and 2022 is \$192,994 and \$191,219, respectively, and is included in other assets. The loans due within one year total \$38,157 and \$37,581 at June 30, 2023 and 2022, respectively. This program is designed to assist member communities with sewer and water systems rehabilitation.

(8) Capital Assets

Capital assets at June 30, 2023 and 2022 consisted of the following:

	<u>2022</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2023</u>
Capital assets not being depreciated:				
Land	\$ 30,058	\$ 2	\$ -	\$ 30,060
Construction in progress	172,476	152,097	(26,038)	298,535
Total capital assets not being depreciated	<u>202,534</u>	<u>152,099</u>	<u>(26,038)</u>	<u>328,595</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	10,098,133	27,765	-	10,125,898
Leased asset - building	37,134	-	(12,095)	25,039
Furniture and fixtures	17,561	-	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	12,560	453	-	13,013
Total capital assets being depreciated	<u>10,167,811</u>	<u>28,218</u>	<u>(12,095)</u>	<u>10,183,934</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	4,750,217	202,952	-	4,953,169
Leased asset - building	24,757	2,101	(20,554)	6,304
Furniture and fixtures	17,531	6	-	17,537
Leasehold improvements	2,192	12	-	2,204
Motor vehicles and equipment	6,566	847	-	7,413
Total accumulated depreciation	<u>4,801,263</u>	<u>205,918</u>	<u>(20,554)</u>	<u>4,986,627</u>
Total capital assets being depreciated, net	<u>5,366,548</u>	<u>(177,700)</u>	<u>8,459</u>	<u>5,197,307</u>
Total capital assets, net	<u>\$ 5,569,082</u>	<u>\$ (25,601)</u>	<u>\$ (17,579)</u>	<u>\$ 5,525,902</u>

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Capital assets at June 30, 2022 and 2021 consisted of the following:

	<u>2021</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2022</u>
Capital assets not being depreciated:				
Land	\$ 30,058	\$ -	\$ -	\$ 30,058
Construction in progress	<u>228,033</u>	<u>101,826</u>	<u>(157,383)</u>	<u>172,476</u>
Total capital assets not being depreciated	<u>258,091</u>	<u>101,826</u>	<u>(157,383)</u>	<u>202,534</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	9,940,906	157,227	-	10,098,133
Leased asset - building	37,134	-	-	37,134
Furniture and fixtures	17,561	-	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	<u>12,404</u>	<u>156</u>	<u>-</u>	<u>12,560</u>
Total capital assets being depreciated	<u>10,010,428</u>	<u>157,383</u>	<u>-</u>	<u>10,167,811</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	4,560,708	189,509	-	4,750,217
Leased asset - building	23,519	1,238	-	24,757
Furniture and fixtures	17,525	6	-	17,531
Leasehold improvements	2,180	12	-	2,192
Motor vehicles and equipment	<u>5,711</u>	<u>855</u>	<u>-</u>	<u>6,566</u>
Total accumulated depreciation	<u>4,609,643</u>	<u>191,620</u>	<u>-</u>	<u>4,801,263</u>
Total capital assets being depreciated, net	<u>5,400,785</u>	<u>(34,237)</u>	<u>-</u>	<u>5,366,548</u>
Total capital assets, net	<u>\$ 5,658,876</u>	<u>\$ 67,589</u>	<u>\$ (157,383)</u>	<u>\$ 5,569,082</u>

Depreciation and amortization for fiscal years 2023 and 2022 was \$230,810 and \$215,079, respectively.

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(9) Lease Liability

The Authority has entered into a 30-year building lease related to the Chelsea maintenance facility. Annual installments range between \$1,538 and \$2,837, plus interest at 7.83%; due dates range from July 2022 through May 2032.

Maturity analysis of future principal and interest payments at June 30, 2023 are as follows:

<u>Fiscal Year Ending June</u>	<u>Interest</u>	<u>Principal</u>	<u>Total</u>
2024	\$ 1,554	\$ 1,663	\$ 3,217
2025	1,419	1,798	3,217
2026	1,273	1,944	3,217
2027	1,115	2,102	3,217
2028	945	2,272	3,217
2029-2032	1,779	10,821	12,600
	<u>\$ 8,085</u>	<u>\$ 20,600</u>	<u>\$ 28,685</u>

(10) Retirement Benefits

(a) Plan Description

The Enabling Act provided for the establishment of the Massachusetts Water Resources Authority Employees' Retirement System (the Plan), a contributory single-employer retirement system that is separate from the State Employees Retirement System. The Plan is a defined benefit pension plan covering those employees not employed by the MDC prior to July 1, 1985. Complete financial statements for the Plan can be obtained from the Authority's administrative offices at 2 Griffin Way, Chelsea, MA 02150.

(b) Benefits Provided

The Plan provides retirement, disability and death benefits. For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 65, this percentage is 2.5%, which is reduced for individuals who retire prior to age 65 to reflect the longer pay out period.

For employees hired on or after April 2, 2012, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 67, this percentage is 2.5%.

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Employees hired prior to April 2, 2012, may elect early retirement after 20 years of service or at any time after attaining age 55 with 10 years of eligible service. Plan members who become permanently and totally disabled may be eligible to receive a disability retirement allowance. The amount of benefits to be received depends on several factors, including the member's age, compensation, veteran status, years of service and whether or not the disability is work-related. In addition, certain death benefits exist for beneficiaries of employees who die in active service.

All MDC personnel who became employees of the Authority on July 1, 1985, and were members of the State Employees Retirement System, retained their membership in that system. The Authority is not liable for retirement allowances paid to or on account of these employees. Funding of the pension liability of the State Employees Retirement System is the obligation of the Commonwealth. Employees covered by this plan become 100% vested after 10 years of service.

(c) *Employees Covered by Benefit Terms*

At December 31, 2022 and 2021 (the date of the Plan's latest actuarial valuation), the following employees were covered by the benefit terms:

	<u>2022</u>	<u>2021</u>
Retired Participants and Beneficiaries Receiving Benefits	797	763
Inactive Participants Entitled to a Return of their Employee Contributions	113	104
Inactive Participants with a Vested Right to a Deferred or Immediate Benefit	38	39
Active Participants	<u>1,045</u>	<u>1,044</u>
Total	<u><u>1,993</u></u>	<u><u>1,950</u></u>

(d) *Contributions*

Contributions made by employees are based upon a percentage of employee base pay (5% for employees hired before December 31, 1974, 7% for employees hired between January 1, 1975 and December 31, 1983, 8% for employees hired between December 31, 1983, and June 30, 1996, and 9% for employees hired after July 1, 1996). Additionally, certain employees earning in excess of \$30 contribute an extra 2% of their salary effective January 1, 1979. Employees receive full payment of contributions upon withdrawal from the Plan and 50% of interest earned for employees with five to nine years of service or 100% of interest earned for employees with 10 or more years of service.

The Authority's 2023 and 2022 contributions to the plan were based on an amount approved by the Retirement Board and the Authority's board of directors, which is based on an actuarially determined amount. The Authority's Enabling Act requires funding to be made in accordance with the Retirement Board's recommendation. In fiscal year 2023 the Authority made a \$12.6 million required contribution. In fiscal year 2022 the Authority made an \$11.2 million required contribution.

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(e) Net Pension Liability (Pension Trust Reporting)

Investment Policy:

Deposits and investments made by the Pension Trust are governed by Chapter 32 of the MGL. The Pension Trust has the ability to invest in equity securities, corporate bonds, annuities and other specified investments in accordance with state laws and regulations.

The Retirement Board has the authority for establishing and amending investment policy decisions. Based on the investment objectives and constraints of the Pension Trust, and based on an annual review of the asset allocation and asset classes, the Retirement Board will specify a long-term target allocation for each class of permissible assets. These targets will be expressed as a percentage of the total portfolio, and will have ranges surrounding them, allowing for the portfolio to maintain policy through market fluctuations.

The long-term target allocations are intended as strategic goals. Thus, it is permissible for the overall Pension Trust's asset allocation to deviate from the long-term target, as would likely occur during manager transitions, asset class restructurings, and other temporary changes in the Pension Trust. Surplus cash flows are utilized to maintain the asset management structure. Should these cash flows not be sufficient to reallocate the plan according to policy, the transfer of assets may occur between managers. At least annually, the Retirement Board reevaluates the portfolio weightings by asset class and adjustments are made accordingly. The following identifies the asset allocation policy as of December 31, 2022 and 2021:

<u>Asset Class</u>	<u>December 31, 2022</u>	<u>December 31, 2021</u>
	<u>Target Allocation</u>	<u>Target Allocation</u>
Domestic Equity	31%	31%
International Equity	19	19
Real Estate	12	10
Private Equity	12	10
Hedge Funds	6	6
Fixed Income	20	24
Total	<u>100%</u>	<u>100%</u>

Rates of Return:

For the years ended December 31, 2022 and 2021, the annual money-weighted rate of return on investments, net of investment expense, was (12.30%) and 16.70%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

The components of the net pension liability of the Pension Trust at December 31, 2022 and 2021, were as follows:

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	<u>2022</u>	<u>2021</u>
Total Pension Liability	\$ 782,214	\$ 748,702
Plan Fiduciary Net Position	<u>629,240</u>	<u>728,673</u>
Net Pension Liability	<u>\$ 152,974</u>	<u>\$ 20,029</u>
Plan's Fiduciary Net Position as Percentage of the Total Pension Liability	80.44%	97.32%

Actuarial assumptions: The total pension liability was determined by actuarial valuations as of January 1, 2023 and January 1, 2022, and update procedures were used to roll back the total pension liability to the December 31, 2022 and 2021 measurement dates. The following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified

Inflation	3%
Salary Increases	Based on years of service, starting at 5.75% at 0 years of service decreasing to 4% after 9 years of service
Discount Rate	6.90% at December 31, 2022 and 2021, respectively
Cost of Living Adjustments	Adjusted to 3% of the first \$15,000 at December 31, 2022 and 2021 as permitted under Massachusetts Chapter 188 of the Acts of 2010
Mortality Rates (2023):	
Pre-Retirement:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - weighted Mortality Tables projected generationally using Scale MP-2021
Healthy Retiree:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - Weighted Mortality Tables projected generationally using Scale MP-2021
Disabled Retiree:	Pub-2010 General Disabled Retiree Amount - weighted Mortality Tables set forward one year projected generationally using Scale MP-2021
Mortality Rates (2022):	
Pre-Retirement:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - weighted Mortality Tables projected generationally using Scale MP-2021
Healthy Retiree:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - Weighted Mortality Tables projected generationally using Scale MP-2021
Disabled Retiree:	Pub-2010 General Disabled Retiree Amount - weighted Mortality Tables set forward one year projected generationally using Scale MP-2021

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Rates of return on investments: The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Plan's target asset allocation are summarized as follows:

<u>Asset Class</u>	<u>Long-Term Expected Rate of Return (%)</u>	
	<u>December 31, 2022</u>	<u>December 31, 2021</u>
Domestic Equity	6.59	6.11
International Equity	6.87 - 8.30	6.49 - 8.12
Real Estate	3.44	3.72
Private Equity	9.49	9.93
Hedge Funds	3.06	2.63
Fixed Income	1.53 - 3.54	0.38 - 2.48

(f) Discount Rate

The discount rate used to measure the total pension liability was 6.90% for December 31, 2022 and 2021. The projection of cash flows used to determine the discount rate assumed that Plan member contributions will be made at the current contribution rate and that the Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

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(g) Changes in the Net Pension Liability (Employer Reporting)

The Plan's net pension liability was measured as of December 31, 2022 and 2021 for the reporting dates June 30, 2023 and 2022, respectively. The total pension liability was determined by actuarial valuations as of January 1, 2023 and January 1, 2022, respectively, rolled back to the measurement dates.

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a) - (b)
Balances at June 30, 2021	<u>\$ 712,864</u>	<u>\$ 648,376</u>	<u>\$ 64,488</u>
Changes for the Year:			
Service Cost	14,330	-	14,330
Interest	49,159	-	49,159
Change of benefit terms	5,568	-	5,568
Differences Between Expected and actual experience	(4,886)	-	(4,886)
Contributions - employer	-	11,205	(11,205)
Contributions - employee	-	9,892	(9,892)
Net investment income	-	89,019	(89,019)
Benefit payments	(29,494)	(29,494)	-
Administrative expenses	-	(325)	325
Changes of assumptions	1,161	-	1,161
Net changes	<u>35,838</u>	<u>80,297</u>	<u>(44,459)</u>
Balances at June 30, 2022	748,702	728,673	20,029
Changes for the year:			
Service cost	13,949	-	13,949
Interest	51,475	-	51,475
Change of benefit terms	2,649	-	2,649
Differences between expected and actual experience	(1,280)	-	(1,280)
Contributions - employer	-	12,555	(12,555)
Contributions - employee	-	10,551	(10,551)
Net investment loss	-	(88,673)	88,673
Benefit payments	(33,281)	(33,281)	-
Administrative expenses	-	(585)	585
Net changes	<u>33,512</u>	<u>(99,433)</u>	<u>132,945</u>
Balances at June 30, 2023	<u>\$ 782,214</u>	<u>\$ 629,240</u>	<u>\$ 152,974</u>

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(Dollars in thousands)

(h) Sensitivity of the Net Pension Liability (Asset) to Changes in the Discount Rate

The following presents the net pension liability (asset), calculated using the discount rate of 6.90%, as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is 1-percentage-point lower (5.90%) or 1-percentage-point higher (7.90%) than the current rate:

	<u>1% Decrease (5.90%)</u>	<u>Discount (6.90%)</u>	<u>1% Increase (7.90%)</u>
Net pension liability as of June 30, 2023	<u>\$ 245,098</u>	<u>\$ 152,974</u>	<u>\$ 74,869</u>
	<u>1% Decrease (5.90%)</u>	<u>Discount (6.90%)</u>	<u>1% Increase (7.90%)</u>
Net pension liability as of June 30, 2022	<u>\$ 109,511</u>	<u>\$ 20,029</u>	<u>\$ (55,830)</u>

(i) Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

For the years ended June 30, 2023 and 2022, the Authority recognized pension expense of \$33,781 and \$6,700, respectively, and reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	<u>June 30, 2023</u>		<u>June 30, 2022</u>	
	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflow s of Resources</u>
Differences between expected and actual experience	\$ 1,718	\$ 4,061	\$ 2,848	\$ 4,092
Changes of assumptions	16,945	-	27,998	-
Net difference between projected and actual earnings on pension plan investments	<u>61,887</u>	<u>-</u>	<u>-</u>	<u>61,984</u>
Total	<u>\$ 80,550</u>	<u>\$ 4,061</u>	<u>\$ 30,846</u>	<u>\$ 66,076</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

<u>Year Ending June 30:</u>	<u>Amount</u>
2024	\$ 12,946
2025	18,284
2026	17,799
2027	<u>27,460</u>
Total	<u>\$ 76,489</u>

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(11) Other Postemployment Benefits (OPEB)

(a) Plan Description

In addition to providing the pension benefits described, the Authority provides postemployment health care and life insurance benefits for retired employees through the Group Insurance Commission (GIC). The GIC is a quasi-independent state agency that administers an agent multi-employer defined benefit OPEB plan. The benefits, benefit levels, employee contributions and employer contributions are governed by the Authority and can be amended by the Authority. The plan issues a separate financial report that can be obtained by contacting the Massachusetts Water Resources Authority, Finance Division, 33 Tafts Avenue, Boston, MA 02128.

In April 2015, the Authority established the MWRA OPEB Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust was \$72.4 million and \$63.9 million at June 30, 2023 and June 30, 2022, respectively.

(b) Plan Membership

At June 30, 2023 and 2022, plan membership consisted of the following:

	<u>2023</u>	<u>2022</u>
Inactive plan members or beneficiaries currently receiving benefits	1,072	1,034
Inactive plan members entitled to but not yet receiving benefits	37	33
Active plan members	<u>875</u>	<u>877</u>
Total	<u>1,984</u>	<u>1,944</u>

(c) Benefits Provided

The Authority provides medical, prescription drug, mental health/substance abuse and life insurance to retirees and their covered dependents. All active employees who retire from the Authority and meet the eligibility criteria will receive these benefits.

(d) Contributions

Retirees who retired on or before July 1, 1994 contribute 10% of the cost of the health plans, as determined by the GIC. Those who retired after July 1, 1994 contribute 15% of the cost of the health plan and those who retired after October 1, 2009 contribute 20% of the cost of the health plan, as determined by the GIC. The Authority contributes the remainder of the health plan costs on a pay-as-you-go basis.

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(e) Investments

Investment policy. The assets are invested by the Trust with the Commonwealth of Massachusetts Pension Reserves Investment Trust (PRIT) fund. The Trust's Board of Trustees may vote to approve a different investment vehicle, at its discretion. The following was the PRIT fund's asset allocation at June 30, 2023 and 2022:

Asset Class	June 30, 2023	June 30, 2022
	Target Allocation	Target Allocation
Domestic Equity	20%	22%
International Equity	17	16
Fixed Income	23	23
Private Equity	16	15
Real Estate	10	10
Other	14	14
Total	100 %	100 %

Concentrations. No investment in any one organization represented 5% or more of the Trust's investments.

Rate of return. For the year ended June 30, 2023 and 2022, the annual money-weighted rate of return on investments, net of investment expense was 5.78% and -4.06%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actually invested.

(f) Net OPEB Liability (Trust Reporting)

The components of the net OPEB liability at June 30, 2023 and 2022, were as follows:

	2023	2022
Total OPEB Liability	\$ 117,758	\$ 113,757
Plan Fiduciary Net Position	72,378	63,929
Net OPEB Liability	\$ 45,380	\$ 49,828
Plan's Fiduciary Net Position as Percentage of the Total OPEB Liability	61.46%	56.20%

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(Dollars in thousands)

Actuarial assumptions. The total OPEB liability was determined by actuarial valuations as of December 31, 2021 and update procedures were used to roll forward the total OPEB liability to June 30, 2023 and 2022 measurement dates, respectively. The following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Inflation	3.0%
Salary increases	5.75%, decreasing over 9 years to an ultimate level of 4.0%
Discount rate and investment rate of return	6.75%, net of OPEB plan investment expense, including inflation
Healthcare cost trend rates (2023)	Non-Medicare Medical and Prescription Drug: 5.99% for 2022, then 7.06%, then 6.83%, then 6.59%, then 6.36%, then 6% decreasing by 0.25% for 6 years to an ultimate rate of 4.50% Medicare Medical and Prescription Drug: 1.92%, then 4.49%, then 4.57%, then 4.66%, then 4.75%, then an ultimate rate of 4.50%
Healthcare cost trend rates (2022)	Non-Medicare Medical and Prescription Drug: 6.52% for 2021, then 7.06%, then 6.83%, then 6.59%, then 6.36%, then 6% decreasing by 0.25% for 6 years to an ultimate rate of 4.50% Medicare Medical and Prescription Drug: 3%, then 4.49%, then 4.57%, then 4.66%, then 4.75%, then an ultimate rate of 4.50%
Mortality Rates (2023):	Mortality rates were based on the Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Headcount- Weighted Mortality Tables projected generationally using Scale MP-2021 for retirees and Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Tables set forward one year projected generationally using Scale MP-2021 for the disabled.
Mortality Rates (2022):	Mortality rates were based on the Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Headcount- Weighted Mortality Tables projected generationally using Scale MP-2021 for retirees and Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Tables set forward one year projected generationally using Scale MP-2021 for the disabled.

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(Dollars in thousands)

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2023 and 2022 (see discussion of the Trust's investment policy) are summarized in the following table:

Asset Class	Long-Term Expected Rate of Return (%)	
	June 30, 2023	June 30, 2022
Domestic Equity	6.59%	6.11%
International Equity	6.87 - 8.30	6.49 - 8.12
Fixed Income	1.53 - 3.54	0.38 - 2.48
Private Equity	9.49	9.93
Real Estate	3.44	3.72
Other	3.06 - 4.01	2.63 - 3.44

Discount rate. The discount rate used to measure the total OPEB liability was 6.75% for June 30, 2023 and 2022. The projection of cash flows used to determine the discount rate assumed that Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

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(Dollars in thousands)

(g) Changes in the Net OPEB Liability (Employer Reporting)

	Increase (Decrease)		
	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability
	(a)	(b)	(a) - (b)
Balances at June 30, 2021	\$ 136,805	\$ 61,764	\$ 75,041
Changes for the year:			
Service cost	3,771	-	3,771
Interest	9,673	-	9,673
Differences between expected and actual experience	3,613	-	3,613
Contributions - employer	-	9,529	(9,529)
Net investment loss	-	(2,509)	2,509
Benefit payments	(4,855)	(4,855)	-
Changes of assumptions	(35,250)	-	(35,250)
Net changes	(23,048)	2,165	(25,213)
Balances at June 30, 2022	113,757	63,929	49,828
Changes for the year:			
Service cost	2,742	-	2,742
Interest	7,688	-	7,688
Contributions - employer	-	10,061	(10,061)
Net investment income	-	3,694	(3,694)
Benefit payments	(5,306)	(5,306)	-
Changes of assumptions	(1,123)	-	(1,123)
Net changes	4,001	8,449	(4,448)
Balances at June 30, 2023	\$ 117,758	\$ 72,378	\$ 45,380

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Sensitivity of the net OPEB liability to changes in the discount rate. The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (5.75%) or 1-percentage-point higher (7.75%) than the current discount rate:

	<u>1% Decrease (5.75%)</u>	<u>Discount Rate (6.75%)</u>	<u>1% Increase (7.75%)</u>
Net OPEB Liability as of June 30, 2023	<u>\$ 59,703</u>	<u>\$ 45,380</u>	<u>\$ 33,373</u>
	<u>1% Decrease (5.75%)</u>	<u>Discount Rate (6.75%)</u>	<u>1% Increase (7.75%)</u>
Net OPEB Liability as of June 30, 2022	<u>\$ 63,830</u>	<u>\$ 49,828</u>	<u>\$ 38,089</u>

Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates. The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rates:

	<u>1% Decrease (4.99% - 3.5%)</u>	<u>Base Rate (5.99% - 4.5%)</u>	<u>1% Increase (6.99% - 5.5%)</u>
Net OPEB Liability as of June 30, 2023	<u>\$ 30,640</u>	<u>\$ 45,380</u>	<u>\$ 63,435</u>
	<u>1% Decrease (5.52% - 3.5%)</u>	<u>Base Rate (6.52% - 4.5%)</u>	<u>1% Increase (7.52% - 5.5%)</u>
Net OPEB Liability as of June 30, 2022	<u>\$ 36,337</u>	<u>\$ 49,828</u>	<u>\$ 66,313</u>

(h) OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB

For the years ended June 30, 2023 and 2022, the Authority recognized OPEB expense of (\$10,832) and (\$7,798), respectively, and reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

	<u>June 30, 2023</u>		<u>June 30, 2022</u>	
	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>
Differences between expected and actual experience	\$ 2,168	\$ 1,173	\$ 2,890	\$ 4,322
Changes of assumptions	-	30,219	-	43,806
Net difference between projected and actual earnings on OPEB Trust investments	<u>1,765</u>	<u>-</u>	<u>1,333</u>	<u>-</u>
Total	<u>\$ 3,933</u>	<u>\$ 31,392</u>	<u>\$ 4,223</u>	<u>\$ 48,128</u>

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Amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in OPEB expense as follows:

<u>Year Ending June 30:</u>	<u>Amount</u>
2024	\$ (14,921)
2025	(7,473)
2026	(4,997)
2027	(68)
Total	<u>\$ (27,459)</u>

(12) Commitments and Contingencies

(a) General

The Authority's capital improvement program continues to proceed. As part of this program, the Authority has entered into a number of contracts for the design and construction of infrastructure and improvements to its facilities. Commitments under these contracts aggregated approximately \$800,233 at June 30, 2023.

The Authority's operating and construction plans are designed to comply with the Federal District Court's schedule of actions. The Authority has incurred capital expenditures of approximately \$9,077,400 from fiscal years 1986 through 2023, including those projects required to comply with the Federal District Court's schedule. The Authority anticipates spending an additional \$1,824,727 on these projects through fiscal year 2028. These capital expenditures have been forecasted based upon certain preliminary assumptions and estimates, which may change significantly as design and construction of the necessary facilities proceed. Funding is expected to come from various federal and state grants, as available and approved, and from the Authority's debt proceeds. To date, federal appropriations for the Boston Harbor Project have aggregated \$810,000.

(b) Boston Harbor Case

The Authority continues to be a defendant in the federal Boston Harbor Case. The federal action was originally brought in 1985 by the United States on behalf of the United States Environmental Protection Agency (EPA) and by certain citizens' groups for Clean Water Act violations. As part of the Boston Harbor Case, the Authority was required to undertake certain corrective actions to meet wastewater treatment, discharge and combined sewer overflow (CSO) requirements, including the completion of new and improved primary and secondary treatment facilities at Deer Island. Beyond these major improvements to its wastewater treatment capabilities, the Authority also was required to improve water quality by its adoption of a Long Term CSO Control Plan (LTCP) which was comprised of 35 projects, the last three of which were completed on time by the close of calendar year 2015. In March 2016, the federal district court formally received the Authority's 2015 annual CSO project report, officially noting completion of LTCP projects.

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In March 2006, the Authority had reached agreement with the United States and the Massachusetts Department of Environmental Protection (DEP) on the scope and schedule for the remaining CSO projects which was filed with the Court as part of a joint motion to amend the Court Schedule. In April 2006, the Court allowed the joint motion and issued an Order with a schedule. In addition to filing biannual compliance reports, the April 2006 court schedule required the Authority to conduct a post-construction performance assessment to verify whether the levels of CSO control included in the LTCP have been achieved.

The Authority commenced the performance assessment in 2017, with the final performance assessment report originally due in December 2020. At the request of the Authority, with the assent of EPA and DEP, the Court extended the time for the Authority to submit the final report to December 2021.

On December 30, 2021, the Authority filed its Performance Assessment Report and Interim Update (“Final Report”) with the Court. The Final Report documents the substantial reduction in CSO discharge volumes over the last several decades. The Authority also reported that there are certain outfalls where CSO discharge estimates indicated higher CSO activity than the LTCP goals. As of the end of 2021, the LTCP goals for average annual CSO activation and volume were met, or materially met, at 70 of the 86 CSO outfalls that were active at the start of the MWRA CSO program. Of the 16 remaining CSO outfalls that did not meet the LTCP goals, The Authority developed plans to enable six of these CSO outfalls to meet LTCP goals by 2024. With respect to the remaining 10 CSO outfalls, the Authority identified potentially feasible alternatives that may enable four of these outfalls to achieve LTCP volume and activation goals. There are at least six CSO outfalls that remain challenging.

Prior to the filing of the Final Report the Authority had commenced discussions with EPA, DEP and the Conservation Law Foundation (“CLF”) to determine whether an agreement could be reached on a framework and path forward in the case. Ultimately, an agreement was reached between the parties for a three-year extension in the case, to December 2024. The agreement includes the following components for the three years: (i) completion of improvements at six outfalls that are expected to bring them into compliance with their respective LTCP goals by December 2024; and continued focused investigations by the Authority on the remaining 10 outfalls; (ii) filing annual reports by the Authority with the Court, and periodic meetings between the Authority and EPA/DEP, and the Authority and other stakeholders; and (iii) by December 2024, the filing of a supplemental performance assessment report by the Authority. On February 4, 2022, the Authority filed an assented-to motion with the Court seeking its approval of the agreement. The Court adopted the parties’ recommendation and amended the Court schedule to add additional milestones through December 2024.

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The Authority filed its first and second annual reports under the agreement on April 29, 2022, and April 28, 2023, respectively. The next annual report is due in April 2024. The second and most recent annual report explained that as of the end of 2022, the Authority has achieved the overall CSO discharge volume reduction goal of 88% from 1988 levels as the system-wide total discharge volume decreased to 396 MG (95% of which is treated) or eight million gallons (MG) below the LTCP target of 404 MG. Further, the Authority reported that as of the end of 2022, two additional CSO outfalls were meeting LTCP goals, effectively reducing the 16 Outfalls to 14 (the “14 Remaining Outfalls”). For eight of the 14 Remaining Outfalls, projects forecasted to enable these outfalls to meet LTCP goals are in design or construction, with construction expected to be complete by the end of 2024. Finally, the report explained that although investigations continue, six of the 14 Remaining Outfalls are not expected to meet their respective LTCP volume and/or activation goals by December 2024.

Among the 86 CSO outfalls are certain outfalls that discharge to the Lower Charles River/Charles River Basin and Alewife Brook/Upper Mystic River (“Variance Waters”), including the six abovementioned outfalls that are not expected to meet their respective LTCP goals by December 2024. As part of the above referenced March 2006 agreement, DEP agreed to reissue and EPA agreed to approve five consecutive variances of no more than three years duration each, through the year 2020, for the Variance Waters that are consistent with and limited to the requirements in the Authority’s LTCP. Most recently, DEP issued (and EPA approved) new variances for the period of September 1, 2019, through August 31, 2024. The CSO outfalls that discharge to the Variance Waters operate under regulatory variances to the Class B Water Quality Standard. Among other conditions, the variances require the development of an updated CSO control plan. On September 22, 2022, the Authority submitted a request to DEP for a 36-month extension to the schedule for submission of certain deliverables associated with its updated plan. The Authority requested that DEP move forward with a process that would support the extension request and ensure that variances are in place for an appropriate period beyond submission of its final updated control plan (i.e., to at least August 2027). It is expected that the request will be subject to a full public review process.

There has been no imposition of penalties by the Court against the Authority on the merits of the claims originally asserted in the Boston Harbor Case to date. The Court always retains the right to order remedial action and to assess penalties.

(c) *Massachusetts Natural Fertilizer Company, Inc. et al., Notice of Potential Liability Pursuant to M.G.L. c. 21E. § 4A*

On July 17, 2023, the Authority received a notice pursuant to Massachusetts General Laws Chapter 21E, Section 4A (“Notice”). The Notice alleges that there is reason to believe that the Authority is liable under §§4, 4A, 5, and 15 of M.G.L. c. 21E (“Chapter 21E”) to Massachusetts Natural Fertilizer Co., Inc. (“Mass Natural”), Otter Farm, Inc. (“Otter Farm”), and The Newark Group (“Newark”) for their past and future costs and damages incurred for real and personal property damages and response actions to address the release of certain per- and polyfluoroalkyl substances (generally, “PFAS”), in the vicinity of Bean Porridge Hill Road, Westminster, Massachusetts and identified by the Massachusetts Department of Environmental Protection (“MassDEP”) Release Tracking Number 2-21866 (the “Site”).

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According to the notice, the MassDEP determined that there was a release of PFAS in the vicinity of the Site (“Release”) and issued notices of responsibility to, among others, Mass Natural, Otter Farm, and Newark. The Notice asserts that testing of nearby private wells has identified PFAS at levels that exceed the drinking water Maximum Contaminant Level for PFAS and the Applicable Imminent Hazard Levels for PFAS as established by the Massachusetts Contingency Plan. The Notice alleges that the Authority is a source of the Release. The Notice alleges that materials originating at MWRA’s Deer Island facility and processed into biosolids at MWRA’s Fore River Pelletizing Plant by the plant operator, New England Fertilizer Company (“NEFCO”), were delivered to Mass Natural from May 3, 2018, to February 3, 2022, and that the biosolids were determined to contain PFAS.

Mass Natural, Otter Farm, and Newark are seeking reimbursement from the Authority for forty percent of their past and future response costs and any other liability under Chapter 21E and any and all real and personal property damage suffered as a result of the Release of PFAS. Mass Natural, Otter Farm, and Newark also seek indemnity for any and all future claims that may be asserted by third parties with respect to the Release and/or threats of releases of oil or hazardous materials at the Property or that has mitigated off-site. As of the date of the Notice, these entities claim that they had incurred in excess of \$3,574,075 in remediation costs, attorneys’ fees, Licensed Site Professional oversight, and related damages. In addition, they maintain that they are not in a position to provide a firm estimate of the total anticipated remedial costs, but those costs “may be in the range of \$30-50 million” according to the Notice.

The Authority responded to the Notice in accordance with Chapter 21E Section 4A, asserting that the claimants have failed to establish the Authority’s potential liability under any of the three Chapter 21E grounds the Notice purports to assert. Regardless of liability, the Authority also questioned how Mass Natural, Otter Farm, and Newark calculated the forty percent share of response costs they allege are attributable to the Authority. Although the Authority asserted that it is not liable, it indicated in its response that it would participate in good faith in Chapter 21E’s required negotiation process and requested certain information necessary to further inform the process. NEFCO has confirmed that, under its contract with the Authority, it is required to defend and indemnify the Authority against the claims.

(d) Miscellaneous

The Authority is also a defendant in several legal actions and administrative proceedings arising out of its operation, maintenance, and improvement of the water and sewer systems under its care. It is the opinion of management that any judgments or settlements that may result from these actions will not have a materially adverse effect upon the Authority.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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(Dollars in thousands)

(13) Risk Management

The Authority is exposed to various risks of loss. The risk management program involves insurance and self-insurance related to property, general liability (including automobile, marine and employers' liability), excess liability, public officials' liability, workers' compensation, unemployment liability, and employee health care and life insurance.

Buildings, plants, and equipment are insured on an all risk replacement basis to the extent that losses exceed \$2,500 per occurrence, up to an aggregate limit of \$300,000. The Authority maintains insurance coverage for general liability, automobile liability, marine liability, and employers' liability to the extent that losses exceed \$2,500 per occurrence, up to a limit of \$25,000. In addition to the primary liability insurance, the Authority maintains excess liability policies with additional limits of \$75,000. The Authority is self-insured for workers' compensation claims up to \$1,000 per occurrence and maintains excess workers' compensation insurance coverage with a limit of \$25,000 per occurrence. The Authority also maintains public officials' liability insurance with a limit of \$5,000 per occurrence with a \$1,000 self-insured retention. All insurance policies are renewed on an annual basis. The amount of claim settlements has not exceeded insurance coverage in any of the previous three fiscal years.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Employer Contributions – Last Ten Years

Required Supplementary Information – GASB No. 67 and 68

(Unaudited)

(Dollars in Thousands)

Plan, Year Ended December 31, Employer, Year Ended June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Actuarially Determined Contribution Contributions in Relation to the Actuarially Determined Contribution	\$ 12,555	\$ 11,205	\$ 10,000	\$ 7,315	\$ 7,000	\$ 3,277	\$ 3,133	\$ 8,159	\$ 7,808	\$ 5,919
Contribution Deficiency (Excess)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,500)	\$ -	\$ (4,822)	\$ (6,528)
Covered Payroll	104,839	\$ 101,060	\$ 99,988	\$ 97,814	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646	\$ 84,829
Contributions as a Percentage of Covered Payroll	11.98%	11.09%	10.00%	7.48%	7.31%	3.52%	5.16%	9.15%	14.25%	14.67%

Notes to Required Supplementary Information

Valuation Date: Actuarial determined contributions for fiscal year 2023 are determined with the January 1, 2021 actuarial valuation.
 Actuarial Cost Method: Entry age normal
 Amortization Method: Total appropriation increases 12.05% per year.
 Asset Valuation Method: Fair value of assets as reported in the Plan's annual statement less unrecognized return in each of the last five years.
 Unrecognized return is equal to the difference between the actual market value return and the expected fair value return and is recognized over a five-year period, further adjusted, if necessary, to be within 10% of the fair value.

Actuarial Assumptions:
 Investment Rate of Return: 6.90%
 Discount Rate: 6.90%
 Inflation Rate: 3.00%
 Projected Salary Increases: Based on years of service, ranging from 5.75% at 0 years of service decreasing to 4.00% after 9 years of service.
 Cost of Living Adjustments: 3% on first \$15,000

Plan Membership:

Retired Participants and Beneficiaries Receiving Benefits	842
Inactive Participants Entitled to a Return of their Employee Contributions	129
Inactive Participants with a Vested Right to a Deferred or Immediate Benefit	37
Active Participants	1,033
Total	2,041

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Changes in the Net Pension Liability and Related Ratios – Last Ten Years

Required Supplementary Information – GASB No. 67 and 68

(Unaudited)

(Dollars in Thousands)

	Measurement Date									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	
Total Pension Liability:										
Service cost	\$ 13,949	\$ 14,330	\$ 13,338	\$ 12,735	\$ 11,762	\$ 11,308	\$ 11,080	\$ 10,638	\$ 10,529	
Interest	51,475	49,159	46,455	44,062	41,392	38,520	36,917	34,598	33,587	
Differences between expected and actual experience	(1,280)	(4,886)	(263)	3,529	3,250	(146)	(9,143)	-	(8,380)	
Changes of assumptions	-	1,161	25,031	10,507	16,401	7,977	13,298	-	4,921	
Changes of benefit terms	2,649	5,568	-	-	5,027	-	2,050	-	-	
Benefit payments, including refunds of employee contributions	(33,281)	(29,494)	(25,313)	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)	
Net change in total pension liability	33,512	35,838	59,248	46,369	56,404	39,437	38,073	29,846	27,694	
Total pension liability - beginning	748,702	712,864	653,616	607,247	550,843	511,406	473,333	443,487	415,793	
Total pension liability - ending	\$ 782,214	\$ 748,702	\$ 712,864	\$ 653,616	\$ 607,247	\$ 550,843	\$ 511,406	\$ 473,333	\$ 443,487	

Plan Fiduciary Net Position:

Contributions - employer	\$ 12,555	\$ 11,205	\$ 10,000	\$ 7,315	\$ 7,000	\$ 3,277	\$ 4,633	\$ 8,159	\$ 12,630	
Contributions - employee	10,551	9,892	10,188	9,722	9,484	9,091	8,757	8,402	8,245	
Net investment income (loss)	(88,673)	89,019	74,947	79,557	(17,114)	70,517	24,183	(530)	20,484	
Benefit payments, including refunds of employee contributions	(33,281)	(29,494)	(25,313)	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)	
Administrative expenses	(585)	(325)	(403)	(464)	(469)	(447)	(426)	(412)	(408)	
Other - military service fund contribution	-	-	-	-	-	-	-	-	16	

Net change in fiduciary net position

Plan fiduciary net position - beginning	(99,433)	80,297	69,419	71,666	(22,527)	64,216	21,018	229	28,004	
Plan fiduciary net position - ending	728,673	648,376	578,957	507,291	529,818	465,602	444,584	444,355	416,351	

Plan fiduciary net position - ending

Net Pension Liability (Asset) - Ending	\$ 629,240	\$ 728,673	\$ 648,376	\$ 578,957	\$ 507,291	\$ 529,818	\$ 465,602	\$ 444,584	\$ 444,355	
Plan's Fiduciary Net Position as a	\$ 152,974	\$ 20,029	\$ 64,488	\$ 74,659	\$ 99,956	\$ 21,025	\$ 45,804	\$ 28,749	\$ (868)	

Percentage of the Total Pension Liability

Covered Payroll	80.44%	97.32%	90.95%	88.58%	83.54%	96.18%	91.04%	93.93%	100.20%	
Net Pension Liability (Asset) as a Percentage of Covered Payroll	\$ 102,316	\$ 99,689	\$ 102,143	\$ 98,145	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646	
	149.51%	20.09%	63.14%	76.07%	104.32%	22.61%	51.03%	32.24%	(0.98%)	

This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Investment Returns – Last Ten Years

Required Supplementary Information – GASB No. 67

(Unaudited)

	Year ended December 31,									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	
Annual money-weighted rate of return, net of investment expenses	-12.30%	16.70%	12.78%	15.58%	-10.03%	15.02%	5.81%	-0.24%	4.40%	

This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Changes in the Employer's Net OPEB Liability and Related Ratios – Last Ten Years
Required Supplementary Information – GASB No. 74 and 75

(Unaudited)

(Dollars in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Total OPEB Liability - Beginning	\$ 113,757	\$ 136,805	\$ 132,819	\$ 161,064	\$ 150,978	\$ 154,254	\$ 146,143
Service Cost	2,742	3,771	3,739	4,604	4,463	2,820	2,705
Interest	7,688	9,673	9,372	11,424	10,705	10,821	10,253
Differences between expected and actual experience	-	3,613	-	(5,862)	-	(11,860)	-
Change of assumptions	(1,123)	(35,250)	(3,685)	(33,488)	-	-	-
Benefit Payments	(5,306)	(4,855)	(5,440)	(4,923)	(5,082)	(5,057)	(4,847)
Net Change in total OPEB liability	4,001	(23,048)	3,986	(28,245)	10,086	(3,276)	8,111
Total OPEB Liability - Ending	117,758	113,757	136,805	132,819	161,064	150,978	154,254
Plan Fiduciary Net Position							
Plan fiduciary net position - beginning	63,929	61,764	43,729	37,072	29,774	22,782	16,123
Contributions - employer (claims + additional funding)	10,061	9,529	11,506	10,885	10,656	10,093	9,723
Net Investment Income (Loss)	3,694	(2,509)	11,969	695	1,724	1,956	1,783
Benefit Payments	(5,306)	(4,855)	(5,440)	(4,923)	(5,082)	(5,057)	(4,847)
Net Change in plan fiduciary net position	8,449	2,165	18,035	6,657	7,298	6,992	6,659
Plan fiduciary net position - ending	72,378	63,929	61,764	43,729	37,072	29,774	22,782
Net OPEB Liability	\$ 45,380	\$ 49,828	\$ 75,041	\$ 89,090	\$ 123,992	\$ 121,204	\$ 131,472
Plan fiduciary net position as a percentage of the total OPEB liability	61.5%	56.2%	45.1%	32.9%	23.0%	19.7%	14.8%
Covered-employee payroll	\$ 113,764	\$ 111,297	\$ 106,879	\$ 103,778	\$ 98,238	\$ 94,816	\$ 86,475
MWRA's net OPEB liability as a percentage of covered-employee payroll	39.9%	44.8%	70.2%	85.8%	126.2%	127.8%	152.0%

Notes to Schedule

Changes in Assumptions - June 30, 2023 : The trend assumptions were revised to account for known premium increases and changes in GIC plan offerings.

Changes in Assumptions - June 30, 2022 : The generational mortality improvement scale was updated from Scale MP-2019 to Scale MP-2021. The per capita health costs and contributions were updated to reflect current premiums and the costs in the most recent Commonwealth OPEB valuation report. The trend assumptions were revised, per the most recent Commonwealth OPEB valuation report. The discount rate was lowered from 7.00% to 6.75%.

Changes in Plan Provisions - June 30, 2023 : Effective July 1, 2022, Fallon plans are no longer offered by the GIC; Also, effective July 1, 2023, due to the merger of Turfis and Harvard Pilgrim, Tufts plans are no longer offered by GIC. The migration away from these plans have been accounted for through medical trend assumption.

Data is being accumulated annually to present 10 years of the reported information.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Employer Contributions - Last Ten Years

Required Supplementary Information – GASB No. 75

(Unaudited)

(Dollars in Thousands)

	Fiscal year ended June 30,									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Actuarially determined contribution	\$ 5,701	5,772	9,144	8,997	11,812	11,400	10,948	14,996	14,564	15,621
Contributions in relation to the actuarially determined contribution	10,061	9,529	11,506	10,885	10,656	10,093	9,723	9,804	14,852	3,493
Contribution deficiency (excess)	<u>(4,360)</u>	<u>(3,757)</u>	<u>(2,362)</u>	<u>(1,888)</u>	<u>1,156</u>	<u>1,307</u>	<u>1,225</u>	<u>5,192</u>	<u>(288)</u>	<u>12,128</u>
Covered-employee payroll	\$ 113,764	111,297	106,879	103,778	98,238	94,816	86,475			
Contributions as a percentage of covered-employee payroll	8.8%	8.6%	10.8%	10.5%	10.8%	10.6%	11.2%			

Notes to Schedule

Methods and assumptions used to determine contributions rates:

Actuarial cost method	Entry Age Normal
Amortization method	30 years (Closed)
Asset valuation method	Fair value of assets
Inflation	3%
Discount rate	6.75%
Healthcare cost trend rates	Non-Medicare Medical and Prescription Drug: 5.99% for 2022, then 7.06%, then 6.83%, then 6.59%, then 6.36%, then 6% decreasing by 0.25% for 6 years to an ultimate rate of 4.50% Medicare Medical and Prescription Drug: 1.92%, then 4.49%, then 4.57%, then 4.66%, then 4.75%, then an ultimate rate of 4.50%
Mortality	Mortality rates were based on the Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Headcount- Weighted Mortality Tables projected generationally using Scale MP-2021 for retirees and Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Tables set forward one year projected generationally using Scale MP-2021 for the disabled.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY
 Schedules of Investment Returns - Last Ten Years
 Required Supplementary Information – GASB No. 74
 (Unaudited)

	Fiscal year ended June 30,						
	2023	2022	2021	2020	2019	2018	2017
Annual money-weighted rate of return, net of investment expenses	5.78%	-4.06%	27.37%	1.88%	5.80%	8.58%	10.58%

This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY
Accounts Established by the General Revenue Bond Resolution
June 30, 2023
(Comparative totals for June 30, 2022)
(Dollars in thousands)

	<u>Construction</u>	<u>Debt Service</u>	<u>Operating</u>	<u>Rate Stabilization</u>	<u>Revenue</u>	<u>Combined Reserves</u>	<u>Total</u>
Balance – June 30, 2022	\$ 115,765	\$ 513,420	\$ 47,274	\$ 40,294	\$ 38,257	\$ 23,806	\$ 778,816
Proceeds from:							
Revenue Bonds and Loans	177,923	102,500	-	-	-	-	280,423
Cash Received from Customers	-	-	-	-	837,361	-	837,361
Investment Income (Loss)	5,716	7,024	-	-	5,514	(1,768)	16,486
Debt Service Grant	-	1,187	-	-	-	-	1,187
Grant Receipts	-	3,397	-	-	-	-	3,397
Construction Payments	(165,608)	-	-	-	-	-	(165,608)
Lease Payments	(1,538)	(1,678)	-	-	-	-	(3,216)
Debt Service Payment	(505)	(545,812)	-	-	(56,873)	-	(603,190)
Other Commonwealth Payments	-	-	-	-	(26,446)	-	(26,446)
Interfund Transfers	14,117	447,988	2,418	(980)	(461,950)	(1,593)	-
Transfers from (to) Operating Account	(842)	1,695	-	-	(294,507)	-	(293,654)
Balance – June 30, 2023	<u>\$ 145,028</u>	<u>\$ 529,721</u>	<u>\$ 49,692</u>	<u>\$ 39,314</u>	<u>\$ 41,356</u>	<u>\$ 20,445</u>	<u>\$ 825,556</u>

	<u>Sewer</u>	<u>Water</u>	<u>Total</u>	
			<u>2023</u>	<u># 2022</u>
Restricted Investments:				
Construction	\$ 80,772	\$ 64,256	\$ 145,028	\$ 115,765
Debt Service - Debt Service Reserves	85,102	63,282	148,384	138,932
Debt Service - Debt Service P & I	221,490	137,936	359,426	351,900
Debt Service - Revenue Redemption	3,935	17,976	21,911	22,588
Operating Reserve	32,450	17,242	49,692	47,274
Rate Stabilization Reserve	24,554	14,760	39,314	40,295
Revenue	32,718	8,638	41,356	38,256
Combined - Renewal and Replacement Reserve	5,000	5,000	10,000	10,000
Combined - Insurance Reserve	6,122	4,323	10,445	13,806
Total Restricted Investments	<u>\$ 492,143</u>	<u>\$ 333,413</u>	<u>\$ 825,556</u>	<u>\$ 778,816</u>

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2023

(Dollars in thousands)

	Assets	Sewer	Water	Combined Total
Current assets:				
Cash and cash equivalents		\$ 52,820	\$ 26,236	\$ 79,056
Investments		2,609	2,669	5,278
Restricted investments		496,158	335,391	831,549
Intergovernmental loans		7,712	30,445	38,157
Accounts receivable		366	2,957	3,323
Interest receivable		473	336	809
Total current assets		<u>560,138</u>	<u>398,034</u>	<u>958,172</u>
Noncurrent assets:				
Capital assets:				
Capital assets – not being depreciated		146,592	182,003	328,595
Capital assets – being depreciated – net		2,994,671	2,183,901	5,178,572
Lease asset - building		12,740	5,995	18,735
Other assets, net		158,453	182,419	340,872
Total noncurrent assets		<u>3,312,456</u>	<u>2,554,318</u>	<u>5,866,774</u>
Total assets		<u>3,872,594</u>	<u>2,952,352</u>	<u>6,824,946</u>
	Deferred Outflows of Resources			
Deferred outflows from pension		51,740	28,810	80,550
Deferred outflows from OPEB		2,504	1,429	3,933
Deferred outflows from derivative instruments		2,500	320	2,820
Deferred outflows from refunding debt		5,480	2,501	7,981
	Liabilities			
Current liabilities:				
Accounts payable and accrued expenses		32,722	17,686	50,408
Accounts payable for construction		18,280	12,194	30,474
Current portion of long-term debt		182,400	115,054	297,454
Accrued interest on bonds payable		38,038	22,054	60,092
Total current liabilities		<u>271,440</u>	<u>166,988</u>	<u>438,428</u>
Noncurrent liabilities:				
Reserves		41,441	26,255	67,696
Retainage on construction in progress		5,384	5,771	11,155
Long-term debt – less current portion		2,604,188	1,742,411	4,346,599
Lease liability		14,994	5,606	20,600
Net pension liability		96,747	56,227	152,974
Other postemployment benefits		29,524	15,856	45,380
Liability for derivative instruments		2,499	321	2,820
Total noncurrent liabilities		<u>2,794,777</u>	<u>1,852,447</u>	<u>4,647,224</u>
Total liabilities		<u>3,066,217</u>	<u>2,019,435</u>	<u>5,085,652</u>
	Deferred Inflows of Resources			
Deferred inflows from pension		3,247	814	4,061
Deferred inflows from OPEB		20,436	10,956	31,392
Deferred inflows from refunding debt		3,288	4,624	7,912
	Net Position			
Net investment in capital assets		577,323	607,156	1,184,479
Restricted				
Construction		80,772	64,257	145,029
Debt service		164,581	112,138	276,719
Operating		4,488	2,314	6,802
Revenue		32,718	8,638	41,356
Rate Stabilization		24,554	14,760	39,314
Unrestricted		(42,806)	140,320	97,514
Total net position		<u>\$ 841,630</u>	<u>\$ 949,583</u>	<u>\$ 1,791,213</u>
Commitments and contingencies				
See accompanying independent auditors' report				

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2022

(Dollars in thousands)

Assets	Sewer	Water	Combined Total
Current assets:			
Cash and cash equivalents	\$ 50,472	\$ 22,759	\$ 73,231
Investments	1,981	2,245	4,226
Restricted investments	496,219	289,890	786,109
Intergovernmental loans	7,076	30,505	37,581
Accounts receivable	548	1,344	1,892
Interest receivable	463	346	809
Total current assets	<u>556,759</u>	<u>347,089</u>	<u>903,848</u>
Noncurrent assets:			
Capital assets:			
Capital assets – not being depreciated	101,625	100,909	202,534
Capital assets – being depreciated – net	3,124,512	2,229,659	5,354,171
Lease asset - building	8,416	3,961	12,377
Other assets, net	166,598	180,251	346,849
Total noncurrent assets	<u>3,401,151</u>	<u>2,514,780</u>	<u>5,915,931</u>
Total assets	<u>3,957,910</u>	<u>2,861,869</u>	<u>6,819,779</u>
Deferred Outflows of Resources			
Deferred outflows from pension	20,500	10,346	30,846
Deferred outflows from OPEB	2,686	1,537	4,223
Deferred outflows from derivative instruments	7,937	895	8,832
Deferred outflows from refunding debt	5,804	2,663	8,467
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	44,129	2,934	47,063
Accounts payable for construction	14,442	12,867	27,309
Current portion of long-term debt	192,776	96,127	288,903
Accrued interest on bonds payable	42,790	22,607	65,397
Total current liabilities	<u>294,137</u>	<u>134,535</u>	<u>428,672</u>
Noncurrent liabilities:			
Reserves	40,197	25,081	65,278
Retainage on construction in progress	3,666	2,292	5,958
Long-term debt – less current portion	2,778,572	1,761,475	4,540,047
Lease liability	15,916	6,222	22,138
Net pension liability	13,187	6,842	20,029
Other postemployment benefits	32,320	17,508	49,828
Liability for derivative instruments	7,937	895	8,832
Total noncurrent liabilities	<u>2,891,795</u>	<u>1,820,315</u>	<u>4,712,110</u>
Total liabilities	<u>3,185,932</u>	<u>1,954,850</u>	<u>5,140,782</u>
Deferred Inflows of Resources			
Deferred inflows from pension	42,225	23,851	66,076
Deferred inflows from OPEB	30,956	17,172	48,128
Deferred inflows from regulated activities	29,788	22,336	52,124
Net Position			
Net investment in capital assets	490,112	567,512	1,057,624
Restricted			
Construction	76,016	39,748	115,764
Debt service	173,389	90,570	263,959
Operating	3,143	4,959	8,102
Revenue	24,241	14,013	38,254
Rate Stabilization	25,535	14,760	40,295
Unrestricted	<u>(86,500)</u>	<u>127,539</u>	<u>41,039</u>
Total net position	<u>\$ 705,936</u>	<u>\$ 859,101</u>	<u>\$ 1,565,037</u>

Commitments and contingencies

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2023

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 529,818	\$ 302,114	\$ 831,932
Other	2,948	2,075	5,023
Total operating revenues	<u>532,766</u>	<u>304,189</u>	<u>836,955</u>
Operating expenses:			
Operations	82,260	51,117	133,377
Maintenance	21,978	12,340	34,318
Payments in lieu of taxes	-	8,479	8,479
Engineering, general, and administrative	85,414	51,383	136,797
Total operating expenses	<u>189,652</u>	<u>123,319</u>	<u>312,971</u>
Income from operating before depreciation	343,114	180,870	523,984
Depreciation and amortization	<u>166,782</u>	<u>64,028</u>	<u>230,810</u>
Operating Income	<u>176,332</u>	<u>116,842</u>	<u>293,174</u>
Regulatory accounting provisions:			
Change in reserves	(1,245)	(1,173)	(2,418)
Change in regulatory provisions, net	29,788	22,336	52,124
Total regulatory accounting provisions	<u>28,543</u>	<u>21,163</u>	<u>49,706</u>
Nonoperating revenues (expenses):			
Debt service grant	1,072	115	1,187
Investment loss	12,327	6,986	19,313
Interest expense	(87,133)	(56,408)	(143,541)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(71,206)</u>	<u>(48,895)</u>	<u>(120,101)</u>
Net gain before capital grants and contributions	133,669	89,110	222,779
Capital grants and contributions	<u>2,025</u>	<u>1,372</u>	<u>3,397</u>
Increase in net position	135,694	90,482	226,176
Total net position - beginning of year	<u>705,936</u>	<u>859,101</u>	<u>1,565,037</u>
Total net position - end of year	<u>\$ 841,630</u>	<u>\$ 949,583</u>	<u>\$ 1,791,213</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2022

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 517,786	\$ 287,955	\$ 805,741
Other	4,243	1,870	6,113
Total operating revenues	<u>522,029</u>	<u>289,825</u>	<u>811,854</u>
Operating expenses:			
Operations	73,038	53,027	126,065
Maintenance	19,897	8,945	28,842
Payments in lieu of taxes	-	8,469	8,469
Engineering, general, and administrative	74,178	43,738	117,916
Total operating expenses	<u>167,113</u>	<u>114,179</u>	<u>281,292</u>
Income from operating before depreciation	354,916	175,646	530,562
Depreciation and amortization	<u>152,985</u>	<u>62,094</u>	<u>215,079</u>
Operating Income	<u>201,931</u>	<u>113,552</u>	<u>315,483</u>
Regulatory accounting provisions:			
Change in reserves	(581)	(831)	(1,412)
Change in regulatory provisions, net	<u>(151,695)</u>	<u>82,407</u>	<u>(69,288)</u>
Total regulatory accounting provisions	<u>(152,276)</u>	<u>81,576</u>	<u>(70,700)</u>
Nonoperating revenues (expenses):			
Debt service grant	1,077	105	1,182
Investment loss	(13,520)	(9,223)	(22,743)
Interest expense	(102,507)	(47,941)	(150,448)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(112,422)</u>	<u>(56,647)</u>	<u>(169,069)</u>
Net gain (loss) before capital grants and contributions	(62,767)	138,481	75,714
Capital grants and contributions	<u>1,954</u>	<u>1,345</u>	<u>3,299</u>
Increase (Decrease) in net position	(60,813)	139,826	79,013
Total net position - beginning of year	<u>766,749</u>	<u>719,275</u>	<u>1,486,024</u>
Total net position - end of year	<u>\$ 705,936</u>	<u>\$ 859,101</u>	<u>\$ 1,565,037</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Fiduciary Net Position

June 30, 2023

(Dollars in thousands)

	<u>December 31, 2022</u>	<u>June 30, 2023</u>	<u>2023</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Assets			
Cash and cash equivalents (note 4)	\$ 14,216	\$ 5,022	\$ 19,238
Investments: (note 4)			
Fixed income	126,381	-	126,381
Equities	286,128	-	286,128
Real estate	70,330	-	70,330
Private equity	71,726	-	71,726
Hedge funds	26,675	-	26,675
External investment pool	34,501	67,356	101,857
Total investments	<u>615,741</u>	<u>67,356</u>	<u>683,097</u>
Accounts receivable	564	-	564
Total assets	<u>630,521</u>	<u>72,378</u>	<u>702,899</u>
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	187	-	187
Due to primary government	180	-	180
Payables for securities purchased	914	-	914
Total liabilities	<u>1,281</u>	<u>-</u>	<u>1,281</u>
Fiduciary Net Position			
Restricted			
Pensions	629,240	-	629,240
Postemployment benefits other than pensions	-	72,378	72,378
Total fiduciary net position	<u>\$ 629,240</u>	<u>\$ 72,378</u>	<u>\$ 701,618</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Fiduciary Net Position

June 30, 2022

(Dollars in thousands)

	<u>December 31, 2021</u>	<u>June 30, 2022</u>	<u>2022</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Assets			
Cash and cash equivalents (note 4)	\$ 19,169	\$ 4,857	\$ 24,026
Investments: (note 4)			
Fixed income	163,159	-	163,159
Equities	366,453	-	366,453
Real estate	59,604	-	59,604
Private equity	52,703	-	52,703
Hedge funds	28,071	-	28,071
External investment pool	33,426	59,072	92,498
Total investments	<u>703,416</u>	<u>59,072</u>	<u>762,488</u>
Accounts receivable	6,407		6,407
Total assets	<u>728,992</u>	<u>63,929</u>	<u>792,921</u>
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	147	-	147
Due to primary government	-	-	-
Payables for securities purchased	172	-	172
Total liabilities	<u>319</u>	<u>-</u>	<u>319</u>
Fiduciary Net Position			
Restricted			
Pensions	728,673	-	728,673
Postemployment benefits other than pensions	-	63,929	63,929
Total fiduciary net position	<u>\$ 728,673</u>	<u>\$ 63,929</u>	<u>\$ 792,602</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Changes in Fiduciary Net Position

Year ended June 30, 2023

(Dollars in thousands)

	<u>December 31, 2022</u>	<u>June 30, 2023</u>	<u>2023</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Additions			
Contributions:			
Employer	\$ 12,555	\$ 10,061	\$ 22,616
Plan members	10,551	-	10,551
Total contributions	<u>23,106</u>	<u>10,061</u>	<u>33,167</u>
Investment income:			
Interest and dividends	9,012	84	9,096
Net realized and unrealized gains (losses)	(91,626)	3,925	(87,701)
Less: investment fees	<u>(6,058)</u>	<u>(315)</u>	<u>(6,373)</u>
Net investment income (loss)	<u>(88,672)</u>	<u>3,694</u>	<u>(84,978)</u>
Reimbursements and transfers from other systems	3,224	-	3,224
Total additions	<u>(62,342)</u>	<u>13,755</u>	<u>(48,587)</u>
Deductions			
Benefits paid to participants or beneficiaries	35,420	5,306	40,726
Reimbursements and transfers to other systems	1,086	-	1,086
Administrative expenses	585	-	585
Total deductions	<u>37,091</u>	<u>5,306</u>	<u>42,397</u>
Change in fiduciary net position	(99,433)	8,449	(90,984)
Total fiduciary net position - beginning of year	<u>728,673</u>	<u>63,929</u>	<u>792,602</u>
Total fiduciary net position - end of year	<u>\$ 629,240</u>	<u>\$ 72,378</u>	<u>\$ 701,618</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Changes in Fiduciary Net Position

Year ended June 30, 2022

(Dollars in thousands)

	<u>December 31, 2021</u>	<u>June 30, 2022</u>	<u>2022</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Additions			
Contributions:			
Employer	\$ 11,205	\$ 9,529	\$ 20,734
Plan members	9,892	-	9,892
Total contributions	<u>21,097</u>	<u>9,529</u>	<u>30,626</u>
Investment income:			
Interest and dividends	14,657	15	14,672
Net realized and unrealized gains (losses)	80,006	(2,202)	77,804
Less: investment fees	<u>(5,644)</u>	<u>(322)</u>	<u>(5,966)</u>
Net investment income (loss)	<u>89,019</u>	<u>(2,509)</u>	<u>86,510</u>
Reimbursements and transfers from other systems	1,994	-	1,994
Total additions	112,110	7,020	119,130
Deductions			
Benefits paid to participants or beneficiaries	31,000	4,855	35,855
Reimbursements and transfers to other systems	488	-	488
Administrative expenses	325	-	325
Total deductions	<u>31,813</u>	<u>4,855</u>	<u>36,668</u>
Change in fiduciary net position	80,297	2,165	82,462
Total fiduciary net position - beginning of year	<u>648,376</u>	<u>61,764</u>	<u>710,140</u>
Total fiduciary net position - end of year	<u>\$ 728,673</u>	<u>\$ 63,929</u>	<u>\$ 792,602</u>

See accompanying independent auditors' report

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STATISTICAL SECTION



Nut Island Headworks

This part of the Massachusetts Water Resources Authority’s Fiscal Year 2023 Annual Comprehensive Financial Report presents detailed information to provide context to the information in the financial statements, note disclosures, required supplementary information and supplemental schedules.

CONTENTS

Financial Trends (94–97)

These schedules contain trend information to help the reader understand how MWRA’s financial performance and well-being have changed over time.

Revenue Capacity (98–101)

These schedules contain information to help the reader assess MWRA’s primary revenue source and community assessments.

Debt Capacity (102–105)

These schedules present information to help the reader assess the affordability of the MWRA’s current level of outstanding debt and MWRA’s ability to issue additional debt in the future.

Demographic and Economic Information (106–111)

These schedules offer demographic and economic indicators to help the reader understand the environment within which MWRA’s financial activities take place.

Operating Information (112–114)

These schedules contain service and infrastructure data to help the reader understand how the information in MWRA’s financial report relates to the services the MWRA provides and the activities it performs.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Components of Net Position
Last Ten Fiscal Years
(Dollars in thousands)

	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net investment in capital assets	\$ 1,184,479	\$ 1,057,624	\$ 957,356	\$ 894,437
Restricted				
Construction	145,029	115,764	228,037	141,521
Debt Service	276,719	263,959	131,239	186,277
Operating	6,802	8,102	54,144	52,446
Revenue	41,356	38,254	48,146	39,765
Rate Stabilization	39,314	40,295	41,544	-
Unrestricted	97,514	41,039	45,887	211,533
Total net position	<u>\$ 1,791,213</u>	<u>\$ 1,565,037</u>	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>

Source: FY2014–2023 financial statements

Note: Reclassification were made related to current year presentation for fiscal year 2021–2023, however fiscal years 2014-2020 have not been adjusted.

<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>
\$ 827,050	\$ 759,757	\$ 729,903	\$ 679,739	\$ 632,029	\$ 608,232
189,293	105,802	117,813	119,743	72,375	80,109
98,251	173,098	140,344	161,723	171,305	145,160
50,862	48,915	47,544	47,167	48,029	47,508
30,126	29,952	33,372	17,733	38,105	37,616
-	-	-	-	-	-
370,505	487,875	597,321	678,004	749,750	837,790
<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>	<u>\$ 1,666,297</u>	<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY
Changes in Net Position
Last Ten Fiscal Years
(Dollars in thousands)

	2023	2022	2021	2020
Operating revenues:				
Customer services	\$ 831,932	\$ 805,741	\$ 781,399	\$ 773,242
Other	5,023	6,113	4,720	5,084
Total operating revenues	<u>836,955</u>	<u>811,854</u>	<u>786,119</u>	<u>778,326</u>
Operating expenses:				
Operations	133,377	126,065	116,455	113,284
Maintenance	34,318	28,842	30,661	29,737
Payments in lieu of taxes	8,479	8,469	8,368	8,330
Engineering, general, and administrative	136,797	117,916	135,886	142,276
Total operating expenses	<u>312,971</u>	<u>281,292</u>	<u>291,370</u>	<u>293,627</u>
Depreciation and amortization	230,810	215,079	214,478	211,214
Operating income	<u>293,174</u>	<u>315,483</u>	<u>280,271</u>	<u>273,485</u>
Nonoperating items:				
Regulatory accounting provisions	49,706	(70,700)	(164,293)	(165,792)
Net nonoperating expenses	(123,041)	(172,009)	(163,187)	(155,095)
Changes in derivative related accounts	2,940	2,940	2,940	2,940
Total nonoperating items	<u>(70,395)</u>	<u>(239,769)</u>	<u>(324,540)</u>	<u>(317,947)</u>
Capital grants and contributions	3,397	3,299	4,314	4,354
Increase (Decrease) in net position	226,176	79,013	(39,955)	(40,108)
Total net position – beginning of year	1,565,037	1,486,024	1,525,979	1,566,087
Restatement to comply with GASB*	-	-	-	-
Total net position – end of year	<u><u>\$ 1,791,213</u></u>	<u><u>\$ 1,565,037</u></u>	<u><u>\$ 1,486,024</u></u>	<u><u>\$ 1,525,979</u></u>

*2018 - GASB 75

*2015 - GASB 68

Source: FY2014–2023 financial statements

2019	2018	2017	2016	2015	2014
\$ 750,742	\$ 728,281	\$ 705,933	\$ 683,501	\$ 661,305	\$ 639,691
4,594	10,023	10,843	13,472	7,299	8,326
<u>755,336</u>	<u>738,304</u>	<u>716,776</u>	<u>696,973</u>	<u>668,604</u>	<u>648,017</u>
113,878	106,943	106,844	98,972	102,322	100,778
30,651	29,067	30,799	30,978	28,323	29,453
8,230	8,220	8,191	8,129	7,966	7,872
<u>152,351</u>	<u>133,627</u>	<u>140,435</u>	<u>133,959</u>	<u>124,792</u>	<u>135,401</u>
<u>305,110</u>	<u>277,857</u>	<u>286,269</u>	<u>272,038</u>	<u>263,403</u>	<u>273,504</u>
207,127	202,799	201,481	197,128	194,000	193,062
<u>243,099</u>	<u>257,648</u>	<u>229,026</u>	<u>227,807</u>	<u>211,201</u>	<u>181,451</u>
(121,739)	(106,777)	(62,714)	(72,162)	(41,634)	(3,808)
(168,861)	(198,327)	(214,288)	(204,259)	(217,218)	(225,293)
2,940	2,940	2,940	2,940	2,940	2,940
<u>(287,660)</u>	<u>(302,164)</u>	<u>(274,062)</u>	<u>(273,481)</u>	<u>(255,912)</u>	<u>(226,161)</u>
<u>5,249</u>	<u>4,715</u>	<u>7,224</u>	<u>38,190</u>	<u>6,429</u>	<u>5,958</u>
(39,312)	(39,801)	(37,812)	(7,484)	(38,282)	(38,752)
1,605,399	1,666,297	1,704,109	1,711,593	1,756,415	1,795,167
-	(21,097)	-	-	(6,540)	-
<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>	<u>\$ 1,666,297</u>	<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY
Historical Rate Revenue and Percentage Increases
Last Ten Fiscal Years
(Dollars in millions)

	Water		Sewer		Combined	
	Amount	Increase	Amount	Increase	Amount	Increase
2023	\$288.3	3.9%	\$526.3	2.3%	\$814.6	2.8%
2022	277.4	3.5	514.7	2.7	792.1	3.0
2021	268.1	3.6	501.3	-0.2	769.4	1.1
2020	258.7	3.6	502.2	2.7	760.9	3.0
2019	249.8	3.1	489.2	3.1	739.0	3.1
2018	242.4	3.5	474.6	3.0	717.0	3.2
2017	234.3	3.5	460.6	3.3	694.9	3.3
2016	226.4	7.7	446.1	1.4	672.4	3.4
2015	210.2	3.5	440.1	3.4	650.3	3.4
2014	203.2	3.7	425.5	3.4	628.7	3.5

Note: Rate revenue is derived exclusively from member community assessments and does not include other charges and fees.

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MASSACHUSETTS WATER RESOURCES AUTHORITY
Historical Revenues, Expenses and Fund Deposits
Last Ten Fiscal Years
(Dollars in thousands)

	2023	2022	2021	2020
Revenues:				
Rates and Charges	\$ 829,105	\$ 803,047	\$ 778,828	\$ 770,817
Investment Income	25,614	5,435	4,242	12,986
Transfer from Rate Stabilization Fund	980	1,250	1,500	-
Other Income	9,037	9,990	8,579	8,400
Total Revenues	864,736	819,722	793,149	792,203
Operating Expenses	319,458	296,959	298,396	281,880
Capital Lease	3,217	3,217	3,217	3,217
Net Operating Revenues	542,061	519,546	491,536	507,106
Debt Service on Bonds	\$ 313,377	\$ 261,060	\$ 281,064	\$ 241,330
Other Debt Service	159,622	203,439	175,082	225,558
Debt Prepayment	5,500	5,609	3,900	5,000
Amount Available After Operations and Debt Service	\$ 63,562	\$ 49,438	\$ 31,490	\$ 35,218
Fund Deposits:				
Reserve Funds	\$ 2,418	\$ 1,413	\$ 1,815	\$ 2,094
Construction Fund	\$ 22,033	\$ 18,554	\$ 16,745	\$ 17,317
Core Fund	\$ -	\$ -	\$ -	\$ -
Rate Stabilization	\$ -	\$ -	\$ -	\$ -

Note: Schedule prepared in accordance with MWRA General Bond Resolution.
*Permit fees are reflected in Other Income

2019	2018	2017	2016	2015	2014
\$ 748,389	\$ 726,073	\$ 703,688	\$ 681,223	\$ 650,316	\$ 628,721
16,985	12,755	9,758	10,303	9,689	12,130
-	-	-	-	-	3,500
6,947	12,231	13,088	15,750	18,289	19,296
772,321	751,059	726,534	707,276	678,294	663,647
277,104	263,226	258,046	293,682	258,534	257,724
3,217	3,217	3,217	3,217	3,217	3,217
492,000	484,616	465,271	410,377	416,543	402,706
\$ 285,663	\$ 279,790	\$ 286,666	\$ 274,212	\$ 233,079	\$ 228,652
169,017	158,485	139,430	114,481	161,736	160,032
7,100	10,900	10,995	-	-	-
\$ 30,220	\$ 35,441	\$ 28,180	\$ 21,684	\$ 21,728	\$ 14,022
\$ 1,882	\$ 821	\$ (168)	\$ (35)	\$ 483	\$ 169
\$ 16,740	\$ 14,683	\$ 13,059	\$ 11,462	\$ 10,464	\$ 9,516
\$ -	\$ -	\$ -	\$ -	\$ 730	\$ 132
\$ -	\$ 6,532	\$ -	\$ -	\$ -	\$ -

MASSACHUSETTS WATER RESOURCES AUTHORITY
Debt Service Coverage
Last Ten Fiscal Years
(Dollars in thousands)

	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Operating Revenues	\$ 836,955	\$ 811,854	\$ 786,119	\$ 778,326
Interest Income	25,614	5,435	4,242	12,985
Transfers from Rate Stabilization Fund	980	1,250	1,500	-
Total Revenues	<u>\$ 863,549</u>	<u>\$ 818,539</u>	<u>\$ 791,861</u>	<u>\$ 791,311</u>
Operating Expenses	\$ (300,332)	\$ (280,006)	\$ (283,600)	\$ (272,901)
Commonwealth Obligations	26,151	25,963	25,845	22,075
OPEB	(20,893)	(17,327)	(13,495)	(7,012)
Pollution Remediation	4,185	1,787	514	127
Capital Lease	(3,217)	(3,217)	(3,217)	(3,217)
Net Revenues	<u>\$ 569,443</u>	<u>\$ 545,739</u>	<u>\$ 517,908</u>	<u>\$ 530,383</u>
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
Revenues Available for Primary and SRF Primary Coverage (Before Provision for Transfer to Rate Stabilization Fund)	<u>\$ 569,443</u>	<u>\$ 545,739</u>	<u>\$ 517,908</u>	<u>\$ 530,383</u>
Provision for Transfer to Rate Stabilization Fund	\$ -	\$ -	\$ -	\$ -
Revenues Available for Primary and SRF Primary Coverage (After Provision for Transfer to Rate Stabilization Fund)	<u>\$ 569,443</u>	<u>\$ 545,739</u>	<u>\$ 517,908</u>	<u>\$ 530,383</u>
Required Senior Debt Service Fund Deposits	\$ 290,415	\$ 234,363	\$ 255,429	\$ 216,129
Required Subordinated Debt Service Deposits	\$ 160,805	\$ 204,728	\$ 175,082	\$ 225,558
Coverage:				
Before Provision for Transfer to Rate Stabilization Fund:				
Primary	196%	233%	203%	245%
SRF Primary	126%	124%	120%	120%
After Provision for Transfer to Rate Stabilization Fund:				
Primary	196%	233%	203%	245%
SRF Primary	126%	124%	120%	120%
Required CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -

Note: Schedule prepared in accordance with MWRA General Bond Resolution.

	2019	2018	2017	2016	2015	2014
\$	755,336	\$ 738,304	\$ 716,776	\$ 696,973	\$ 668,605	\$ 648,017
	16,985	12,755	9,758	10,303	9,689	12,130
	-	-	-	-	-	3,500
\$	772,321	\$ 751,059	\$ 726,534	\$ 707,276	\$ 678,294	\$ 663,647
\$	(276,631)	\$ (263,394)	\$ (266,415)	\$ (278,887)	\$ (271,329)	\$ (273,500)
	23,412	23,757	23,912	27,470	27,168	26,641
	331	(236)	3,449	11,555	9,401	13,521
	1,078	1,225	4,752	322	3,394	2,261
	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)
\$	517,294	\$ 509,194	\$ 489,015	\$ 464,519	\$ 443,711	\$ 429,353
\$	-	\$ -	\$ -	\$ -	\$ 862	\$ 132
\$	517,294	\$ 509,194	\$ 489,015	\$ 464,519	\$ 442,849	\$ 429,221
\$	-	\$ 6,532	\$ -	\$ -	\$ -	\$ -
\$	517,294	\$ 502,662	\$ 489,015	\$ 464,519	\$ 442,849	\$ 429,221
\$	269,435	\$ 261,383	\$ 262,093	\$ 272,570	\$ 208,500	\$ 203,338
\$	169,017	\$ 158,485	\$ 139,430	\$ 114,481	\$ 161,737	\$ 160,032
	192%	195%	187%	170%	212%	211%
	118%	121%	122%	120%	120%	118%
	192%	192%	187%	170%	212%	211%
	118%	120%	122%	120%	120%	118%
\$	-	\$ -	\$ -	\$ -	\$ 862	\$ 132
\$	-	\$ -	\$ -	\$ -	\$ 862	\$ 132

MASSACHUSETTS WATER RESOURCES AUTHORITY
Long Term Debt by System
Last Ten Fiscal Years
(Dollars in thousands)

	2023		2022		2021		2020	
	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water
General Revenue Bonds:								
1993C Series Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2002J Series Bonds	-	-	21,688	707	67,417	5,788	107,445	10,235
2006A Series Bonds	-	-	-	-	-	-	-	-
2007A Series Bonds	-	-	-	-	-	-	-	-
2009A Series Bonds	-	-	-	-	-	-	-	-
2010A Series Bonds	-	-	-	-	-	-	-	-
2011B Series Bonds	-	-	-	-	2,121	909	2,121	909
2012A Series Bonds	-	-	1,753	1,753	1,753	1,753	1,753	1,753
2014D Series Bonds	-	-	-	-	37,631	17,709	38,780	18,250
2016B Series Bonds	4,640	4,640	6,590	6,590	30,385	30,385	30,385	30,385
2017B Series Bonds	26,758	26,758	30,235	30,235	30,235	30,235	31,408	31,408
2018B Series Bonds	51,879	34,586	59,823	39,882	59,823	39,882	63,843	42,562
2019B Series Bonds	81,127	34,769	83,136	35,630	84,886	36,380	84,886	36,380
2019E Series Bonds	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
2020B Series Bonds	106,194	45,512	108,273	46,853	109,322	46,853	-	-
2021B Series Bonds	17,591	41,045	18,191	42,445	-	-	-	-
2023B Series Bonds	44,212	89,763	-	-	-	-	-	-
General Revenue Refunding Bonds:								
2004B Series Bonds	-	-	-	-	-	-	-	-
2005A Series Bonds	-	-	-	-	-	-	-	-
2005B Series Bonds	-	-	-	-	-	-	-	-
2006B Series Bonds	-	-	-	-	-	-	-	-
2007B Series Bonds	544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672
2009B Series Bonds	-	-	-	-	-	-	-	-
2010B Series Bonds	-	-	-	-	-	-	-	-
2011C Series Bonds	-	-	-	-	-	-	-	-
2012B Series Bonds	-	-	-	-	-	-	-	-
2013A Series Bonds	16,601	13,044	28,104	22,081	52,648	41,367	53,007	41,648
2014E Series Bonds	-	-	-	-	-	-	3,688	527
2014F Series Bonds	1,349	3,002	5,385	11,985	43,014	95,741	43,837	97,573
2016C Series Bonds	163,271	156,869	175,241	168,369	342,947	329,498	344,349	330,846
2016D Series Bonds	28,291	15,234	31,684	17,061	67,226	36,199	67,226	36,199
2017C Series Bonds	75,020	91,691	92,871	113,509	99,054	121,066	106,817	130,554
2018C Series Bonds	9,825	3,275	13,125	4,375	13,125	4,375	16,425	5,475
2019C Series Bonds	-	-	5,494	2,136	13,817	5,373	13,817	5,373
2019F Series Bonds	169,400	254,100	211,900	317,850	214,900	322,350	219,100	328,650
2019G Series Bonds	-	-	-	-	-	-	7,608	15,217
2021C Series Bonds	349,219	322,356	357,445	329,950	-	-	-	-
2023C Series Bonds	43,146	57,194	-	-	-	-	-	-
General Revenue Bonds (variable rates):								
1999B Series Bonds	19,680	13,120	22,500	15,000	25,260	16,840	27,900	18,600
General Revenue Refunding Bonds (fixed rate):								
2012G Series Bonds	2,174	91	5,366	224	8,429	351	15,072	628
General Revenue Refunding Bonds (variable rates):								
2002C Series Bonds	-	-	-	-	-	-	-	-
2008A Series Bonds	95,797	13,063	125,004	17,046	140,932	19,218	170,113	23,197
2008C Series Bonds	32,976	1,374	37,757	1,573	42,355	1,765	52,320	2,180
2008E Series Bonds	60,163	5,232	87,345	7,595	98,569	8,571	122,949	10,691
2008F Series Bonds	-	-	-	-	-	-	-	-
2012E Series Bonds	10,513	39,547	11,064	41,621	11,600	43,637	11,943	44,927
2012F Series Bonds	-	-	-	-	-	-	-	-
2014A Series Bonds	3,993	40,372	4,500	45,500	4,500	45,500	4,500	45,500
2014B Series Bonds	-	-	1,182	11,948	2,835	28,670	3,873	39,162
2018A Series Bonds	9,981	37,549	9,981	37,549	9,981	37,549	9,981	37,549
2018D Series Bonds	4,500	45,500	4,500	45,500	4,500	45,500	4,500	45,500
Revolving Loan:								
2015C Revolving Loan	5,500	49,500	36,500	36,500	26,500	26,500	26,500	26,500
Borrowings Associated with Derivative Instruments:	19,086	3,108	21,615	3,519	24,144	3,930	-	-
General Revenue Bonds with the Massachusetts Clean Water Trust:								
	622,768	183,198	639,725	182,324	693,196	200,742	743,953	208,997
Total	\$2,644,930	\$1,754,160	\$2,827,253	\$1,765,530	\$2,932,383	\$1,773,306	\$2,999,375	\$1,796,045

MASSACHUSETTS WATER RESOURCES AUTHORITY
Schedule of Sewer Flows
Last Ten Fiscal Years
(Million gallons per day)

MWRA Community	2023	2022	2021	2020
Arlington	4.55	4.84	4.22	4.99
Ashland	1.37	1.29	1.14	1.25
Bedford	2.34	2.38	1.97	2.44
Belmont	2.73	2.96	2.62	3.04
Boston (BWSC)	84.64	84.15	80.68	89.04
Braintree	6.32	6.55	5.99	7.33
Brookline	6.27	7.12	6.91	8.00
Burlington	3.53	3.55	3.01	3.77
Cambridge	20.29	19.60	18.18	19.18
Canton	3.11	2.77	2.77	2.90
Chelsea	6.24	5.85	5.57	5.86
Dedham	3.50	3.95	3.40	3.73
Everett	5.28	5.48	4.86	5.56
Framingham	7.96	7.54	6.60	6.35
Hingham Sewer District	1.28	1.27	1.07	1.33
Holbrook	1.14	1.00	0.80	0.85
Lexington	5.43	5.55	4.24	5.27
Malden	7.72	8.21	8.16	8.66
Medford	7.26	7.51	6.70	7.78
Melrose	3.52	3.97	3.65	4.31
Milton	3.95	3.59	2.69	3.17
Natick	3.15	3.12	2.44	2.89
Needham	4.33	4.09	3.28	3.76
Newton	14.77	15.07	12.29	14.35
Norwood	5.88	6.20	5.27	5.57
Quincy	12.80	12.98	11.97	12.94
Randolph	3.92	3.69	3.07	3.49
Reading	2.39	2.53	2.30	2.63
Revere	7.34	6.93	6.11	6.47
Somerville	13.17	9.96	8.79	9.79
Stoneham	3.81	3.78	3.07	3.57
Stoughton	3.14	3.31	2.66	2.81
Wakefield	3.65	3.95	3.41	4.39
Walpole	2.37	2.29	1.98	2.10
Waltham	8.06	8.27	7.78	8.81
Watertown	3.67	3.68	2.91	3.40
Wellesley	3.87	3.75	2.88	3.59
Westwood	1.44	1.64	1.58	1.72
Weymouth	8.34	8.49	7.29	8.40
Wilmington	1.57	1.58	1.37	1.58
Winchester	3.23	2.82	1.78	2.32
Winthrop	2.16	2.32	2.15	2.29
Woburn	7.31	6.80	4.80	6.52

Source: MWRA metering

2019	2018	2017	2016	2015	2014
5.28	4.79	4.64	3.96	4.56	4.15
1.37	1.28	1.36	1.11	1.16	1.20
2.72	2.51	2.46	2.34	2.57	2.42
3.40	2.93	2.69	2.31	2.89	2.56
101.54	89.82	87.04	80.51	87.21	85.18
8.74	7.07	6.26	6.63	7.08	6.39
9.72	8.05	7.72	7.07	8.62	8.89
3.95	3.58	3.38	3.00	3.31	3.12
19.08	17.98	17.83	16.31	17.93	16.15
3.35	3.24	2.79	2.59	2.77	2.98
5.90	5.49	5.12	4.67	5.16	4.76
4.52	3.92	3.41	3.06	3.53	3.44
6.43	5.60	5.12	4.54	4.95	4.85
7.86	7.32	6.87	7.15	7.62	6.76
1.62	1.32	1.25	1.22	1.37	1.25
1.01	0.91	0.85	0.83	0.89	0.86
5.85	5.03	4.59	4.22	4.93	4.47
9.35	8.73	8.45	8.19	9.20	8.13
7.79	7.52	7.17	6.72	8.26	7.09
4.80	4.18	4.29	3.69	4.64	3.86
3.97	3.28	3.04	2.56	3.26	2.93
3.28	2.77	2.76	2.80	2.93	2.95
4.28	3.68	3.52	3.06	3.39	3.29
16.50	14.21	14.73	14.11	15.22	13.29
6.93	6.20	5.41	4.58	5.29	4.97
14.92	13.48	12.58	12.11	13.56	12.96
4.06	3.85	3.58	2.82	3.52	3.41
3.63	2.88	2.89	2.42	2.83	2.65
7.18	6.18	6.14	5.97	6.82	6.13
10.25	10.63	10.27	9.96	10.70	9.30
3.57	3.13	2.68	2.39	3.16	2.70
3.55	3.24	2.75	2.60	3.20	2.67
5.02	4.17	4.09	3.59	4.26	3.50
2.48	2.07	1.99	1.75	1.88	1.89
10.02	9.07	8.39	8.10	9.11	8.06
3.84	3.48	3.36	3.00	3.31	3.14
3.80	3.22	3.15	2.82	3.14	3.05
1.99	1.76	1.78	1.50	1.50	1.28
10.14	8.65	7.93	7.15	7.82	6.90
1.56	1.45	1.40	1.28	1.33	1.20
2.73	2.30	2.23	1.94	2.24	1.99
2.40	2.10	2.14	1.85	1.90	1.84
5.97	6.29	6.48	5.83	6.86	6.97

MASSACHUSETTS WATER RESOURCES AUTHORITY
Schedule of Water Flows
Last Ten Fiscal Years
(Million gallons per day)

MWRA Community	2023	2022	2021	2020
Arlington	3.249	3.509	3.618	3.618
Belmont	1.976	1.826	2.060	1.953
Boston (BWSC)	61.381	60.098	58.451	60.687
Brookline	5.083	4.836	5.059	4.782
Chelsea	3.262	3.263	3.392	3.336
Chicopee	5.485	5.035	5.186	5.188
Clinton	1.495	1.188	1.345	1.297
Everett	3.772	3.725	3.948	3.857
Framingham	5.649	5.656	5.844	5.657
Lexington	5.243	4.948	5.429	5.381
Lynnfield W.D.	0.553	0.513	0.552	0.513
Malden	5.156	5.196	5.246	5.123
Marblehead	1.868	1.723	1.963	1.788
Medford	4.643	4.542	4.588	4.567
Melrose	2.220	2.033	2.213	2.044
Milton	2.450	2.343	2.532	2.305
Nahant	0.356	0.329	0.362	0.326
Newton	8.901	8.312	8.636	8.656
Norwood	2.771	2.680	2.769	2.727
Quincy	8.418	8.213	8.485	8.018
Reading	1.695	1.616	1.776	1.548
Revere	3.801	3.788	3.750	3.500
Saugus	3.084	3.191	3.048	2.932
Somerville	5.919	5.575	5.523	5.653
So. Hadley Fire District #1	1.067	1.029	1.132	1.130
Southborough	1.044	0.874	1.057	0.996
Stoneham	2.190	1.970	2.130	2.066
Swampscott	1.509	1.519	1.592	1.539
Waltham	7.359	6.742	6.809	6.248
Watertown	2.593	2.407	2.618	2.529
Weston	1.709	1.458	1.794	1.590
Wilbraham	1.229	1.094	1.246	1.175
Winthrop	1.142	1.141	1.202	1.273
Burlington (Partial)	1.086	1.041	0.208	-
Cambridge (Partial)	2.775	-	0.053	-
Canton (Partial)	1.674	1.115	1.292	0.892
Dedham-Westwood W.D. (Partial)	0.433	0.338	0.096	0.909
Lynn (LWSC) (Partial)	0.065	0.101	0.082	0.141
Marlborough (Partial)	4.317	4.103	4.104	4.047
Needham (Partial)	1.104	0.572	1.347	0.873
Northborough (Partial)	0.886	0.868	1.029	1.000
Peabody (Partial)	2.108	1.897	2.242	1.018
Stoughton (Partial)	0.057	0.059	0.096	0.102
Wakefield (Partial)	1.878	1.749	1.675	1.843
Wellesley (Partial)	2.128	2.551	1.678	1.114
Wilmington (Partial)	0.488	0.499	0.598	0.475
Winchester (Partial)	1.425	1.113	1.406	1.104
Woburn (Partial)	3.624	3.140	3.558	2.699
Worcester (Partial)	-	-	-	-
Comm. of Mass. - Fernald (Other)	-	-	-	-
D.C.R. Parks/Pools/Blue Hills (Other)	0.076	0.085	0.093	0.086
MWRA - Deer Island Water (Other)	1.340	1.224	1.320	1.249
Other Reservoir Withdrawals (Other)	6.232	6.590	6.089	4.655
Quinapoxet Withdrawal (Other)	6.974	2.257	3.695	6.343
Westboro State Hospital (DYS) (Other)	-	-	-	-

2019	2018	2017	2016	2015	2014
3.573	3.676	3.782	3.907	3.826	3.778
1.990	2.032	2.105	2.187	2.157	2.113
62.331	63.418	64.334	64.902	64.567	63.184
4.903	4.948	5.068	5.275	5.500	5.462
3.278	3.368	3.323	3.283	3.248	3.306
4.878	5.131	5.122	5.306	5.251	5.285
1.390	1.416	1.433	1.637	1.700	1.719
3.710	3.778	3.905	3.883	3.755	3.832
5.669	5.752	5.883	6.017	6.621	6.504
5.034	5.047	5.304	5.377	5.824	5.145
0.488	0.549	0.560	0.522	0.488	0.463
5.101	5.088	4.941	5.225	5.684	5.250
1.654	1.804	1.817	1.839	1.803	1.791
4.292	4.587	4.624	4.944	5.059	5.075
1.976	2.038	2.071	2.207	2.323	2.235
2.271	2.420	2.578	2.632	2.598	2.394
0.315	0.323	0.390	0.384	0.357	0.331
8.540	8.511	8.973	9.986	10.095	9.174
2.662	2.771	2.835	2.776	2.932	2.892
7.894	8.106	8.869	9.209	9.330	9.173
1.540	1.610	1.658	1.646	1.625	1.616
3.558	3.600	3.673	3.770	3.919	3.909
2.830	2.852	2.926	2.862	2.935	2.805
5.653	5.636	5.805	6.186	5.672	5.609
0.978	1.034	1.070	1.091	1.082	1.074
0.904	0.934	0.984	1.050	1.014	0.956
1.865	2.220	2.247	2.336	2.573	2.793
1.473	1.461	1.426	1.431	1.380	1.559
6.400	6.600	6.599	7.077	7.133	6.823
2.547	2.640	2.582	2.553	2.599	2.661
1.566	1.739	1.973	1.940	1.919	1.675
1.066	1.107	1.166	1.193	1.153	1.112
1.258	1.224	1.196	1.225	1.312	1.263
-	-	-	-	-	-
0.025	-	1.403	0.942	-	5.874
1.342	1.198	1.867	1.559	1.068	0.875
0.210	0.134	0.198	0.140	0.273	0.039
0.330	0.269	0.233	0.690	0.175	0.227
3.883	4.074	3.834	3.570	3.247	3.482
0.834	0.638	0.703	0.933	0.907	0.787
0.893	0.890	0.912	0.906	0.891	0.875
1.562	3.487	2.105	1.126	1.257	1.155
0.078	0.102	0.154	0.526	0.979	0.759
1.782	1.541	1.667	1.426	1.505	1.355
1.158	1.160	0.994	1.054	0.820	0.686
0.461	0.456	0.485	0.539	0.456	0.256
1.230	1.144	1.407	1.542	1.042	1.048
2.766	2.400	2.627	2.482	2.673	2.383
-	-	2.322	0.001	-	-
-	-	-	-	0.015	0.063
0.077	0.103	0.044	0.052	0.058	0.061
1.310	1.275	1.325	1.397	1.279	1.247
6.146	6.001	2.821	-	-	-
3.192	5.250	2.654	7.582	3.824	4.110
0.008	0.024	0.023	0.024	0.045	0.017

MASSACHUSETTS WATER RESOURCES AUTHORITY
Sewer-System Total
Community Population Estimates
Last Ten Calendar Years

Population	Customer Type	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Arlington	Sewer & Water	45,522	45,617	45,169	45,531	45,624	45,510	45,052	44,204	44,212	44,028
Ashland	Sewer	18,466	18,560	17,887	17,807	17,739	17,706	17,684	17,185	17,191	17,150
Bedford	Sewer	14,161	14,155	14,053	14,123	14,195	14,197	14,411	14,058	14,086	13,975
Belmont	Sewer & Water	26,710	26,838	25,873	26,116	26,330	26,458	26,171	25,425	25,431	25,332
Boston Water & Sewer Comm.	Sewer & Water	650,706	654,776	691,531	692,600	694,583	685,094	673,184	651,710	649,917	645,966
Braintree	Sewer	38,567	38,822	37,074	37,190	37,250	37,156	37,297	36,984	36,968	36,727
Brookline	Sewer & Water	62,535	62,726	59,022	59,121	59,310	59,157	59,126	59,277	59,246	59,128
Burlington	Sewer	25,966	25,989	28,432	28,627	28,742	27,176	26,351	25,502	25,507	25,463
Cambridge	Sewer & Partial Water	118,488	117,090	119,192	118,927	118,977	113,630	110,651	107,705	107,732	107,289
Canton	Sewer & Partial Water	24,609	24,470	24,029	23,805	23,629	23,444	22,952	22,257	22,246	22,221
Chelsea	Sewer & Water	38,637	38,889	39,230	39,690	40,160	40,227	38,599	37,359	37,881	37,670
Chicopee	Water	54,980	55,190	54,825	55,126	55,582	55,363	55,342	55,789	56,233	55,882
Clinton	Water	15,484	15,381	13,952	14,000	14,022	13,958	13,873	13,837	13,788	13,748
Dedham	Sewer & Partial Water	24,997	25,240	25,345	25,219	25,334	25,364	25,263	25,322	25,346	25,299
Everett	Sewer & Water	49,350	48,557	46,107	46,451	46,880	46,324	44,840	43,484	43,110	42,935
Framingham	Sewer & Water	70,963	71,265	73,892	74,416	73,123	72,032	71,594	70,569	70,583	70,441
Hingham Sewer District	Sewer	7,963	8,168	7,808	7,795	7,586	7,611	7,708	7,370	7,260	7,475
Holbrook	Sewer	11,285	11,335	11,014	11,033	11,048	11,026	11,022	10,994	10,988	10,952
Lexington	Sewer & Water	34,074	34,071	33,003	33,132	33,792	33,727	33,410	32,810	32,817	32,650
Lynnfield	Water	12,951	12,955	13,040	12,999	13,041	12,944	12,839	12,765	12,667	12,409
Malden	Sewer & Water	64,712	65,074	59,922	60,470	61,036	61,246	60,840	60,776	60,788	60,509
Marblehead	Water	20,233	20,296	20,551	20,555	20,634	20,559	20,467	20,428	20,364	20,256
Marlborough	Partial Water	40,971	41,110	39,290	39,597	39,825	39,788	39,793	39,799	39,691	39,468
Medford	Sewer & Water	65,399	62,098	60,847	57,341	57,765	57,797	57,213	57,266	57,385	57,170
Melrose	Sewer & Water	29,155	29,312	27,790	28,016	28,193	28,367	27,928	27,777	27,810	27,690
Milton	Sewer & Water	28,364	28,388	27,537	27,593	27,616	27,575	27,351	27,358	27,345	27,270
Nahant	Water	3,289	3,315	3,506	3,513	3,524	3,506	3,493	3,496	3,483	3,474
Natick	Sewer	36,272	36,426	35,766	36,050	36,229	36,246	36,137	35,326	35,339	35,214
Needham	Sewer & Water	32,114	32,048	31,537	31,388	31,248	30,999	30,755	29,797	29,785	29,736
Newton	Sewer & Water	87,381	87,453	87,803	88,414	88,904	88,994	89,045	87,908	87,927	87,971
Northborough	Partial Water	15,663	15,667	15,038	15,109	15,101	15,038	14,962	14,944	14,905	14,749
Norwood	Sewer & Water	31,317	31,441	29,737	29,725	29,327	29,195	29,097	29,021	29,007	28,951
Peabody	Partial Water	53,896	54,119	53,063	53,070	53,278	53,008	52,809	52,661	52,489	52,243
Quincy	Sewer & Water	101,727	101,119	94,421	94,470	94,580	94,166	93,688	93,373	93,327	93,494
Randolph	Sewer	34,530	34,715	34,260	34,362	34,398	34,272	33,610	33,541	33,519	33,456
Reading	Sewer & Water	25,205	25,223	25,535	25,400	25,337	26,106	25,834	25,397	25,433	25,327
Revere	Sewer & Water	58,528	59,075	52,375	53,073	53,821	53,993	53,157	53,316	54,063	53,756
Saugus	Water	28,547	28,676	28,542	28,361	28,385	28,265	28,125	28,080	27,976	27,826
Somerville	Sewer & Water	79,762	79,815	80,935	81,360	81,562	81,360	81,322	78,929	78,857	78,804
South Hadley Fire District #1	Water	18,051	17,806	17,514	17,625	17,806	17,836	17,765	17,625	17,712	17,715
Southborough	Water	10,409	10,421	10,200	10,208	10,169	10,138	10,087	10,015	9,936	9,894
Stonham	Sewer & Water	22,705	22,877	23,961	24,126	22,729	22,036	21,953	21,803	21,808	21,734
Stoughton	Sewer & Partial Water	28,969	29,132	28,891	28,915	28,950	28,528	28,431	28,197	28,183	28,106
Swampscott	Water	15,280	15,155	15,462	15,298	15,227	14,976	14,898	14,564	14,085	14,025
Wakefield	Sewer & Partial Water	27,069	27,104	27,051	27,045	27,135	27,157	26,753	26,147	26,182	26,080
Walpole	Sewer	26,277	26,652	26,582	25,200	25,209	25,073	25,125	24,788	24,776	24,818
Waltham	Sewer & Water	64,065	64,015	62,069	62,495	62,962	62,442	63,002	62,412	62,424	62,227
Watertown	Sewer & Water	35,022	35,149	36,125	35,939	35,954	35,756	34,025	33,124	33,130	32,996
Wellesley	Sewer & Partial Water	30,524	30,191	28,684	28,670	29,673	29,479	29,215	28,897	29,180	29,090
Weston	Water	11,661	11,666	12,028	12,124	12,134	12,119	12,100	12,066	11,921	11,845
Westwood	Sewer & Partial Water	16,231	16,213	16,384	16,400	16,127	16,056	15,279	14,904	14,896	14,876
Weymouth	Sewer	57,410	57,670	58,104	57,746	57,719	56,664	55,972	55,510	55,482	55,419
Wilbraham	Water	14,526	14,551	14,670	14,689	14,749	14,625	14,588	14,573	14,477	14,432
Wilmington	Sewer & Partial Water	22,904	23,012	23,287	23,445	23,907	23,803	23,570	23,199	23,204	23,147
Winchester	Sewer & Partial Water	22,640	22,662	22,678	22,799	22,851	22,838	22,808	22,159	22,166	22,079
Winthrop	Sewer & Water	18,510	18,505	18,446	18,544	18,688	18,625	18,190	17,979	18,232	18,111
Woburn	Sewer & Partial Water	41,248	41,056	40,135	40,228	40,397	39,701	39,452	39,162	39,170	39,083
SYSTEM		2,666,980	2,669,301	2,671,204	2,673,071	2,680,096	2,656,436	2,626,208	2,580,923	2,579,666	2,569,781

Source: U.S. Census Bureau

MASSACHUSETTS WATER RESOURCES AUTHORITY
Sewer-System Total
Community Population Estimates
Last Ten Calendar Years

System Share	Customer Type	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Arlington	Sewer & Water	1.71%	1.71%	1.69%	1.70%	1.70%	1.71%	1.72%	1.71%	1.71%	1.71%
Ashland	Sewer	0.69%	0.70%	0.67%	0.67%	0.66%	0.67%	0.67%	0.67%	0.67%	0.67%
Bedford	Sewer	0.53%	0.53%	0.53%	0.53%	0.53%	0.53%	0.55%	0.54%	0.55%	0.54%
Belmont	Sewer & Water	1.00%	1.01%	0.97%	0.98%	0.98%	1.00%	1.00%	0.99%	0.99%	0.99%
Boston Water & Sewer Comm.	Sewer & Water	24.40%	24.53%	25.89%	25.91%	25.92%	25.79%	25.63%	25.25%	25.19%	25.14%
Braintree	Sewer	1.45%	1.45%	1.39%	1.39%	1.39%	1.40%	1.42%	1.43%	1.43%	1.43%
Brookline	Sewer & Water	2.34%	2.35%	2.21%	2.21%	2.21%	2.23%	2.25%	2.30%	2.30%	2.30%
Burlington	Sewer	0.97%	0.97%	1.06%	1.07%	1.07%	1.02%	1.00%	0.99%	0.99%	0.99%
Cambridge	Sewer & Partial Water	4.44%	4.39%	4.46%	4.45%	4.44%	4.28%	4.21%	4.17%	4.18%	4.18%
Canton	Sewer & Partial Water	0.92%	0.92%	0.90%	0.89%	0.88%	0.88%	0.87%	0.86%	0.86%	0.86%
Chelsea	Sewer & Water	1.45%	1.46%	1.47%	1.48%	1.50%	1.51%	1.47%	1.45%	1.47%	1.47%
Chicopee	Water	2.06%	2.07%	2.05%	2.06%	2.07%	2.08%	2.11%	2.16%	2.18%	2.17%
Clinton	Water	0.58%	0.58%	0.52%	0.52%	0.52%	0.53%	0.53%	0.54%	0.53%	0.53%
Dedham	Sewer & Partial Water	0.94%	0.95%	0.95%	0.94%	0.95%	0.95%	0.96%	0.98%	0.98%	0.98%
Everett	Sewer & Water	1.85%	1.82%	1.73%	1.74%	1.75%	1.74%	1.71%	1.68%	1.67%	1.67%
Framingham	Sewer & Water	2.66%	2.67%	2.77%	2.78%	2.73%	2.71%	2.73%	2.73%	2.74%	2.74%
Hingham Sewer District	Sewer	0.30%	0.31%	0.29%	0.29%	0.28%	0.29%	0.29%	0.29%	0.28%	0.29%
Holbrook	Sewer	0.42%	0.42%	0.41%	0.41%	0.41%	0.42%	0.42%	0.43%	0.43%	0.43%
Lexington	Sewer & Water	1.28%	1.28%	1.24%	1.24%	1.26%	1.27%	1.27%	1.27%	1.27%	1.27%
Lynnfield	Water	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%	0.48%	0.48%
Malden	Sewer & Water	2.43%	2.44%	2.24%	2.26%	2.28%	2.31%	2.32%	2.35%	2.36%	2.35%
Marblehead	Water	0.76%	0.76%	0.77%	0.77%	0.77%	0.77%	0.78%	0.79%	0.79%	0.79%
Marlborough	Partial Water	1.54%	1.54%	1.47%	1.48%	1.49%	1.50%	1.52%	1.54%	1.54%	1.54%
Medford	Sewer & Water	2.45%	2.33%	2.28%	2.15%	2.16%	2.18%	2.18%	2.22%	2.22%	2.22%
Melrose	Sewer & Water	1.09%	1.10%	1.04%	1.05%	1.05%	1.07%	1.06%	1.08%	1.08%	1.08%
Milton	Sewer & Water	1.06%	1.06%	1.03%	1.03%	1.03%	1.04%	1.04%	1.06%	1.06%	1.06%
Nahant	Water	0.12%	0.12%	0.13%	0.13%	0.13%	0.13%	0.13%	0.14%	0.14%	0.14%
Natick	Sewer	1.36%	1.36%	1.34%	1.35%	1.35%	1.36%	1.38%	1.37%	1.37%	1.37%
Needham	Sewer & Water	1.20%	1.20%	1.18%	1.17%	1.17%	1.17%	1.17%	1.15%	1.15%	1.16%
Newton	Sewer & Water	3.28%	3.28%	3.29%	3.31%	3.32%	3.35%	3.39%	3.41%	3.41%	3.42%
Northborough	Partial Water	0.59%	0.59%	0.56%	0.57%	0.56%	0.57%	0.57%	0.58%	0.58%	0.57%
Norwood	Sewer & Water	1.17%	1.18%	1.11%	1.09%	1.09%	1.10%	1.11%	1.12%	1.12%	1.13%
Peabody	Partial Water	2.02%	2.03%	1.99%	1.99%	1.99%	2.00%	2.01%	2.04%	2.03%	2.03%
Quincy	Sewer & Water	3.81%	3.79%	3.53%	3.53%	3.53%	3.54%	3.57%	3.62%	3.62%	3.64%
Randolph	Sewer	1.29%	1.30%	1.28%	1.29%	1.28%	1.29%	1.28%	1.30%	1.30%	1.30%
Reading	Sewer & Water	0.95%	0.94%	0.96%	0.95%	0.95%	0.98%	0.98%	0.98%	0.99%	0.99%
Revere	Sewer & Water	2.19%	2.21%	1.96%	1.99%	2.01%	2.03%	2.02%	2.07%	2.10%	2.09%
Saugus	Water	1.07%	1.07%	1.07%	1.06%	1.06%	1.06%	1.07%	1.09%	1.08%	1.08%
Somerville	Sewer & Water	2.99%	2.99%	3.03%	3.04%	3.04%	3.06%	3.10%	3.06%	3.06%	3.07%
South Hadley Fire District #1	Water	0.68%	0.67%	0.66%	0.66%	0.66%	0.67%	0.68%	0.68%	0.69%	0.69%
Southborough	Water	0.39%	0.39%	0.38%	0.38%	0.38%	0.38%	0.38%	0.39%	0.39%	0.39%
Stonham	Sewer & Water	0.85%	0.86%	0.90%	0.90%	0.85%	0.83%	0.84%	0.84%	0.85%	0.85%
Stoughton	Sewer & Partial Water	1.09%	1.09%	1.08%	1.08%	1.08%	1.07%	1.08%	1.09%	1.09%	1.09%
Swampscott	Water	0.57%	0.57%	0.58%	0.57%	0.57%	0.56%	0.57%	0.56%	0.55%	0.55%
Wakefield	Sewer & Partial Water	1.01%	1.02%	1.01%	1.01%	1.01%	1.02%	1.02%	1.01%	1.01%	1.01%
Walpole	Sewer	0.99%	1.00%	1.00%	0.94%	0.94%	0.94%	0.96%	0.96%	0.96%	0.97%
Waltham	Sewer & Water	2.40%	2.40%	2.32%	2.34%	2.35%	2.35%	2.40%	2.42%	2.42%	2.42%
Watertown	Sewer & Water	1.31%	1.32%	1.35%	1.34%	1.34%	1.35%	1.30%	1.28%	1.28%	1.28%
Wellesley	Sewer & Partial Water	1.14%	1.13%	1.07%	1.07%	1.11%	1.11%	1.11%	1.12%	1.13%	1.13%
Weston	Water	0.44%	0.44%	0.45%	0.45%	0.45%	0.46%	0.46%	0.47%	0.46%	0.46%
Westwood	Sewer & Partial Water	0.61%	0.61%	0.61%	0.61%	0.60%	0.60%	0.58%	0.58%	0.58%	0.58%
Weymouth	Sewer	2.15%	2.16%	2.18%	2.16%	2.15%	2.13%	2.13%	2.15%	2.15%	2.16%
Wilbraham	Water	0.54%	0.55%	0.55%	0.55%	0.55%	0.55%	0.56%	0.56%	0.56%	0.56%
Wilmington	Sewer & Partial Water	0.86%	0.86%	0.87%	0.88%	0.89%	0.90%	0.90%	0.90%	0.90%	0.90%
Winchester	Sewer & Partial Water	0.85%	0.85%	0.85%	0.85%	0.85%	0.86%	0.87%	0.86%	0.86%	0.86%
Winthrop	Sewer & Water	0.69%	0.69%	0.69%	0.69%	0.70%	0.70%	0.69%	0.70%	0.71%	0.70%
Woburn	Sewer & Partial Water	1.55%	1.54%	1.50%	1.50%	1.51%	1.49%	1.50%	1.52%	1.52%	1.52%
SYSTEM		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

MASSACHUSETTS WATER RESOURCES AUTHORITY
Full-time Equivalent Employees by Function
Last Ten Fiscal Years

Division	2023		2022		2021		2020	
	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
Executive	3.0	40.00%	3.0	40.00%	4.0	20.00%	4.0	20.00%
Internal Audit	6.0	25.00%	5.0	37.50%	5.8	25.00%	5.8	25.00%
Public Affairs	9.0	40.00%	8.0	46.67%	9.9	33.33%	9.9	28.57%
Affirmative Action	5.0	28.57%	4.0	42.86%	7.0	0.00%	5.0	28.57%
Emergency Preparedness	5.0	0.00%	4.0	0.00%	4.0	0.00%	4.0	0.00%
Tunnel Redundancy	9.0	35.71%	10.0	28.57%	10.0	16.67%	7.0	0.00%
Finance	45.3	19.30%	45.1	19.30%	34.3	16.67%	32.3	21.43%
Operations	830.5	17.61%	833.5	16.58%	911.9	10.44%	920.4	9.37%
Law	11.0	45.00%	11.0	45.00%	12.0	42.11%	12.5	31.58%
Administration	136.9	19.05%	131.9	21.21%	141.9	14.11%	138.8	15.00%

2019		2018		2017		2016		2015		2014	
FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
4.0	20.00%	4.0	20.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%
5.7	25.00%	6.7	12.50%	6.7	12.50%	6.7	12.50%	6.7	12.50%	7.5	0.00%
9.9	28.57%	10.9	15.38%	11.9	7.69%	12.9	7.14%	12.9	7.69%	11.9	7.69%
5.0	28.57%	6.0	0.00%	4.0	33.33%	6.0	0.00%	5.0	33.33%	6.0	14.29%
4.0	0.00%	8.0	0.00%	8.0	0.00%	5.8	0.00%	4.8	0.00%	5.8	0.00%
7.0	0.00%	1.0	0.00%	-		-		-		-	
31.5	23.81%	33.5	19.05%	35.5	14.29%	37.5	11.63%	38.3	9.30%	39.3	4.65%
922.8	8.51%	923.3	8.70%	930.0	7.35%	922.7	6.93%	925.1	7.35%	917.2	7.55%
12.5	31.58%	13.5	26.32%	13.5	26.32%	15.5	15.79%	14.5	26.32%	14.9	15.79%
136.8	15.63%	135.5	13.46%	135.4	12.26%	138.0	10.32%	138.0	9.74%	136.6	9.03%

MASSACHUSETTS WATER RESOURCES AUTHORITY

Capital Asset Statistics by Function



Quabbin Reservoir

WATER SYSTEM

- ◆ 2 protected reservoirs
 - Quabbin
 - Wachusett
- ◆ 2 water treatment facilities
 - John J. Carroll
 - William A. Brutsch
- ◆ 395 miles of distribution infrastructure, including aqueducts, deep rock tunnels, and pipeline
- ◆ 12 active storage reservoirs and standpipes
- ◆ 11 active pumping stations
- ◆ Average Daily flow: 270 mgd
- ◆ Safe yield: 300 mgd
- ◆ Treatment Capacity: 405 mgd
- ◆ Percentage of capacity utilized: 67%*
**based on safe yield*



Chelsea Headworks

WASTEWATER SYSTEM

- ◆ 240 miles of sewer pipelines and cross-harbor tunnels
- ◆ 11 pump stations
- ◆ 1 screening facility
- ◆ 1 gate house
- ◆ 4 CSO treatment/storage facilities
- ◆ 2 wastewater treatment plants
 - Deer Island Treatment Plant
 - Clinton Advanced Wastewater Treatment Plant
- ◆ 5 remote headworks
- ◆ 1 Pellet Plant residuals processing
- ◆ Average daily flow: 365 mgd
- ◆ Peak wet weather capacity: 1,270 mgd
- ◆ Percentage of capacity utilized on average: 30%

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Massachusetts Water Resources Authority

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