

MIDDLESEX COUNTY RETIREMENT SYSTEM

FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2021

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Financial Section

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Independent Auditor's Report

To the Honorable Middlesex County Retirement Board
Middlesex County Retirement System
Billerica, Massachusetts

Opinion

We have audited the accompanying financial statements of the Middlesex County Retirement System (MCRS) as of and for the year ended December 31, 2021, and the related notes to the financial statements, which collectively comprise the MCRS's 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 financial position of the MCRS as of December 31, 2021, and the changes in its financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America 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 Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the MCRS and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management's for the Financial Statements

Management is responsible for the preparation and fair presentation of these 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 MCRS'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.

Auditor's 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 auditor's report that includes our opinion. 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 generally accepted 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 judgement made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards, we:

- Exercise professional judgement 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 auditing 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 MCRS'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 judgement, there are conditions or events, considered in the aggregate, that raise substantial doubt about the MCRS'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 Management's Discussion and Analysis; the Schedule of Changes in the Net Pension Liability and Related Ratios; the Schedule of Contributions; and the Schedule of Investment Returns be presented to supplement the financial statements. Such information is the responsibility of management and, although not a part of the financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, 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 financial statements, and other knowledge we obtained during our audit of the 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.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated August 23, 2022, on our consideration of the MCRS's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, 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 MCRS'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 MCRS's internal control over financial reporting and compliance.

Restriction on Use

This report is intended solely for the information and use of MCRS, the Public Employee Retirement Administration Commission and all member units and is not intended to be and should not be used by anyone other than these specified parties.

A handwritten signature in black ink, appearing to read "Bowers & Sullivan LLC". The signature is written in a cursive, flowing style.

August 23, 2022

Management's Discussion and Analysis

As management of the Middlesex County Retirement System (MCRS), we offer readers of these financial statements this narrative overview and analysis of the financial activities for the year ended December 31, 2021. The MCRS complies with financial reporting requirements issued by the Governmental Accounting Standards Board (GASB).

The GASB is the authoritative standard setting body that provides guidance on how to prepare financial statements in conformity with generally accepted accounting principles (GAAP). Users of these financial statements rely on the GASB to establish consistent reporting standards for all governments in the United States. This consistent application is the only way users can assess the financial condition of a public retirement system compared to others.

Financial Highlights

- The MCRS's assets exceeded its liabilities at the close of the most recent year by \$2.1 billion (net position).
- The MCRS's net position increased by \$353.6 million for the year ended December 31, 2021.
- Total investment income was \$349.7 million; investment expenses were \$9.4 million; and net investment income was \$340.2 million.
- Total contributions were \$214.5 million, primarily consisting of \$147.8 million from employers, \$51.7 million from members, \$8.4 million in transfers from other systems and \$6.5 million in other contributions.
- Retirement benefits, refunds, and transfers of member deductions to other systems amounted to \$197.7 million.
- Depreciation, administrative and building expenses were \$3.4 million.
- The total pension liability was \$3.5 billion as of December 31, 2021, while the net pension liability was \$1.3 billion.
- The Plan fiduciary net position as a percentage of the total pension liability was 61.14%.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the MCRS's fiduciary financial statements. These fiduciary financial statements comprise of four components: 1) management's discussion and analysis, 2) fiduciary financial statements, 3) notes to the financial statements and 4) required supplementary information.

Fiduciary Financial Statements

The *statement of fiduciary net position* presents information on all assets and deferred outflows less deferred inflows and liabilities with the difference reported as *net position*. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position is improving or deteriorating.

The *statement of changes in fiduciary net position* presents information showing how the MCRS's net position changed during the most recent year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows*. Thus, additions and deductions are reported in this statement for some items that will only result in cash flows in future periods.

Notes to the financial statements

The notes provide additional information that is essential to a full understanding of the data provided in the fiduciary financial statements.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Schedule of Changes in the Net Pension Liability and Related Ratios; the Schedule of Contributions; and the Schedule of Investment Returns be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context.

Financial Analysis

As noted earlier, net position may serve over time as a useful indicator of the MCRS's financial position. The MCRS's assets exceeded liabilities by \$2.1 billion at the close of 2021.

The assets accumulated are held to provide pension benefits for qualified retirees along with active and inactive employees of the member units. At year-end, the MCRS's net position included investments of \$2.08 billion, cash of \$18.5 million and current accounts receivable of \$4.9 million. The system also had capital assets, net of accumulated depreciation, of \$4.1 million at year-end primarily consisting of land, an office building, and building improvements.

In 2021, the MCRS's contributions were \$214.5 million while deductions were \$201.1 million which resulted in a current surplus of \$13.4 million. In 2020, the MCRS's contributions were \$196.5 million while deductions were \$191.3 million which resulted in a prior year surplus of \$5.2 million. Therefore, for these two years the MCRS was able to sustain operations independent of investment income.

The primary change in net position over the prior year relates to each year's investment performance. Net investment income was \$340.2 million in 2021, and \$185.4 million in 2020. The annual money weighted rate of return was 19.86% and 12.26% in 2021, and 2020, respectively. The MCRS's investment policy is designed to achieve a long-term rate of return of 7.15% and fluctuation in annual investment returns is expected.

The following tables present summarized financial information for the past two years:

	2021	2020
Assets:		
Cash.....	\$ 18,455,232	\$ 41,101,439
Investments.....	2,082,386,263	1,706,314,629
Receivables.....	4,949,242	4,435,670
Capital assets, net of accumulated depreciation....	4,108,907	4,429,195
Total assets.....	2,109,899,644	1,756,280,933
Liabilities:		
Accounts payable.....	102,089	115,997
Other liabilities.....	26,556	26,606
Total liabilities.....	128,645	142,603
Net Position Restricted for Pensions.....	\$ 2,109,770,999	\$ 1,756,138,330

	2021	2020
Additions:		
Contributions:		
Member contributions..... \$	51,747,946	\$ 50,973,950
Employer contributions.....	147,955,483	138,327,737
Other contributions.....	14,791,325	7,185,413
Total contributions.....	<u>214,494,754</u>	<u>196,487,100</u>
Net investment income:		
Total investment income.....	349,671,539	192,871,896
Less, investment expenses.....	<u>(9,428,015)</u>	<u>(7,442,169)</u>
Net investment income.....	<u>340,243,524</u>	<u>185,429,727</u>
Total additions.....	<u>554,738,278</u>	<u>381,916,827</u>
Deductions:		
Administration.....	2,878,819	2,781,367
Retirement benefits, refunds and transfers.....	197,701,698	187,995,148
Building operations and maintenance.....	204,804	208,858
Depreciation.....	<u>320,288</u>	<u>321,386</u>
Total deductions.....	<u>201,105,609</u>	<u>191,306,759</u>
Net increase (decrease) in fiduciary net position....	353,632,669	190,610,068
Fiduciary net position at beginning of year.....	<u>1,756,138,330</u>	<u>1,565,528,262</u>
Fiduciary net position at end of year..... \$	<u><u>2,109,770,999</u></u>	<u><u>\$ 1,756,138,330</u></u>

Requests for Information

This financial report is designed to provide a general overview of the MCRS's finances for all those with an interest in the MCRS's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the MCRS's Chief Administrative Officer, 25 Linnell Circle, Billerica, Massachusetts 01865.

STATEMENT OF FIDUCIARY NET POSITION

DECEMBER 31, 2021

Assets

Cash and cash equivalents.....	\$ 18,455,232
Investments:	
Investments in Pension Reserve Investment Trust...	2,077,485,448
Pooled alternative investments.....	4,863,412
Pooled real estate funds.....	<u>37,403</u>
Total investments.....	<u>2,082,386,263</u>
Receivables, net of allowance for uncollectibles:	
Member deductions.....	4,294,279
Member contributions.....	9,017
Employer pension appropriation.....	42,295
Member make-up payments and redeposits.....	217,870
Transfers from other systems.....	345,041
Other accounts receivable.....	<u>40,740</u>
Total Receivables.....	<u>4,949,242</u>
Capital assets, net of accumulated depreciation.....	<u>4,108,907</u>
Total Assets.....	<u>2,109,899,644</u>
Liabilities	
Accounts payable.....	102,089
Other liabilities.....	<u>26,556</u>
Total Liabilities.....	<u>128,645</u>
Net Position Restricted for Pensions.....	\$ <u><u>2,109,770,999</u></u>

See notes to financial statements.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

YEAR ENDED DECEMBER 31, 2021

Additions:

Contributions:

Employer pension appropriation.....	\$ 147,849,683
Member contributions.....	51,747,946
Transfers from other systems.....	8,391,579
3(8)(c) contributions from other systems.....	4,620,024
Workers' compensation settlements.....	105,800
Retirement benefits - state COLA reimbursements.....	556,170
Members' makeup payments and redeposits.....	1,000,847
Interest not refunded.....	222,705

Total contributions..... 214,494,754

Net investment income:

Investment income.....	349,671,539
Less: investment expense.....	<u>(9,428,015)</u>

Net investment income..... 340,243,524

Total additions..... 554,738,278

Deductions:

Administration.....	2,878,819
Building operations and maintenance.....	204,804
Retirement benefits and refunds.....	182,979,923
Transfers to other systems.....	6,860,647
3(8)(c) transfer to other systems.....	7,861,128
Depreciation.....	<u>320,288</u>

Total deductions..... 201,105,609

Net increase (decrease) in fiduciary net position..... 353,632,669

Fiduciary net position at beginning of year..... 1,756,138,330

Fiduciary net position at end of year..... \$ 2,109,770,999

See notes to financial statements.

NOTE 1 – PLAN DESCRIPTION

The Middlesex County Retirement System (MCRS) is a multiple-employer, cost-sharing, contributory defined benefit pension plan covering all employees of the governmental member units deemed eligible by the Middlesex County Retirement Board (the Board), with the exception of school department employees who serve in a teaching capacity. The pensions of such school employees are administered by the Commonwealth of Massachusetts' Teachers Retirement System. Membership in the System is mandatory immediately upon the commencement of employment for all permanent employees working a minimum of 20 hours per week and who are paid annual compensation of no less than \$5,000. As of January 1, 2022, the MCRS had 71 participating employers.

The MCRS is a Massachusetts Contributory Retirement System and is governed by Chapter 32 of the Massachusetts General Laws. Membership in the Plan is mandatory immediately upon the commencement of employment for all permanent, full-time employees.

Massachusetts contributory retirement system benefits are, with certain exceptions, uniform from system to system. The MCRS provides for retirement allowance benefits up to a maximum of 80% of a member's highest three-year average annual rate of regular compensation for those hired prior to April 2, 2012, and the highest five-year average for members hired after that date. Benefit payments are based upon a member's age, length of creditable service, level of compensation, and group classification.

Members become vested after ten years of creditable service. A superannuation retirement allowance may be received upon the completion of 20 years of service or upon reaching the age of 55 with 10 years of service for those hired prior to April 2, 2012. For those hired on or after April 2, 2012, a superannuation allowance may be received upon reaching the age of 60 with 10 years of service. Normal retirement for most employees occurs at age 65 for those hired prior to April 2, 2012, and at age 67 for those hired after April 2, 2012 (except for certain hazardous duty and public safety positions, whose normal retirement is at age 55).

A retirement allowance consists of two parts: an annuity and a pension. A member's accumulated total deductions and the interest they generate constitute the annuity. The differential between the total retirement benefit and the annuity is the pension.

Active members contribute between 5% and 11% of their gross regular compensation. The percentage rate is keyed to the date upon which an employee's membership commences. These deductions are deposited in the Annuity Savings Fund and earn interest at a rate determined by the Public Employee Retirement Administration Commission's (PERAC) actuary. When a member's retirement becomes effective, his/her deductions and related interest are transferred to the Annuity Reserve Fund. Any cost-of-living adjustments granted between 1981 and 1997 and any increase in other benefits imposed by the Commonwealth of Massachusetts' state law during those years are borne by the Commonwealth and are deposited into the Pension Fund. Cost-of-living adjustments granted after 1997 must be approved by the MCRS and all costs are borne by the MCRS.

The pension portion of any retirement benefit is paid from the Pension Fund. The governmental unit employing the member must annually appropriate and contribute the amount of current-year pension assessment.

Administrative expenses are paid from investment income.

Members who become permanently and totally disabled for further duty may be eligible to receive a disability retirement allowance. The amount of benefits to be received in such cases is dependent on several factors, including whether or not the disability is work related, the member's age, years of creditable service, level of compensation, veterans' status and group classification.

Survivor benefits are extended to eligible beneficiaries of members whose death occurs prior to or following retirement.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying financial statements of the Middlesex County Retirement System have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). The Governmental Accounting Standards Board (GASB) is the recognized standard-setting body for establishing governmental accounting and financial reporting principles.

MCRS is a special-purpose government engaged only in fiduciary activities. Accordingly, the financial statements are reported using the flow of economic resources measurement focus and use the accrual basis of accounting. Under this method, additions are recorded when earned and deductions are recorded when the liabilities are incurred.

Cash and Investments

Cash and cash equivalents are 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. Investments are carried at fair value. The fair values were determined by the closing price for those securities traded on national stock exchanges and at the average bid-and-asked quotation for those securities traded in the over-the-counter market. The fair value of private equities are based on management's valuation of estimates and assumptions from information and representations provided by the respective general partners, in the absence of readily ascertainable market values. Real estate assets are reported at fair value utilizing an income approach to valuation along with independent appraisals and estimates by management.

Fair Value Measurements

The MCRS reports required types of financial instruments in accordance with the fair value standards. These standards require an entity to maximize the use of observable inputs (such as quoted prices in active markets) and minimize the use of unobservable inputs (such as appraisals or valuation techniques) to determine fair value. Fair value standards also require the government to classify these financial instruments into a three-level hierarchy, based on the priority of inputs to the valuation technique or in accordance with net asset value practical expedient rules, which allow for either Level 2 or Level 3 depending on lock up and notice periods associated with the underlying funds.

Instruments measured and reported at fair value are classified and disclosed in one of the following categories:

Level 1 – Quoted prices are available in active markets for identical instruments as of the reporting date. Instruments, which are generally included in this category, include actively traded equity and debt securities, U.S. government obligations, and mutual funds with quoted market prices in active markets.

Level 2 – Pricing inputs are other than quoted in active markets, which are either directly or indirectly observable as of the reporting date, and fair value is determined through the use of models or other valuation methodologies. Certain fixed income securities, primarily corporate bonds, are classified as Level 2 because fair values are estimated using pricing models, matrix pricing, or discounted cash flows.

Level 3 – Pricing inputs are unobservable for the instrument and include situations where there is little, if any, market activity for the instrument. The inputs into the determination of fair value require significant management judgment or estimation.

In some instances the inputs used to measure fair value may fall into different levels of the fair value hierarchy and is based on the lowest level of input that is significant to the fair value measurement.

Market price is affected by a number of factors, including the type of instrument and the characteristics specific to the instrument. Instruments with readily available active quoted prices generally will have a higher degree of market price observability and a lesser degree of judgment used in measuring fair value. It is reasonably possible that change in values of these instruments will occur in the near term and that such changes could materially affect amounts reported in these financial statements. For more information on the fair value of the MCRS's financial instruments, see Note 5 – Cash and Investments.

Accounts Receivable

Accounts receivable consist of member deductions, pension fund appropriations, and other miscellaneous reimbursements. These receivables are considered 100% collectible and therefore do not report an allowance for uncollectibles.

Deferred Outflows/Inflows of Resources

In addition to assets, the statement of fiduciary net position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, *deferred outflows of resources*, represents a consumption of fiduciary net position that applies to a future period(s) and so will not be recognized as an outflow of resources (deduction) until then. The MCRS did not have any items that qualify for reporting in this category.

In addition to liabilities, the statement of fiduciary net position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, *deferred inflows of resources*, represents an acquisition of net position that applies to a future period(s) and so will not be recognized as an inflow of resources (addition) until that time. The MCRS did not have any items that qualify for reporting in this category.

NOTE 3 – PLAN ADMINISTRATION

The MCRS is administered by a five-person Board of Retirement consisting of a first member, who shall serve as Chairman/Treasurer, who shall be appointed by the other four members, a second member elected by the Advisory Council consisting of representatives from the member units, a third and fourth member who shall be elected by the members in or retired from the service of such system, and a fifth member who shall be chosen by the other four members.

Chairman.....	Thomas F. Gibson	Term Expires:	12/31/2026
Advisory Council Member.....	Brian P. Curtin	Term Expires:	12/31/2024
Elected Member.....	John Brown	Term Expires:	12/31/2023
Elected Member.....	Joseph W. Kearns	Term Expires:	12/31/2022
Appointed Member.....	Robert W. Healy, Jr.	Term Expires:	12/16/2025

Board members are required to meet at least once a month. The Board must keep a record of all of its proceedings. The Board must annually submit to the appropriate authority an estimate of the expenses of administration and cost of operation of the MCRS. The Board must annually file a financial statement of condition

for the MCRS with the Executive Director of PERAC.

The investment of the MCRS's funds is the responsibility of the Board. All retirement allowances must be approved by the Retirement Board. The PERAC Actuary performs verification prior to payment, unless the MCRS has obtained a waiver for superannuation calculations allowing them to bypass this requirement. All expenses incurred by the MCRS must be approved by a majority vote of the Board. Payments shall be made only upon vouchers signed by three persons designated by the Board.

The following retirement board members and employees are bonded by an authorized agent representing a company licensed to do business in Massachusetts as follows:

Treasurer-Custodian:	\$10,000,000 Fiduciary
Ex-Officio Member:	RLI Insurance Company
Elected Members:	
Appointed Members:	\$1,000,000 Fidelity
Staff Employees:	National Union Fire Insurance

NOTE 4 – OFFICE BUILDING

The MCRS owns an office building that was purchased as an investment and for the administrative offices of the System. The building is a two story, 1986-built office building consisting of 62,307 square feet of net rentable area. The property is situated on a 4.23-acre site in Billerica, Middlesex County, Massachusetts.

NOTE 5 – CASH AND INVESTMENTS

Custodial Credit Risk - Deposits

At December 31, 2021, the carrying amount of the MCRS's deposits totaled \$10,778,530, and the bank balance totaled \$13,352,131, all of which was covered by Federal Depository Insurance.

Investments

The MCRS's investments were as follows:

<u>Investment Type</u>	<u>December 31, 2021</u>
PRIT Pooled Funds.....	\$ 2,077,485,448
Money Market Mutual Funds.....	7,676,702
Pooled Alternative Investments...	4,863,412
Pooled Real Estate Funds.....	37,403
Total Investments.....	<u>\$ 2,090,062,965</u>

Approximately 99.4% of the Retirement MCRS's investments are in Pension Reserve Investment Trust (PRIT). This investment pool was established by the Treasurer of the Commonwealth of Massachusetts, who serves as Trustee. PRIT is administered by the Pension Reserves Investment Management Board. The fair values of the positions in each investment Pool are the same as the value of each Pool's shares. The Administration does not

have the ability to control any of the investment decisions relative to its funds in PRIT. The effective weighted duration rate for PRIT investments ranged from 1.33 to 15.12 years.

Approximately 0.2% of the MCRS's funds are invested in pooled alternative investments and pooled real estate funds. The market values of assets in those funds are based on the quoted values obtained from each pool.

Approximately 0.4% of the MCRS's funds are invested in money market mutual funds. The market values of assets in those funds are valued using prices quoted in active markets for those securities.

The Administration's annual money-weighted rate of return on pension plan investments was 19.86%. The money-weighted rate of return expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested, measured monthly.

Fair Value of Investments

The retiree pension defined benefit plan holds significant amounts of investments that are measured at fair value on a recurring basis. Because investing is a key part of the plan's activities, the plan shows greater disaggregation in its disclosures. The plan chooses a tabular format for disclosing the levels within the fair value hierarchy.

The MCRS categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles.

The MCRS had the following recurring fair value measurements as of December 31, 2021:

Investment Type	12/31/2021	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level:				
Money Market Mutual Funds.....	\$ 7,676,702	\$ 7,676,702	\$ -	\$ -
Pooled Alternative Investments.....	4,863,412	-	-	4,863,412
Pooled Real Estate Funds.....	37,403	-	-	37,403
Total Investments by fair value level.....	12,577,517	\$ 7,676,702	\$ -	\$ 4,900,815
Investments measured at the net asset value (NAV):				
PRIT Investments.....	2,077,485,448			
Total Investments.....	\$ 2,090,062,965			

Money market mutual funds in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Pooled alternative investments and pooled real estate funds classified in level 3 are valued using either a discounted cash flow or market comparable company's technique.

PRIT Investments are valued using the net asset value (NAV) method.

NOTE 6 – CAPITAL ASSETS

All purchases and building costs in excess of \$25,000 are capitalized at the date of acquisition. Capital assets are depreciated on a straight-line basis. The estimated useful lives of capital assets are as follows:

<u>Capital Asset Type</u>	<u>Estimated Useful Life (in years)</u>
Building.....	40
Building improvements.....	40
Vehicles.....	5
Software and equipment.....	5

Capital asset activity for the year ended December 31, 2021, was as follows:

	<u>Beginning Balance</u>	<u>Increases</u>	<u>Decreases</u>	<u>Ending Balance</u>
<u>Capital assets not being depreciated:</u>				
Land.....	\$ 672,657	\$ -	\$ -	\$ 672,657
<u>Capital assets being depreciated:</u>				
Buildings.....	5,417,136	-	-	5,417,136
Building improvements.....	1,099,492	-	-	1,099,492
Vehicles.....	30,913	-	-	30,913
Software and equipment.....	757,189	-	-	757,189
Total capital assets being depreciated.....	7,304,730	-	-	7,304,730
<u>Less accumulated depreciation for:</u>				
Buildings.....	(2,442,066)	(135,428)	-	(2,577,494)
Building improvements.....	(491,557)	(29,740)	-	(521,297)
Vehicles.....	(30,912)	-	-	(30,912)
Software and equipment.....	(583,657)	(155,120)	-	(738,777)
Total accumulated depreciation.....	(3,548,192)	(320,288)	-	(3,868,480)
Total capital assets being depreciated, net.....	3,756,538	(320,288)	-	3,436,250
Total capital assets, net.....	\$ 4,429,195	\$ (320,288)	\$ -	\$ 4,108,907

NOTE 7 – MEMBERSHIP

The following table represents the MCRS's membership at December 31, 2021:

Active members.....	9,432
Inactive members entitled to a return of their employee contributions.....	3,581
Inactive members with a vested right to a deferred or immediate benefit.....	403
Retirees and beneficiaries currently receiving benefits.....	<u>6,284</u>
Total.....	<u>19,700</u>

NOTE 8 – ACTUARIAL VALUATION

Components of the net pension liability as of December 31, 2021, were as follows:

Total pension liability.....	\$ 3,450,498,511
The MCRS's fiduciary net position.....	<u>2,109,770,999</u>
The net pension liability.....	<u>\$ 1,340,727,512</u>
The MCRS's fiduciary net position as a percentage of the total pension liability.....	61.14%

The total pension liability was determined by an actuarial valuation as of January 1, 2022, using the following actuarial assumptions, applied to all periods included in the measurement that was rolled back to December 31, 2021:

Valuation date.....	January 1, 2022.
Actuarial cost method.....	Entry Age Normal Cost Method.
Amortization method.....	Prior year's total contribution increased by 6.50% for fiscal 2022 through fiscal 2028, and thereafter the remaining unfunded liability will be amortized on a 4.00% annual increasing basis; ERI liability amortized in level payments.
Remaining amortization period.....	17 years from July 1, 2020, for non-ERI liability, and 2 years from July 1, 2020 for 2010 ERI.
Asset valuation method.....	The difference between the expected return and the actual investment return on a market value basis is recognized over a five year period. Asset value is adjusted as necessary to be within 20% of the market value.
Investment rate of return/Discount rate..	7.15%, previously 7.30%.
Inflation rate.....	3.25%

Projected salary increases.....	Varies by length of service with ultimate rates of 4.00% for Group 1, 4.25% for Group 2 and 4.50% for Group 4
Cost of living adjustments.....	3.00% of the first \$16,000 of retirement income.
Mortality Rates:	
Pre-Retirement.....	The RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2021.
Healthy Retiree.....	The RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2021.
Disabled Retiree.....	The RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year and projected generationally with Scale MP-2021.

Investment policy: The MCRS's policy in regard to the allocation of invested assets is established by PRIT. Plan assets are managed on a total return basis with a long-term objective of achieving a fully funded status for the benefits provided through the pension plan.

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 MCRS's target asset allocation as of December 31, 2021, are summarized in the following table:

Asset Class	Long-Term Expected Asset Allocation	Long-Term Expected Real Rate of Return
Domestic equity.....	22.00%	6.11%
International developed markets equity.....	11.50%	6.49%
International emerging markets equity.....	4.50%	8.12%
Core fixed income.....	15.00%	0.38%
High-yield fixed income.....	8.00%	2.48%
Real estate.....	10.00%	3.72%
Timber.....	4.00%	3.44%
Hedge funds, GTAA, risk parity.....	10.00%	2.63%
Private equity.....	15.00%	9.93%
	<u>100.00%</u>	

Discount rate: The discount rate used to measure the total pension liability was 7.15% at December 31, 2021, and 7.30% at December 31, 2020. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that contributions will be made at rates equal to the actuarially determined contribution rate. Based on those assumptions, the MCRS'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.

Sensitivity of the net pension liability to changes in the discount rate: The following presents the net pension liability, calculated using the discount rate of 7.15%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.15%) or 1-percentage-point higher (8.15%) than the current rate:

	1% Decrease (6.15%)	Current Discount (7.15%)	1% Increase (8.15%)
Middlesex County Retirement System's net pension liability as of December 31, 2021.....	\$ 1,734,275,212	\$ 1,340,727,512	\$ 1,009,270,759

Contributions: Governmental employers are required to pay an annual appropriation as established by PERAC. The total appropriation includes the amounts to pay the pension portion of each member's retirement allowance, an amount to amortize the actuarially determined unfunded liability to zero in accordance with the system's funding schedule, and additional appropriations in accordance with adopted early retirement incentive programs. The pension fund appropriations are allocated amongst employers based on the actuarial valuation.

NOTE 9 – IMPLEMENTATION OF GASB PRONOUNCEMENTS

There were no GASB pronouncements required to be implemented in 2021 that impacted the MCRS's financial statements.

None of the issued GASB statements that are required to be implemented in future years are anticipated to impact the MCRS's financial statements.

NOTE 10 – SUBSEQUENT EVENTS

Management has evaluated subsequent events through August 23, 2022, which is the date the financial statements were available to be issued.

The Retirement System carries its investments at fair (market) value in accordance with Generally Accepted Accounting Principles (GAAP). Market value adjustments are recorded monthly. Subsequent to year end, the System's investments had declined in value by approximately 7.0%. The market value decline is consistent with recent trends in the overall financial securities market.

In accordance with GAAP, the System has not recorded the losses in its financial statements as the impairments were not known as of December 31, 2021. The System has recorded the losses associated with the investment during the year 2022.

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Required Supplementary Information

**SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
AND RELATED RATIOS**

	December 31, 2014	December 31, 2015	December 31, 2016	December 31, 2017
Total pension liability:				
Service cost.....	\$ 52,132,389	\$ 54,217,685	\$ 56,386,392	\$ 60,585,598
Interest.....	172,094,226	179,703,272	187,359,946	200,298,121
Changes in benefit terms.....	-	-	-	-
Differences between expected and actual experience.....	-	-	7,976,453	(9,059,393)
Changes in assumptions.....	-	-	96,500,754	97,195,824
Benefit payments.....	<u>(125,082,678)</u>	<u>(134,295,504)</u>	<u>(143,428,636)</u>	<u>(150,780,931)</u>
Net change in total pension liability.....	99,143,937	99,625,453	204,794,909	198,239,219
Total pension liability - beginning.....	<u>2,195,732,452</u>	<u>2,294,876,389</u>	<u>2,394,501,842</u>	<u>2,599,296,751</u>
Total pension liability - ending (a).....	<u>\$ 2,294,876,389</u>	<u>\$ 2,394,501,842</u>	<u>\$ 2,599,296,751</u>	<u>\$ 2,797,535,970</u>
Plan fiduciary net position:				
Employer pension appropriation.....	\$ 93,368,685	\$ 99,792,641	\$ 107,032,211	\$ 115,377,205
Member contributions.....	39,048,869	40,340,741	42,015,296	44,177,815
Other contributions.....	6,405,881	8,668,378	12,337,414	10,405,773
Net investment income (loss).....	74,904,315	7,732,128	74,917,546	189,343,574
Administrative expenses.....	(2,996,390)	(2,824,803)	(3,062,521)	(2,619,464)
Building operations and maintenance.....	(381,899)	(302,771)	(235,667)	(306,177)
Retirement benefits and refunds.....	(125,082,678)	(134,295,504)	(143,428,636)	(150,780,931)
Other retirement deductions.....	(5,556,930)	(8,025,993)	(11,475,752)	(9,358,262)
Depreciation.....	<u>(162,594)</u>	<u>(162,594)</u>	<u>(162,594)</u>	<u>(308,508)</u>
Net increase (decrease) in fiduciary net position.....	79,547,259	10,922,223	77,937,297	195,931,025
Fiduciary net position - beginning of year.....	<u>1,014,013,415</u>	<u>1,093,560,674</u>	<u>1,104,482,897</u>	<u>1,182,420,194</u>
Fiduciary net position - end of year (b).....	<u>\$ 1,093,560,674</u>	<u>\$ 1,104,482,897</u>	<u>\$ 1,182,420,194</u>	<u>\$ 1,378,351,219</u>
Net pension liability - ending (a)-(b).....	<u>\$ 1,201,315,715</u>	<u>\$ 1,290,018,945</u>	<u>\$ 1,416,876,557</u>	<u>\$ 1,419,184,751</u>
Plan fiduciary net position as a percentage of the total pension liability.....	47.65%	46.13%	45.49%	49.27%
Covered payroll.....	\$ 415,752,810	\$ 432,382,921	\$ 439,644,322	\$ 451,777,105
Net pension liability as a percentage of covered payroll.....	288.95%	298.35%	322.28%	314.13%

Note: this schedule is intended to present information for 10 years.
Until a 10-year trend is compiled, information is presented for those years for which information is available.

See notes to required supplementary information.

	December 31, 2018	December 31, 2019	December 31, 2020	December 31, 2021
\$	64,615,910	\$ 66,816,001	\$ 73,591,385	\$ 76,097,081
	208,614,148	216,905,943	229,825,239	238,805,957
	-	29,156,339	-	-
	-	46,671,873	-	5,225,766
	-	65,013,900	-	27,166,375
	<u>(161,259,804)</u>	<u>(168,486,003)</u>	<u>(181,769,445)</u>	<u>(184,028,124)</u>
	111,970,254	256,078,053	121,647,179	163,267,055
	<u>2,797,535,970</u>	<u>2,909,506,224</u>	<u>3,165,584,277</u>	<u>3,287,231,456</u>
\$	<u>2,909,506,224</u>	<u>3,165,584,277</u>	<u>3,287,231,456</u>	<u>3,450,498,511</u>
\$	120,614,676	\$ 129,685,755	\$ 138,290,237	\$ 147,849,683
	45,984,957	48,445,698	50,973,950	51,747,946
	9,581,643	10,842,796	7,222,913	14,897,125
	(31,074,711)	208,322,511	185,429,727	340,243,524
	(2,645,568)	(2,754,384)	(2,781,367)	(2,878,819)
	(309,357)	(279,208)	(208,858)	(204,804)
	(161,259,804)	(168,486,003)	(181,769,445)	(184,028,124)
	(8,884,478)	(9,969,856)	(6,225,703)	(13,673,574)
	<u>(318,812)</u>	<u>(318,812)</u>	<u>(321,386)</u>	<u>(320,288)</u>
	(28,311,454)	215,488,497	190,610,068	353,632,669
	<u>1,378,351,219</u>	<u>1,350,039,765</u>	<u>1,565,528,262</u>	<u>1,756,138,330</u>
\$	<u>1,350,039,765</u>	<u>1,565,528,262</u>	<u>1,756,138,330</u>	<u>2,109,770,999</u>
\$	<u>1,559,466,459</u>	<u>1,600,056,015</u>	<u>1,531,093,126</u>	<u>1,340,727,512</u>
	46.40%	49.45%	53.42%	61.14%
\$	471,115,185	\$ 492,109,775	\$ 513,201,283	\$ 519,239,589
	331.02%	325.14%	298.34%	258.21%

SCHEDULE OF CONTRIBUTIONS

Year	Actuarially determined contribution	Contributions in relation to the actuarially determined contribution	Contribution deficiency (excess)	Covered payroll	Contributions as a percentage of covered payroll
December 31, 2021.....	\$ 144,255,207	\$ (147,852,245)	\$ (3,597,038)	\$ 519,239,589	28.47%
December 31, 2020.....	135,472,822	(138,290,237)	(2,817,415)	513,201,283	26.95%
December 31, 2019.....	127,151,838	(129,685,754)	(2,533,916)	492,109,775	26.35%
December 31, 2018.....	119,298,291	(120,614,676)	(1,316,385)	471,115,185	25.60%
December 31, 2017.....	112,017,087	(115,426,815)	(3,409,728)	451,777,105	25.55%
December 31, 2016.....	105,246,797	(107,067,707)	(1,820,910)	439,644,322	24.35%
December 31, 2015.....	98,792,642	(99,820,481)	(1,027,839)	432,382,921	23.09%
December 31, 2014.....	92,826,743	(93,400,946)	(574,203)	415,752,810	22.47%

Note: this schedule is intended to present information for 10 years.

Until a 10-year trend is compiled, information is presented for those years for which information is available.

See notes to required supplementary information.

SCHEDULE OF INVESTMENT RETURNS

<u>Year</u>	<u>Annual money-weighted rate of return, net of investment expense</u>
December 31, 2021.....	19.86%
December 31, 2020.....	12.26%
December 31, 2019.....	16.21%
December 31, 2018.....	-2.52%
December 31, 2017.....	17.25%
December 31, 2016.....	7.35%
December 31, 2015.....	0.61%
December 31, 2014.....	7.54%

Note: this schedule is intended to present information for 10 years.
Until a 10-year trend is compiled, information is presented for those
years for which information is available.

See notes to required supplementary information.

NOTE A – CHANGES IN THE NET PENSION LIABILITY AND RELATED RATIOS

The Schedule of Changes in the Net Pension Liability and Related Ratios includes the detailed changes in the system's total pension liability, changes in the system's net position, and the ending net pension liability. It also demonstrates the plan's net position as a percentage of the total pension liability and the net pension liability as a percentage of covered payroll.

NOTE B – CONTRIBUTIONS

Governmental employers are required to pay an annual appropriation as established by PERAC. The total appropriation includes the amounts to pay the pension portion of each member's retirement allowance, an amount to amortize the actuarially determined unfunded liability to zero in accordance with the system's funding schedule, and additional appropriations in accordance with adopted early retirement incentive programs. The total appropriations are payable on July 1 and January 1. Employers may choose to pay the entire appropriation in July at a discounted rate. Accordingly, actual employer contributions may be less than the "total appropriation". The pension fund appropriations are allocated amongst employers based on the actuarial valuation results. In addition, an employer may contribute more than the amount required.

NOTE C – MONEY WEIGHTED RATE OF RETURN

The money weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense. A money weighted rate of return expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested. Inputs to the money weighted rate of return calculation are determined monthly.

NOTE D – CHANGES IN ASSUMPTIONS AND PLAN PROVISIONS

The following changes were reflected in the January 1, 2022 actuarial valuation.

Changes in Assumptions

- The net investment return assumption was lowered from 7.30% to 7.15%.
- The mortality projection scale was updated from MP-2017 to MP-2021.

Changes in Plan Provisions

- None.

Audit of Specific Elements, Accounts and Items of Financial Statements

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Independent Auditor's Report

To the Honorable Middlesex County Retirement Board
Middlesex County Retirement System
Billerica, Massachusetts

Report on the Audit of the Schedule of Employer Allocations and Schedule of Pension Amounts by Employer

Opinion

We have audited the accompanying schedule of employer allocations of the Middlesex County Retirement System (MCRS) as of and for the year ended December 31, 2021, and the related notes. We have also audited the total for all entities of the rows titled net pension liability, total deferred outflows of resources, total deferred inflows of resources, total contributions and total pension expense included in the accompanying schedule pension amounts by employer of the MCRS Pension Plan as of and for the year ended December 31, 2021, and the related notes.

In our opinion, the accompanying schedule of employer allocations and schedule of pension amounts by employer present fairly, in all material respects, the employer allocations and net pension liability, total deferred outflows of resources, total deferred inflows of resources, total contributions and total pension expense for the total of all participating entities for the MCRS as of and for the year ended December 31, 2021, in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Schedules section of our report. We are required to be independent of the MCRS and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. 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 Schedules

Management is responsible for the preparation and fair presentation of the schedules 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 the schedules that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibilities for the Audit of the Schedules

Our objectives are to obtain reasonable assurance about whether the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer as a whole are free from material

misstatement, whether due to fraud or error, and to issue an auditor's 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 will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than 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 judgement made by a reasonable user based on the schedules.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgement and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the schedules, 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 schedules.
- 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 purposes of expressing an opinion on the effectiveness of the MCRS'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 schedules.

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.

Other Matter

We have audited, in accordance with GAAS, the financial statements of the MCRS as of and for the year ended December 31, 2021, and our report thereon, dated August 23, 2022, expressed an unmodified opinion on those financial statements.

Restriction on Use

This report is intended solely for the information and use of the MCRS management, the MCRS employers and their auditors and is not intended to be and should not be used by anyone other than these specified parties.

A handwritten signature in black ink, appearing to read "Bowers & Sullivan LLC", with a stylized flourish at the end.

August 23, 2022

SCHEDULE OF EMPLOYER ALLOCATIONS

FOR THE YEAR ENDED DECEMBER 31, 2021

Employer	Share of Net Pension Liability/(Asset)	Percent of Total Net Pension Liability
Middlesex County Retirement Board.....	\$ -	0.000000%
Middlesex County.....	-	0.000000%
Middlesex Hospital.....	-	0.000000%
Town of Acton.....	44,317,853	3.305508%
Town of Ashby.....	1,370,949	0.102254%
Town of Ashland.....	29,025,102	2.164877%
Town of Ayer.....	16,034,552	1.195959%
Town of Bedford.....	44,033,584	3.284305%
Town of Billerica.....	136,488,741	10.180200%
Town of Boxborough.....	10,220,882	0.762338%
Town of Burlington.....	118,806,981	8.861382%
Town of Carlisle.....	8,806,565	0.656850%
Town of Chelmsford.....	100,318,386	7.482384%
Town of Dracut.....	62,185,294	4.638175%
Town of Dunstable.....	2,299,674	0.171524%
Town of Groton.....	19,238,916	1.434961%
Town of Holliston.....	18,170,200	1.355249%
Town of Hopkinton.....	16,725,088	1.247464%
Town of Hudson.....	59,893,267	4.467221%
Town of Lincoln.....	24,515,962	1.828557%
Town of Littleton.....	19,636,977	1.464651%
Town of North Reading.....	44,566,036	3.324019%
Town of Pepperell.....	15,377,884	1.146981%
Town of Sherborn.....	8,564,819	0.638819%
Town of Shirley.....	8,630,720	0.643734%
Town of Stow.....	11,352,166	0.846717%
Town of Sudbury.....	54,643,133	4.075633%
Town of Tewksbury.....	99,361,547	7.411017%
Town of Townsend.....	4,774,763	0.356132%
Town of Tyngsborough.....	21,175,029	1.579369%
Town of Wayland.....	46,247,117	3.449405%
Town of Westford.....	44,844,218	3.344767%
Town of Weston.....	59,360,735	4.427502%
Town of Wilmington.....	76,302,617	5.691135%
Acton-Boxborough Regional School District.....	24,866,009	1.854665%
Acton Water Supply.....	3,246,366	0.242135%
Bedford Housing Authority.....	255,587	0.019063%
Billerica Housing Authority.....	1,042,229	0.077736%
Chelmsford Housing Authority.....	1,656,493	0.123552%
Chelmsford Water District.....	(1,005,744)	-0.075015%
Dracut Housing Authority.....	1,703,681	0.127071%
Dracut Water Supply.....	3,204,541	0.239015%

(Continued)

SCHEDULE OF EMPLOYER ALLOCATIONS

FOR THE YEAR ENDED DECEMBER 31, 2021

Employer	Share of Net Pension Liability/(Asset)	Percent of Total Net Pension Liability
East Chelmsford Water District.....	183,163	0.013661%
East Middlesex Mosquito Control.....	465,506	0.034720%
Greater Lowell Regional Vocational Technical School District.....	17,260,795	1.287420%
Groton-Dunstable Regional School District.....	11,406,839	0.850795%
Hudson Housing Authority.....	568,228	0.042382%
Lincoln-Sudbury Regional School District.....	8,307,816	0.619650%
Nashoba Valley Technical High School District.....	3,439,271	0.256523%
North Chelmsford Water District.....	628,790	0.046899%
North Middlesex Regional School District.....	11,254,512	0.839433%
Shawsheen Valley Regional Vocational School.....	8,099,773	0.604133%
South Middlesex Regional Vocational Technical School.....	6,194,749	0.462044%
Sudbury Water District.....	1,399,802	0.104406%
Tewksbury Housing Authority.....	1,475,444	0.110048%
Wayland Housing Authority.....	371,407	0.027702%
Hopkinton Housing Authority.....	498,319	0.037168%
Sudbury Housing Authority.....	458,401	0.034190%
Wilmington Housing Authority.....	185,577	0.013842%
Acton Housing Authority.....	721,454	0.053811%
Burlington Housing Authority.....	4,057	0.000303%
Ayer Housing Authority.....	691,363	0.051566%
Holliston Housing Authority.....	93,451	0.006970%
Littleton Housing Authority.....	665,340	0.049625%
Westford Housing Authority.....	285,368	0.021285%
Shirley Water District.....	310,034	0.023124%
Tyngsborough Housing Authority.....	504,387	0.037620%
Pepperell Housing Authority.....	212,725	0.015866%
Groton Housing Authority.....	-	0.000000%
Tyngsborough Water District.....	370,151	0.027608%
North Reading Housing Authority.....	26,035	0.001942%
West Groton Water.....	(39,887)	-0.002975%
Ayer-Shirley Regional School District.....	2,097,697	0.156460%
Northern Middlesex Regional Emergency Communications Center.....	328,026	0.024466%
Total.....	\$ 1,340,727,512	100.000%

(Concluded)

See notes to schedule of employer allocations and schedule of pension amounts by employer.

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Middlesex County Retirement Board	Middlesex County	Middlesex Hospital	Town of Acton
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 52,615,628
Ending net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 44,317,853
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ -	\$ -	\$ 755,287
Changes of assumptions.....	-	-	-	1,578,005
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	14,416
Total Deferred Outflows of Resources.....	\$ -	\$ -	\$ -	\$ 2,347,708
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ -	\$ -	\$ -	\$ 7,535,277
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	1,784,770
Total Deferred Inflows of Resources.....	\$ -	\$ -	\$ -	\$ 9,320,047
Pension Expense				
Proportionate share of plan pension expense.....	\$ 428,815	\$ -	\$ -	\$ 3,711,239
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	(110,017)
Total Employer Pension Expense.....	\$ 428,815	\$ -	\$ -	\$ 3,601,222
Contributions				
Statutory required contribution.....	\$ 428,815	\$ -	\$ -	\$ 4,814,701
Contribution in relation to statutory required contribution.....	(428,815)	-	-	(4,821,666)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ (6,965)
Contributions as a percentage of covered payroll.....	32.02%	0.00%	0.00%	32.31%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ -	\$ -	\$ -	\$ (1,190,679)
June 30, 2024.....	-	-	-	(2,094,556)
June 30, 2025.....	-	-	-	(2,089,241)
June 30, 2026.....	-	-	-	(1,597,863)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ -	\$ -	\$ -	\$ (6,972,339)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ -	\$ -	\$ -	\$ 57,326,603
Current discount rate (7.15%).....	\$ -	\$ -	\$ -	\$ 44,317,853
1% increase (8.15%).....	\$ -	\$ -	\$ -	\$ 33,361,524
Covered Payroll.....	\$ 1,339,300	\$ -	\$ -	\$ 14,922,594
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Ashby	Town of Ashland	Town of Ayer	Town of Bedford
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 1,775,392	\$ 35,887,576	\$ 19,150,544	\$ 51,394,381
Ending net pension liability/(asset).....	\$ 1,370,949	\$ 29,025,102	\$ 16,034,552	\$ 44,033,584
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 23,364	\$ 494,661	\$ 273,269	\$ 750,443
Changes of assumptions.....	48,815	1,033,483	570,935	1,567,883
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	41,871	356,649	71,405	94,043
Total Deferred Outflows of Resources.....	\$ 114,050	\$ 1,884,793	\$ 915,609	\$ 2,412,369
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 233,100	\$ 4,935,081	\$ 2,726,323	\$ 7,486,944
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	165,720	1,976,868	436,870	1,808,571
Total Deferred Inflows of Resources.....	\$ 398,820	\$ 6,911,949	\$ 3,163,193	\$ 9,295,515
Pension Expense				
Proportionate share of plan pension expense.....	\$ 114,805	\$ 2,430,602	\$ 1,342,754	\$ 3,687,434
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	49,164	(136,315)	74,178	(721,874)
Total Employer Pension Expense.....	\$ 163,969	\$ 2,294,287	\$ 1,416,932	\$ 2,965,560
Contributions				
Statutory required contribution.....	\$ 240,126	\$ 3,563,976	\$ 1,934,480	\$ 4,965,363
Contribution in relation to statutory required contribution.....	(240,126)	(3,598,325)	(2,234,480)	(4,966,807)
Contribution deficiency/(excess).....	\$ -	\$ (34,349)	\$ (300,000)	\$ (1,444)
Contributions as a percentage of covered payroll.....	24.19%	23.28%	30.58%	25.38%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (44,300)	\$ (733,783)	\$ (341,208)	\$ (1,305,064)
June 30, 2024.....	(106,627)	(1,461,335)	(731,463)	(2,282,864)
June 30, 2025.....	(73,015)	(1,587,638)	(671,996)	(1,919,816)
June 30, 2026.....	(60,828)	(1,244,400)	(502,917)	(1,375,402)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (284,770)	\$ (5,027,156)	\$ (2,247,584)	\$ (6,883,146)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 1,773,368	\$ 37,544,926	\$ 20,741,221	\$ 56,958,892
Current discount rate (7.15%).....	\$ 1,370,949	\$ 29,025,102	\$ 16,034,552	\$ 44,033,584
1% increase (8.15%).....	\$ 1,032,021	\$ 21,849,471	\$ 12,070,465	\$ 33,147,532
Covered Payroll.....	\$ 992,577	\$ 15,457,970	\$ 7,307,387	\$ 19,572,584
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Billerica	Town of Boxborough	Town of Burlington	Town of Carlisle
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 152,215,238	\$ 12,166,423	\$ 133,422,263	\$ 10,349,764
Ending net pension liability/(asset).....	\$ 136,488,741	\$ 10,220,882	\$ 118,806,981	\$ 8,806,565
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 2,326,115	\$ 174,189	\$ 2,024,769	\$ 150,086
Changes of assumptions.....	4,859,892	363,930	4,230,305	313,571
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,837,939	357,785	2,927,496	148,410
Total Deferred Outflows of Resources.....	\$ 10,023,946	\$ 895,904	\$ 9,182,570	\$ 612,067
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 23,206,914	\$ 1,737,836	\$ 20,200,517	\$ 1,497,363
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	591,897	379,548	334,022	223,522
Total Deferred Inflows of Resources.....	\$ 23,798,811	\$ 2,117,384	\$ 20,534,539	\$ 1,720,885
Pension Expense				
Proportionate share of plan pension expense.....	\$ 11,429,756	\$ 855,910	\$ 9,949,061	\$ 737,473
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(472,654)	111,338	1,179,597	(15,013)
Total Employer Pension Expense.....	\$ 10,957,102	\$ 967,248	\$ 11,128,658	\$ 722,460
Contributions				
Statutory required contribution.....	\$ 13,584,397	\$ 1,144,434	\$ 11,757,449	\$ 1,192,106
Contribution in relation to statutory required contribution.....	(13,587,241)	(1,144,434)	(11,757,449)	(1,192,106)
Contribution deficiency/(excess).....	\$ (2,844)	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	35.49%	32.45%	31.59%	19.37%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (1,965,504)	\$ (92,511)	\$ (1,067,956)	\$ (81,370)
June 30, 2024.....	(4,112,940)	(297,684)	(3,118,396)	(406,529)
June 30, 2025.....	(4,491,409)	(462,882)	(4,176,403)	(371,363)
June 30, 2026.....	(3,205,012)	(368,403)	(2,989,214)	(249,556)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (13,774,865)	\$ (1,221,480)	\$ (11,351,969)	\$ (1,108,818)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 176,552,684	\$ 13,221,048	\$ 153,680,744	\$ 11,391,582
Current discount rate (7.15%).....	\$ 136,488,741	\$ 10,220,882	\$ 118,806,981	\$ 8,806,565
1% increase (8.15%).....	\$ 102,745,781	\$ 7,694,060	\$ 89,435,333	\$ 6,629,392
Covered Payroll.....	\$ 38,284,144	\$ 3,526,748	\$ 37,219,280	\$ 6,153,577
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Chelmsford	Town of Dracut	Town of Dunstable	Town of Groton
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 110,931,084	\$ 66,580,110	\$ 3,218,104	\$ 24,595,262
Ending net pension liability/(asset).....	\$ 100,318,386	\$ 62,185,294	\$ 2,299,674	\$ 19,238,916
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 1,709,677	\$ 1,059,793	\$ 39,192	\$ 327,879
Changes of assumptions.....	3,571,990	2,214,203	81,883	685,031
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	3,002,347	3,692,727	150,370	577,786
Total Deferred Outflows of Resources.....	\$ 8,284,014	\$ 6,966,723	\$ 271,445	\$ 1,590,696
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 17,056,938	\$ 10,573,243	\$ 391,009	\$ 3,271,155
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	552,719	120,361	382,628	1,886,868
Total Deferred Inflows of Resources.....	\$ 17,609,657	\$ 10,693,604	\$ 773,637	\$ 5,158,023
Pension Expense				
Proportionate share of plan pension expense.....	\$ 8,400,801	\$ 5,207,483	\$ 192,579	\$ 1,611,095
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	873,243	1,257,711	50,819	(322,137)
Total Employer Pension Expense.....	\$ 9,274,044	\$ 6,465,194	\$ 243,398	\$ 1,288,958
Contributions				
Statutory required contribution.....	\$ 9,883,109	\$ 6,152,234	\$ 367,320	\$ 2,385,255
Contribution in relation to statutory required contribution.....	(10,283,109)	(6,152,234)	(367,320)	(2,385,255)
Contribution deficiency/(excess).....	\$ (400,000)	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	34.29%	35.54%	25.59%	28.98%
Deferred Outflows/(Inflows) Recognized in				
Future Pension Expense				
June 30, 2023.....	\$ (1,362,912)	\$ (94,404)	\$ (51,974)	\$ (497,951)
June 30, 2024.....	(2,823,588)	(1,222,104)	(120,447)	(902,577)
June 30, 2025.....	(3,032,297)	(1,497,342)	(172,573)	(1,180,239)
June 30, 2026.....	(2,106,846)	(913,031)	(157,198)	(986,560)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (9,325,643)	\$ (3,726,881)	\$ (502,192)	\$ (3,567,327)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 129,765,138	\$ 80,438,727	\$ 2,974,704	\$ 24,886,172
Current discount rate (7.15%).....	\$ 100,318,386	\$ 62,185,294	\$ 2,299,674	\$ 19,238,916
1% increase (8.15%).....	\$ 75,517,518	\$ 46,811,748	\$ 1,731,145	\$ 14,482,641
Covered Payroll.....	\$ 29,987,946	\$ 17,308,432	\$ 1,435,309	\$ 8,229,713
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Holliston	Town of Hopkinton	Town of Hudson	Town of Lincoln
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 25,050,502	\$ 24,095,505	\$ 66,148,477	\$ 26,477,563
Ending net pension liability/(asset).....	\$ 18,170,200	\$ 16,725,088	\$ 59,893,267	\$ 24,515,962
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 309,666	\$ 285,037	\$ 1,020,732	\$ 417,814
Changes of assumptions.....	646,978	595,522	2,132,592	872,928
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	223,070	596,398	1,697,746	1,207,163
Total Deferred Outflows of Resources.....	\$ 1,179,714	\$ 1,476,957	\$ 4,851,070	\$ 2,497,905
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 3,089,443	\$ 2,843,734	\$ 10,183,534	\$ 4,168,401
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	3,586,151	3,457,221	672,302	249,099
Total Deferred Inflows of Resources.....	\$ 6,675,594	\$ 6,300,955	\$ 10,855,836	\$ 4,417,500
Pension Expense				
Proportionate share of plan pension expense.....	\$ 1,521,598	\$ 1,400,584	\$ 5,015,544	\$ 2,053,002
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(833,925)	(416,652)	219,026	100,907
Total Employer Pension Expense.....	\$ 687,673	\$ 983,932	\$ 5,234,570	\$ 2,153,909
Contributions				
Statutory required contribution.....	\$ 2,589,575	\$ 2,910,419	\$ 6,381,731	\$ 2,587,296
Contribution in relation to statutory required contribution.....	(2,589,575)	(2,916,805)	(6,387,468)	(2,589,045)
Contribution deficiency/(excess).....	\$ -	\$ (6,386)	\$ (5,737)	\$ (1,749)
Contributions as a percentage of covered payroll.....	22.16%	15.72%	27.94%	22.71%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (1,094,841)	\$ (627,969)	\$ (868,990)	\$ (168,864)
June 30, 2024.....	(1,682,588)	(1,447,759)	(2,118,814)	(736,219)
June 30, 2025.....	(1,489,246)	(1,515,705)	(1,824,938)	(641,414)
June 30, 2026.....	(1,229,205)	(1,232,565)	(1,192,024)	(373,098)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (5,495,880)	\$ (4,823,998)	\$ (6,004,766)	\$ (1,919,595)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 23,503,752	\$ 21,634,452	\$ 77,473,914	\$ 31,712,205
Current discount rate (7.15%).....	\$ 18,170,200	\$ 16,725,088	\$ 59,893,267	\$ 24,515,962
1% increase (8.15%).....	\$ 13,678,135	\$ 12,590,286	\$ 45,086,360	\$ 18,455,088
Covered Payroll.....	\$ 11,683,621	\$ 18,552,588	\$ 22,864,683	\$ 11,398,289
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Littleton	Town of North Reading	Town of Pepperell	Town of Sherborn
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 23,466,261	\$ 50,095,267	\$ 17,612,899	\$ 9,801,713
Ending net pension liability/(asset).....	\$ 19,636,977	\$ 44,566,036	\$ 15,377,884	\$ 8,564,819
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 334,663	\$ 759,517	\$ 262,078	\$ 145,966
Changes of assumptions.....	699,205	1,586,842	547,553	304,964
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,451,193	392,765	19,470	120,522
Total Deferred Outflows of Resources.....	\$ 2,485,061	\$ 2,739,124	\$ 829,101	\$ 571,452
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 3,338,837	\$ 7,577,475	\$ 2,614,671	\$ 1,456,259
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	159,606	662,566	111,471	481,950
Total Deferred Inflows of Resources.....	\$ 3,498,443	\$ 8,240,041	\$ 2,726,142	\$ 1,938,209
Pension Expense				
Proportionate share of plan pension expense.....	\$ 1,644,428	\$ 3,732,022	\$ 1,287,765	\$ 717,230
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	577,715	(256,301)	(93,579)	(208,249)
Total Employer Pension Expense.....	\$ 2,222,143	\$ 3,475,721	\$ 1,194,186	\$ 508,981
Contributions				
Statutory required contribution.....	\$ 2,730,527	\$ 4,553,483	\$ 1,671,047	\$ 1,047,555
Contribution in relation to statutory required contribution.....	(4,061,166)	(4,553,483)	(1,672,631)	(1,047,555)
Contribution deficiency/(excess).....	\$ (1,330,639)	\$ -	\$ (1,584)	\$ -
Contributions as a percentage of covered payroll.....	27.22%	32.25%	30.54%	22.66%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ 349,254	\$ (1,025,673)	\$ (294,464)	\$ (317,880)
June 30, 2024.....	(393,914)	(1,808,640)	(594,960)	(535,800)
June 30, 2025.....	(615,099)	(1,564,551)	(582,114)	(300,870)
June 30, 2026.....	(353,623)	(1,102,053)	(425,503)	(212,207)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (1,013,382)	\$ (5,500,917)	\$ (1,897,041)	\$ (1,366,757)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 25,401,077	\$ 57,647,636	\$ 19,891,800	\$ 11,078,876
Current discount rate (7.15%).....	\$ 19,636,977	\$ 44,566,036	\$ 15,377,884	\$ 8,564,819
1% increase (8.15%).....	\$ 14,782,293	\$ 33,548,351	\$ 11,576,139	\$ 6,447,411
Covered Payroll.....	\$ 14,917,191	\$ 14,117,838	\$ 5,476,497	\$ 4,623,108
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Shirley	Town of Stow	Town of Sudbury	Town of Tewksbury
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 8,952,975	\$ 11,389,407	\$ 61,745,935	\$ 104,198,258
Ending net pension liability/(asset).....	\$ 8,630,720	\$ 11,352,166	\$ 54,643,133	\$ 99,361,547
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 147,089	\$ 193,469	\$ 931,256	\$ 1,693,370
Changes of assumptions.....	307,310	404,211	1,945,653	3,537,920
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	643,092	1,147,453	304,228	6,514,025
Total Deferred Outflows of Resources.....	\$ 1,097,491	\$ 1,745,133	\$ 3,181,137	\$ 11,745,315
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 1,467,464	\$ 1,930,186	\$ 9,290,864	\$ 16,894,248
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,403	20,129	759,061	565,487
Total Deferred Inflows of Resources.....	\$ 1,468,867	\$ 1,950,315	\$ 10,049,925	\$ 17,459,735
Pension Expense				
Proportionate share of plan pension expense.....	\$ 722,749	\$ 950,646	\$ 4,575,891	\$ 8,320,672
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	83,762	280,843	(97,985)	1,808,853
Total Employer Pension Expense.....	\$ 806,511	\$ 1,231,489	\$ 4,477,906	\$ 10,129,525
Contributions				
Statutory required contribution.....	\$ 812,736	\$ 1,077,698	\$ 5,622,886	\$ 9,177,392
Contribution in relation to statutory required contribution.....	(812,736)	(1,077,698)	(5,622,886)	(9,177,392)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	41.84%	28.15%	29.89%	37.23%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ 19,201	\$ 106,023	\$ (1,304,168)	\$ (534,543)
June 30, 2024.....	(152,615)	(144,249)	(2,198,073)	(1,963,247)
June 30, 2025.....	(160,637)	(144,421)	(1,958,505)	(2,064,903)
June 30, 2026.....	(77,325)	(22,535)	(1,408,042)	(1,151,727)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (371,376)	\$ (205,182)	\$ (6,868,788)	\$ (5,714,420)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 11,164,121	\$ 14,684,401	\$ 70,682,693	\$ 128,527,435
Current discount rate (7.15%).....	\$ 8,630,720	\$ 11,352,166	\$ 54,643,133	\$ 99,361,547
1% increase (8.15%).....	\$ 6,497,020	\$ 8,545,666	\$ 41,134,172	\$ 74,797,230
Covered Payroll.....	\$ 1,942,258	\$ 3,828,104	\$ 18,814,338	\$ 24,651,278
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Townsend	Town of Tyngsborough	Town of Wayland	Town of Westford
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 8,103,799	\$ 24,002,922	\$ 56,416,777	\$ 56,098,309
Ending net pension liability/(asset).....	\$ 4,774,763	\$ 21,175,029	\$ 46,247,117	\$ 44,844,218
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 81,374	\$ 360,876	\$ 788,167	\$ 764,258
Changes of assumptions.....	170,013	753,969	1,646,700	1,596,747
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	96,188	759,785	58,540	500,972
Total Deferred Outflows of Resources.....	\$ 347,575	\$ 1,874,630	\$ 2,493,407	\$ 2,861,977
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 811,844	\$ 3,600,349	\$ 7,863,306	\$ 7,624,774
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,033,266	-	3,252,009	3,693,847
Total Deferred Inflows of Resources.....	\$ 2,845,110	\$ 3,600,349	\$ 11,115,315	\$ 11,318,621
Pension Expense				
Proportionate share of plan pension expense.....	\$ 399,844	\$ 1,773,226	\$ 3,872,798	\$ 3,755,317
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(655,438)	44,324	(1,229,247)	(678,704)
Total Employer Pension Expense.....	\$ (255,594)	\$ 1,817,550	\$ 2,643,551	\$ 3,076,613
Contributions				
Statutory required contribution.....	\$ 934,704	\$ 2,462,187	\$ 5,378,336	\$ 5,950,276
Contribution in relation to statutory required contribution.....	(934,704)	(2,462,187)	(5,378,336)	(5,950,276)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	25.91%	27.23%	25.39%	22.31%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (560,101)	\$ 4,103	\$ (1,659,902)	\$ (1,276,212)
June 30, 2024.....	(737,920)	(506,516)	(2,646,624)	(2,677,209)
June 30, 2025.....	(622,711)	(719,204)	(2,414,757)	(2,528,293)
June 30, 2026.....	(576,803)	(504,102)	(1,900,625)	(1,974,930)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (2,497,535)	\$ (1,725,719)	\$ (8,621,908)	\$ (8,456,644)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 6,176,313	\$ 27,390,598	\$ 59,822,170	\$ 58,007,474
Current discount rate (7.15%).....	\$ 4,774,763	\$ 21,175,029	\$ 46,247,117	\$ 44,844,218
1% increase (8.15%).....	\$ 3,594,339	\$ 15,940,105	\$ 34,813,832	\$ 33,757,760
Covered Payroll.....	\$ 3,607,178	\$ 9,042,420	\$ 21,184,193	\$ 26,671,296
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Town of Weston	Town of Wilmington	Acton- Boxborough Regional School District	Acton Water Supply
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 64,849,395	\$ 86,423,315	\$ 30,083,545	\$ 3,548,184
Ending net pension liability/(asset).....	\$ 59,360,735	\$ 76,302,617	\$ 24,866,009	\$ 3,246,366
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 1,011,656	\$ 1,300,388	\$ 423,779	\$ 55,326
Changes of assumptions.....	2,113,630	2,716,872	885,392	115,592
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,851,892	1,345,055	408,886	56,708
Total Deferred Outflows of Resources.....	\$ 4,977,178	\$ 5,362,315	\$ 1,718,057	\$ 227,626
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 10,092,989	\$ 12,973,584	\$ 4,227,919	\$ 551,973
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	544,687	261,431	1,039,352	119,417
Total Deferred Inflows of Resources.....	\$ 10,637,676	\$ 13,235,015	\$ 5,267,271	\$ 671,390
Pension Expense				
Proportionate share of plan pension expense.....	\$ 4,970,950	\$ 6,389,687	\$ 2,082,316	\$ 271,855
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(280,114)	372,046	(85,208)	(46,644)
Total Employer Pension Expense.....	\$ 4,690,836	\$ 6,761,733	\$ 1,997,108	\$ 225,211
Contributions				
Statutory required contribution.....	\$ 5,898,122	\$ 7,801,298	\$ 3,124,290	\$ 268,502
Contribution in relation to statutory required contribution.....	(5,898,122)	(9,306,639)	(3,124,290)	(268,502)
Contribution deficiency/(excess).....	\$ -	\$ (1,505,341)	\$ -	\$ -
Contributions as a percentage of covered payroll.....	27.13%	36.92%	21.25%	21.54%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (842,684)	\$ (1,177,785)	\$ (451,305)	\$ (94,722)
June 30, 2024.....	(1,928,421)	(2,467,635)	(1,015,154)	(152,066)
June 30, 2025.....	(1,763,843)	(2,511,551)	(1,157,489)	(124,279)
June 30, 2026.....	(1,125,550)	(1,715,729)	(925,266)	(72,697)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (5,660,498)	\$ (7,872,700)	\$ (3,549,214)	\$ (443,764)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 76,785,067	\$ 98,699,949	\$ 32,165,002	\$ 4,199,281
Current discount rate (7.15%).....	\$ 59,360,735	\$ 76,302,617	\$ 24,866,009	\$ 3,246,366
1% increase (8.15%).....	\$ 44,685,481	\$ 57,438,965	\$ 18,718,595	\$ 2,443,794
Covered Payroll.....	\$ 21,737,198	\$ 25,210,625	\$ 14,699,280	\$ 1,246,732
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Bedford Housing Authority	Billerica Housing Authority	Chelmsford Housing Authority	Chelmsford Water District
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 315,580	\$ 1,612,020	\$ 2,016,950	\$ 24,164
Ending net pension liability/(asset).....	\$ 255,587	\$ 1,042,229	\$ 1,656,493	\$ (1,005,744)
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 4,356	\$ 17,762	\$ 28,231	\$ (17,140)
Changes of assumptions.....	9,101	37,110	58,982	(35,811)
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	478	51,504	34,021	137,703
Total Deferred Outflows of Resources.....	\$ 13,935	\$ 106,376	\$ 121,234	\$ 84,752
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 43,457	\$ 177,208	\$ 281,650	\$ (171,005)
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	24,585	335,044	111,642	1,053,282
Total Deferred Inflows of Resources.....	\$ 68,042	\$ 512,252	\$ 393,292	\$ 882,277
Pension Expense				
Proportionate share of plan pension expense.....	\$ 21,404	\$ 87,278	\$ 138,715	\$ (84,224)
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(6,054)	(65,098)	152,538	(191,293)
Total Employer Pension Expense.....	\$ 15,350	\$ 22,180	\$ 291,253	\$ (275,517)
Contributions				
Statutory required contribution.....	\$ 28,862	\$ 130,292	\$ 248,780	\$ 70,601
Contribution in relation to statutory required contribution.....	(28,862)	(130,292)	(248,780)	(70,601)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	23.86%	33.67%	8.04%	4.57%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (11,104)	\$ (83,024)	\$ (30,816)	\$ (150,403)
June 30, 2024.....	(16,712)	(94,270)	(98,083)	(267,921)
June 30, 2025.....	(14,856)	(119,348)	(87,072)	(207,483)
June 30, 2026.....	(11,435)	(109,234)	(56,087)	(171,718)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (54,107)	\$ (405,876)	\$ (272,058)	\$ (797,525)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 330,610	\$ 1,348,158	\$ 2,142,728	\$ (1,300,963)
Current discount rate (7.15%).....	\$ 255,587	\$ 1,042,229	\$ 1,656,493	\$ (1,005,744)
1% increase (8.15%).....	\$ 192,400	\$ 784,568	\$ 1,246,972	\$ (757,102)
Covered Payroll.....	\$ 120,957	\$ 386,955	\$ 3,092,974	\$ 1,544,300
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Dracut Housing Authority	Dracut Water Supply	East Chelmsford Water District	East Middlesex Mosquito Control
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 2,264,513	\$ 3,240,627	\$ 366,619	\$ 649,547
Ending net pension liability/(asset).....	\$ 1,703,681	\$ 3,204,541	\$ 183,163	\$ 465,506
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 29,035	\$ 54,613	\$ 3,122	\$ 7,933
Changes of assumptions.....	60,662	114,103	6,522	16,575
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	18,316	255,912	7,870	24,008
Total Deferred Outflows of Resources.....	\$ 108,013	\$ 424,628	\$ 17,514	\$ 48,516
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 289,674	\$ 544,862	\$ 31,143	\$ 79,149
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	290,811	56,010	117,389	111,666
Total Deferred Inflows of Resources.....	\$ 580,485	\$ 600,872	\$ 148,532	\$ 190,815
Pension Expense				
Proportionate share of plan pension expense.....	\$ 142,670	\$ 268,354	\$ 15,337	\$ 38,982
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(62,397)	94,931	(23,272)	(23,007)
Total Employer Pension Expense.....	\$ 80,273	\$ 363,285	\$ (7,935)	\$ 15,975
Contributions				
Statutory required contribution.....	\$ 170,394	\$ 252,748	\$ 37,612	\$ 58,341
Contribution in relation to statutory required contribution.....	(170,394)	(252,748)	(37,612)	(58,341)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	41.32%	40.36%	17.52%	14.76%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (108,543)	\$ (27,177)	\$ (25,964)	\$ (17,251)
June 30, 2024.....	(120,980)	(68,172)	(35,486)	(43,180)
June 30, 2025.....	(130,093)	(59,117)	(36,627)	(47,219)
June 30, 2026.....	(112,856)	(21,778)	(32,941)	(34,649)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (472,472)	\$ (176,244)	\$ (131,018)	\$ (142,299)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 2,203,768	\$ 4,145,179	\$ 236,927	\$ 602,147
Current discount rate (7.15%).....	\$ 1,703,681	\$ 3,204,541	\$ 183,163	\$ 465,506
1% increase (8.15%).....	\$ 1,282,494	\$ 2,412,309	\$ 137,881	\$ 350,423
Covered Payroll.....	\$ 412,422	\$ 626,182	\$ 214,654	\$ 395,169

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Greater Lowell Regional Vocation Technical School District	Groton- Dunstable Regional School District	Hudson Housing Authority	Lincoln- Sudbury Regional School District
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 17,820,793	\$ 12,381,614	\$ 616,643	\$ 8,715,281
Ending net pension liability/(asset).....	\$ 17,260,795	\$ 11,406,839	\$ 568,228	\$ 8,307,816
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 294,167	\$ 194,401	\$ 9,684	\$ 141,586
Changes of assumptions.....	614,597	406,158	20,233	295,813
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,446,808	669,010	22,520	493,356
Total Deferred Outflows of Resources.....	\$ 2,355,572	\$ 1,269,569	\$ 52,437	\$ 930,755
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 2,934,819	\$ 1,939,482	\$ 96,615	\$ 1,412,562
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	107,491	82,794	191,777	187,046
Total Deferred Inflows of Resources.....	\$ 3,042,310	\$ 2,022,276	\$ 288,392	\$ 1,599,608
Pension Expense				
Proportionate share of plan pension expense.....	\$ 1,445,444	\$ 955,224	\$ 47,584	\$ 695,708
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	451,134	295,624	(140,304)	56,763
Total Employer Pension Expense.....	\$ 1,896,578	\$ 1,250,848	\$ (92,720)	\$ 752,471
Contributions				
Statutory required contribution.....	\$ 1,453,154	\$ 1,173,066	\$ 58,322	\$ 756,986
Contribution in relation to statutory required contribution.....	(1,453,154)	(1,173,066)	(58,322)	(756,986)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	30.69%	27.72%	13.77%	25.29%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ 65,263	\$ 46,428	\$ (100,955)	\$ (115,961)
June 30, 2024.....	(211,852)	(265,868)	(107,073)	(257,546)
June 30, 2025.....	(367,974)	(340,924)	(18,351)	(196,364)
June 30, 2026.....	(172,175)	(192,343)	(9,576)	(98,982)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (686,738)	\$ (752,707)	\$ (235,955)	\$ (668,853)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 22,327,407	\$ 14,755,122	\$ 735,022	\$ 10,746,434
Current discount rate (7.15%).....	\$ 17,260,795	\$ 11,406,839	\$ 568,228	\$ 8,307,816
1% increase (8.15%).....	\$ 12,993,554	\$ 8,586,822	\$ 427,750	\$ 6,253,945
Covered Payroll.....	\$ 4,734,333	\$ 4,231,955	\$ 423,443	\$ 2,993,714
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Nashoba Valley Technical High School District	North Chelmsford Water District	North Middlesex Regional School District	Shawsheen Valley Regional Vocational Technical School
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 3,650,910	\$ 977,691	\$ 12,806,518	\$ 8,542,800
Ending net pension liability/(asset).....	\$ 3,439,271	\$ 628,790	\$ 11,254,512	\$ 8,099,773
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 58,614	\$ 10,716	\$ 191,805	\$ 138,040
Changes of assumptions.....	122,461	22,389	400,734	288,405
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	225,799	18,806	80,780	444,986
Total Deferred Outflows of Resources.....	\$ 406,874	\$ 51,911	\$ 673,319	\$ 871,431
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 584,772	\$ 106,912	\$ 1,913,583	\$ 1,377,188
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	40,422	247,901	27,663	32,627
Total Deferred Inflows of Resources.....	\$ 625,194	\$ 354,813	\$ 1,941,246	\$ 1,409,815
Pension Expense				
Proportionate share of plan pension expense.....	\$ 288,008	\$ 52,655	\$ 942,468	\$ 678,286
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	59,612	(34,445)	(1,235)	(14,567)
Total Employer Pension Expense.....	\$ 347,620	\$ 18,210	\$ 941,233	\$ 663,719
Contributions				
Statutory required contribution.....	\$ 327,120	\$ 78,589	\$ 1,219,851	\$ 723,882
Contribution in relation to statutory required contribution.....	(327,120)	(78,589)	(1,219,851)	(723,882)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	31.50%	13.61%	21.04%	24.28%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (36,775)	\$ (58,947)	\$ (148,808)	\$ (48,876)
June 30, 2024.....	(65,380)	(90,373)	(399,528)	(184,656)
June 30, 2025.....	(69,335)	(86,648)	(424,089)	(196,354)
June 30, 2026.....	(46,830)	(66,934)	(295,502)	(108,498)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (218,320)	\$ (302,902)	\$ (1,267,927)	\$ (538,384)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 4,448,810	\$ 813,361	\$ 14,558,082	\$ 10,477,323
Current discount rate (7.15%).....	\$ 3,439,271	\$ 628,790	\$ 11,254,512	\$ 8,099,773
1% increase (8.15%).....	\$ 2,589,009	\$ 473,340	\$ 8,472,154	\$ 6,097,334
Covered Payroll.....	\$ 1,038,502	\$ 577,414	\$ 5,799,083	\$ 2,981,397

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	South Middlesex Regional Vocational Technical School	Sudbury Water District	Tewksbury Housing Authority	Wayland Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 6,677,782	\$ 2,449,672	\$ 1,645,758	\$ 625,875
Ending net pension liability/(asset).....	\$ 6,194,749	\$ 1,399,802	\$ 1,475,444	\$ 371,407
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 105,574	\$ 23,856	\$ 25,145	\$ 6,330
Changes of assumptions.....	220,574	49,842	52,535	13,225
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	244,125	162,541	24,420	6,105
Total Deferred Outflows of Resources.....	\$ 570,273	\$ 236,239	\$ 102,100	\$ 25,660
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 1,053,281	\$ 238,006	\$ 250,867	\$ 63,150
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	137,991	715,804	13,101	184,183
Total Deferred Inflows of Resources.....	\$ 1,191,272	\$ 953,810	\$ 263,968	\$ 247,333
Pension Expense				
Proportionate share of plan pension expense.....	\$ 518,757	\$ 117,223	\$ 123,557	\$ 31,102
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(137,550)	(150,161)	6,208	(48,108)
Total Employer Pension Expense.....	\$ 381,207	\$ (32,938)	\$ 129,765	\$ (17,006)
Contributions				
Statutory required contribution.....	\$ 580,201	\$ 178,572	\$ 142,280	\$ 57,807
Contribution in relation to statutory required contribution.....	(580,201)	(178,572)	(142,280)	(57,807)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	25.69%	17.89%	29.34%	17.38%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (100,619)	\$ (114,909)	\$ (23,442)	\$ (52,982)
June 30, 2024.....	(232,161)	(163,940)	(48,629)	(66,541)
June 30, 2025.....	(181,673)	(235,730)	(54,169)	(55,201)
June 30, 2026.....	(106,546)	(202,992)	(35,628)	(46,949)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (620,999)	\$ (717,571)	\$ (161,868)	\$ (221,673)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 8,013,112	\$ 1,810,690	\$ 1,908,535	\$ 480,427
Current discount rate (7.15%).....	\$ 6,194,749	\$ 1,399,802	\$ 1,475,444	\$ 371,407
1% increase (8.15%).....	\$ 4,663,273	\$ 1,053,741	\$ 1,110,682	\$ 279,587
Covered Payroll.....	\$ 2,258,149	\$ 998,296	\$ 484,993	\$ 332,528

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Hopkinton Housing Authority	Sudbury Housing Authority	Wilmington Housing Authority	Acton Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 517,677	\$ 465,613	\$ 370,673	\$ 861,176
Ending net pension liability/(asset).....	\$ 498,319	\$ 458,401	\$ 185,577	\$ 721,454
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 8,493	\$ 7,812	\$ 3,163	\$ 12,295
Changes of assumptions.....	17,743	16,322	6,608	25,688
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	35,164	40,584	6,243	16,337
Total Deferred Outflows of Resources.....	\$ 61,400	\$ 64,718	\$ 16,014	\$ 54,320
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 84,728	\$ 77,941	\$ 31,553	\$ 122,667
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,914	4,303	115,318	42,075
Total Deferred Inflows of Resources.....	\$ 86,642	\$ 82,244	\$ 146,871	\$ 164,742
Pension Expense				
Proportionate share of plan pension expense.....	\$ 41,729	\$ 38,387	\$ 15,538	\$ 60,416
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(1,043)	18,865	(23,145)	(42,956)
Total Employer Pension Expense.....	\$ 40,686	\$ 57,252	\$ (7,607)	\$ 17,460
Contributions				
Statutory required contribution.....	\$ 43,799	\$ 43,182	\$ 35,519	\$ 77,609
Contribution in relation to statutory required contribution.....	(43,799)	(43,182)	(35,519)	(77,609)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	35.01%	27.40%	56.04%	16.24%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ 1,206	\$ 415	\$ (29,369)	\$ (11,816)
June 30, 2024.....	(10,045)	(8,403)	(32,859)	(33,108)
June 30, 2025.....	(11,164)	(7,416)	(34,892)	(38,379)
June 30, 2026.....	(5,239)	(2,122)	(33,737)	(27,119)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (25,242)	\$ (17,526)	\$ (130,857)	\$ (110,422)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 644,592	\$ 592,957	\$ 240,050	\$ 933,225
Current discount rate (7.15%).....	\$ 498,319	\$ 458,401	\$ 185,577	\$ 721,454
1% increase (8.15%).....	\$ 375,124	\$ 345,074	\$ 139,698	\$ 543,095
Covered Payroll.....	\$ 125,114	\$ 157,571	\$ 63,386	\$ 477,825

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Burlington Housing Authority	Ayer Housing Authority	Holliston Housing Authority	Littleton Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 327,467	\$ 858,485	\$ 168,599	\$ 607,838
Ending net pension liability/(asset).....	\$ 4,057	\$ 691,363	\$ 93,451	\$ 665,340
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 69	\$ 11,783	\$ 1,593	\$ 11,339
Changes of assumptions.....	144	24,617	3,327	23,690
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	75,912	15,654	7,322	141,102
Total Deferred Outflows of Resources.....	\$ 76,125	\$ 52,054	\$ 12,242	\$ 176,131
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 690	\$ 117,551	\$ 15,889	\$ 113,126
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	241,805	72,082	41,832	3,524
Total Deferred Inflows of Resources.....	\$ 242,495	\$ 189,633	\$ 57,721	\$ 116,650
Pension Expense				
Proportionate share of plan pension expense.....	\$ 339	\$ 57,896	\$ 7,825	\$ 55,716
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(15,922)	(214,539)	(19,696)	43,282
Total Employer Pension Expense.....	\$ (15,583)	\$ (156,643)	\$ (11,871)	\$ 98,998
Contributions				
Statutory required contribution.....	\$ 35,290	\$ 66,830	\$ 19,951	\$ 48,297
Contribution in relation to statutory required contribution.....	(35,290)	(66,830)	(19,951)	(48,297)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	16.16%	33.75%	23.14%	#DIV/0!
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (16,834)	\$ (28,936)	\$ (7,551)	\$ 30,413
June 30, 2024.....	(30,214)	(33,326)	(11,254)	20,584
June 30, 2025.....	(61,524)	(41,167)	(13,715)	823
June 30, 2026.....	(57,798)	(34,150)	(12,959)	7,661
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (166,370)	\$ (137,579)	\$ (45,479)	\$ 59,481
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 5,248	\$ 894,301	\$ 120,882	\$ 860,639
Current discount rate (7.15%).....	\$ 4,057	\$ 691,363	\$ 93,451	\$ 665,340
1% increase (8.15%).....	\$ 3,054	\$ 520,443	\$ 70,348	\$ 500,854
Covered Payroll.....	\$ 218,402	\$ 198,031	\$ 86,205	\$ -

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Westford Housing Authority	Shirley Water District	Tyngsborough Housing Authority	Pepperell Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 537,128	\$ 453,772	\$ 516,453	\$ 247,338
Ending net pension liability/(asset).....	\$ 285,368	\$ 310,034	\$ 504,387	\$ 212,725
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 4,863	\$ 5,284	\$ 8,596	\$ 3,625
Changes of assumptions.....	10,161	11,039	17,959	7,574
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	21,480	46,081	21,097
Total Deferred Outflows of Resources.....	\$ 15,024	\$ 37,803	\$ 72,636	\$ 32,296
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 48,521	\$ 52,714	\$ 85,760	\$ 36,169
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	157,431	93,820	7,839	3,939
Total Deferred Inflows of Resources.....	\$ 205,952	\$ 146,534	\$ 93,599	\$ 40,108
Pension Expense				
Proportionate share of plan pension expense.....	\$ 23,897	\$ 25,961	\$ 42,238	\$ 17,815
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(33,256)	(17,914)	13,081	11,245
Total Employer Pension Expense.....	\$ (9,359)	\$ 8,047	\$ 55,319	\$ 29,060
Contributions				
Statutory required contribution.....	\$ 53,528	\$ 36,292	\$ 47,279	\$ 24,032
Contribution in relation to statutory required contribution.....	(53,528)	(36,292)	(47,279)	(24,032)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	20.20%	15.81%	26.28%	24.64%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ (45,319)	\$ (17,003)	\$ (2,037)	\$ 5,080
June 30, 2024.....	(50,263)	(27,553)	(8,801)	1,729
June 30, 2025.....	(49,830)	(36,348)	(6,917)	(8,173)
June 30, 2026.....	(45,516)	(27,827)	(3,208)	(6,448)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (190,928)	\$ (108,731)	\$ (20,963)	\$ (7,812)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ 369,133	\$ 401,039	\$ 652,441	\$ 275,167
Current discount rate (7.15%).....	\$ 285,368	\$ 310,034	\$ 504,387	\$ 212,725
1% increase (8.15%).....	\$ 214,819	\$ 233,387	\$ 379,692	\$ 160,135
Covered Payroll.....	\$ 265,045	\$ 229,540	\$ 179,917	\$ 97,538

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Groton Housing Authority	Tyngsborough Water District	North Reading Housing Authority	West Groton Water
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ -	\$ 440,581	\$ 212,881	\$ 18,060
Ending net pension liability/(asset).....	\$ -	\$ 370,151	\$ 26,035	\$ (39,887)
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ 6,308	\$ 444	\$ (680)
Changes of assumptions.....	-	13,180	927	(1,420)
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	8,244	9,051	23,015	2,149
Total Deferred Outflows of Resources.....	\$ 8,244	\$ 28,539	\$ 24,386	\$ 49
Deferred Inflows of Resources				
Net difference between projected and actual investment earnings on pension plan investments.....	\$ -	\$ 62,936	\$ 4,427	\$ (6,782)
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	23,708	131,128	55,970
Total Deferred Inflows of Resources.....	\$ -	\$ 86,644	\$ 135,555	\$ 49,188
Pension Expense				
Proportionate share of plan pension expense.....	\$ -	\$ 30,996	\$ 2,179	\$ (3,342)
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	546	(3,199)	(21,538)	(11,521)
Total Employer Pension Expense.....	\$ 546	\$ 27,797	\$ (19,359)	\$ (14,863)
Contributions				
Statutory required contribution.....	\$ -	\$ 43,481	\$ 22,357	\$ 2,709
Contribution in relation to statutory required contribution.....	-	(43,481)	(22,357)	(2,709)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	0.00%	18.69%	36.50%	1.40%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2023.....	\$ 4,832	\$ (4,877)	\$ (21,471)	\$ (12,289)
June 30, 2024.....	2,839	(19,573)	(23,712)	(13,638)
June 30, 2025.....	573	(20,726)	(32,507)	(12,959)
June 30, 2026.....	-	(12,929)	(33,479)	(10,253)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 8,244	\$ (58,105)	\$ (111,169)	\$ (49,139)
Discount Rate Sensitivity				
1% decrease (6.15%).....	\$ -	\$ 478,803	\$ 33,677	\$ (51,595)
Current discount rate (7.15%).....	\$ -	\$ 370,151	\$ 26,035	\$ (39,887)
1% increase (8.15%).....	\$ -	\$ 278,642	\$ 19,599	\$ (30,026)
Covered Payroll.....	\$ -	\$ 232,657	\$ 61,252	\$ 193,409

See notes to schedule of employer allocations and schedule
of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2021

	Ayer-Shirley Regional School District	Northern Middlesex Regional Emergency Communications Center	Totals
Net Pension Liability			
Beginning net pension liability/(asset).....	\$ 4,239,976	\$ (14,725)	\$ 1,531,093,126
Ending net pension liability/(asset).....	\$ 2,097,697	\$ 328,026	\$ 1,340,727,512
Deferred Outflows of Resources			
Differences between expected and actual experience.....	\$ 35,750	\$ 5,590	\$ 22,849,362
Changes of assumptions.....	74,692	11,680	47,738,660
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	105,858	283,044	38,895,800
Total Deferred Outflows of Resources.....	\$ 216,300	\$ 300,314	\$ 109,483,822
Deferred Inflows of Resources			
Net difference between projected and actual investment earnings on pension plan investments.....	\$ 356,667	\$ 55,774	\$ 227,961,260
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,507,225	7,839	38,895,800
Total Deferred Inflows of Resources.....	\$ 1,863,892	\$ 63,613	\$ 266,857,060
Pension Expense			
Proportionate share of plan pension expense.....	\$ 175,664	\$ 27,474	\$ 112,703,191
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(393,228)	68,149	-
Total Employer Pension Expense.....	\$ (217,564)	\$ 95,623	\$ 112,703,191
Contributions			
Statutory required contribution.....	\$ 513,767	\$ -	\$ 144,255,207
Contribution in relation to statutory required contribution.....	(513,767)	-	(147,852,245)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ (3,597,038)
Contributions as a percentage of covered payroll.....	12.60%	0.00%	28.47%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense			
June 30, 2023.....	\$ (354,951)	\$ 62,706	\$ (22,243,804)
June 30, 2024.....	(502,909)	56,122	(49,152,268)
June 30, 2025.....	(420,813)	55,891	(50,098,614)
June 30, 2026.....	(368,919)	61,982	(35,878,552)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (1,647,592)	\$ 236,701	\$ (157,373,238)
Discount Rate Sensitivity			
1% decrease (6.15%).....	\$ 2,713,437	\$ 424,312	\$ 1,734,275,212
Current discount rate (7.15%).....	\$ 2,097,697	\$ 328,026	\$ 1,340,727,512
1% increase (8.15%).....	\$ 1,579,101	\$ 246,931	\$ 1,009,270,759
Covered Payroll.....	\$ 4,076,791	\$ 923,210	\$ 519,239,589
See notes to schedule of employer allocations and schedule of pension amounts by employer.			(Concluded)

NOTE A – Schedule of Employer Allocations

Governmental Accounting Standards Board (GASB) Statement #68 requires employers participating in a cost-sharing pension plan to recognize pension liabilities as employees provide services to the government and earn their pension benefits. Employers participating in cost-sharing plans are required to recognize their proportionate share of the plan's collective pension amounts for all benefits provided through the plan including the net pension liability, deferred outflows of resources, deferred inflows of resources, pension expense, and contributions.

GASB Statement #68 requires the allocation of the collective pension amounts be consistent with the manner in which contributions to the plan are determined. As permissible under GASB Statement #68, The Schedule of Employer Allocations is used to demonstrate the allocation of Middlesex County Retirement System's collective pension amounts.

Massachusetts General Law (MGL) Chapter 32 Section 22 Paragraph 7c dictates that Massachusetts cost sharing defined benefit pension plans allocate the annual required pension fund appropriation to employer units based on their proportionate share of the aggregate of the annual rates of regular compensation of all members in service of the system. The Public Employee Retirement Administration Commission (PERAC) approves each system's proportionate share of the annual required contribution. PERAC can accept alternative allocation methodologies and as such the MCRS has elected to use an actuarial based allocation methodology. Accordingly, each member unit's proportionate share of the total pension liability has been calculated based on each member unit's actual current employees, retirees and inactive participants. Each member's share of the MCRS's net position at year end is calculated by starting with the balance carried forward from the prior year. Each member unit is then credited with the actual required contribution received during the year along with any excess contributions received. Each member unit's share is reduced by the actual payment made to their specific retirees. Net investment income is allocated based on each member's money-weighted rate of return. All other shared expenses are allocated based on the proportionate share of the total pension liability. The difference between the total pension liability and the net position is reported as the net pension liability.

The County of Middlesex was abolished on July 11, 1997, pursuant to Chapter 48 of the Acts of 1997. This Act required that active employees of Middlesex County and Middlesex Hospital be transferred to the Commonwealth. The legislation required that County and Hospital retirees and beneficiaries remain with the County Retirement System. The Commonwealth provided a mechanism, in the legislation, that fully funded the actuarially determined liability of those retirees. At December 31, 2018, the remaining liabilities for Middlesex County and the Middlesex Hospital retirees and beneficiaries were actuarially determined and are separately identified in the MCRS's funding schedule. No assets have been allocated to cover the remaining liability and therefore the liability has been allocated to the remaining member units.

The current employees, retirees, beneficiaries and inactive participants of the MCRS have been identified and their total pension liability has been actuarially determined. For transparency purposes, the MCRS has historically paid a contribution as an employer to itself. However, with the implementation of GASB 67 & 68 the net pension liability is allocated to each member unit.

When a member unit accepts an Early Retirement Incentive Program (E.R.I. or ERIP), PERAC completes an analysis of the costs and liabilities attributable to the additional benefits payable in accordance with the ERIP. The accrued liability for the members who accept the ERIP as retirees including the ERIP less the accrued liability for the members as active employees excluding the ERIP represents the increase in accrued liability due to the ERIP. The net increase is amortized for each member unit accepting the ERIP and is separately identified in the MCRS's funding schedule. The 2010 ERIP amortization is straight line ending in fiscal 2022.

NOTE B – Schedule of Pension Amounts by Employer

The Schedule of Pension Amounts by Employer presents the net pension liability, the various categories of deferred outflows of resources and deferred inflows of resources, contributions and pension expense for all participating employers including differences between expected and actual economic experience; differences between projected and actual investment earnings, net; and changes of assumptions.

The following assumption changes were reflected in the January 1, 2022 actuarial valuation.

Changes in Assumptions

- The net investment return assumption was lowered from 7.30% to 7.15%.
- The mortality projection scale was updated from MP-2017 to MP-2021.

Changes in Plan Provisions

- None.