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MASSACHUSETTS WATER RESOURCES AUTHORITY

Financial Statements and Supplemental Schedules
and Required Supplementary Information

June 30, 2016 and 2015

(With Independent Auditors' Report Thereon)

MASSACHUSETTS WATER RESOURCES AUTHORITY

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KPMG LLP
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Independent Auditors' Report

The Board of Directors
Massachusetts Water Resources Authority:

Report on the Financial Statements

We have audited the accompanying statements of net position of the Massachusetts Water Resources Authority (the Authority), as of June 30, 2016 and 2015, and the statements of revenues, expenses, and changes in net position, and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes 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.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits 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. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Authority at June 30, 2016 and 2015, and the changes in net position and cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

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Emphasis of Matter

As discussed in Note 2a to the financial statements, the Authority adopted Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3 through 11 and schedules of funding progress, schedules of employer contributions and schedules of changes in net pension liability and related ratios on pages 52 through 54 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with 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 basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming an opinion on the Authority's basic financial statements. The supplemental schedules listed in the table of contents are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The supplemental schedules listed in the table of contents are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplemental schedules listed in the table of contents are fairly stated in all material respects in relation to the basic financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated August 31, 2016 on our consideration of the Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is 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 internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control over financial reporting and compliance.

KPMG LLP

Boston, Massachusetts
August 31, 2016

This section of the Authority's annual financial report presents our discussion and analysis of the Authority's financial performance during the Fiscal Years ended June 30, 2016 and 2015. Please read it in conjunction with the Authority's financial statements, which immediately follow this section.

Financial Highlights – Fiscal Year 2016

The Fiscal Year 2016 customer service revenues were approximately $683.5 million. Of this amount, rate revenues represent approximately 98.4%, or $672.4 million, and were $22.1 million higher than Fiscal Year 2015. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately $272 million in Fiscal Year 2016. The 3.3% increase in total operating expenses over Fiscal Year 2015 is the result of increases in pension and OPEB expenses totaling $9.3 million and increases in maintenance costs of $2.7 million due to a fire at the Nut Island facility, offset by a decrease in pollution remediation expense of $3.3 million.

Net nonoperating expenses decreased $13 million, or 6%, due to a $3.3 million increase in investment income and an $8.8 million decrease in interest expense and debt service assistance receipts of $874,000. The increase in investment income was primarily due to an increase in the unrealized gain on investments. Lower long-term interest rates have caused the market values of investments to increase. A rise in short-term interest rates during Fiscal Year 2016 also caused increases in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt.

Total assets at June 30, 2016 were approximately $7.8 billion, a $150.8 million, or 1.9%, decrease over total assets at June 30, 2015.

During Fiscal Year 2016, the Authority issued General Revenue Bonds 2016 Series B and General Revenue Refunding Bonds, 2016 Series C for a total of $747.6 million. The proceeds from these bonds were used to finance new capital projects and refund $761.4 million of the Authority's outstanding bonds. The interest rate on these bonds is 3% to 5%.

Total capital assets (net of depreciation) were approximately $5.8 billion at June 30, 2016, a $158.9 million, or 2.7%, decrease over June 30, 2015. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Financial Highlights – Fiscal Year 2015

The Fiscal Year 2015 customer service revenues were approximately $661.3 million. Of this amount, rate revenues represent approximately 98.3%, or $650.3 million, and were $21.6 million higher than Fiscal Year 2014. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately $263.4 million in Fiscal Year 2015. The 3.7% decrease in total operating expenses over Fiscal Year 2014 is the result of a decrease in utility and maintenance costs.

Net nonoperating expenses decreased $8.1 million, or 3.6%, due to a $10.5 million increase in investment income offset by a $1.6 million increase in interest expense and no debt service assistance. The increase in investment income was primarily due to an increase in the unrealized gain on investments. Lower long-term interest rates have caused the market values of investments to increase.

Total assets at June 30, 2015 were approximately $7.9 billion, a $166.3 million, or 2.0%, decrease over total assets at June 30, 2014.

During Fiscal Year 2015, the Authority issued General Revenue Bonds 2014 Series D and General Revenue Refunding Bonds, 2014 Series E and 2014 Series F for a total of $243.9 million. The proceeds from these bonds were used to finance new capital projects and refund $194.6 million of the Authority's outstanding bonds. The interest rate on these bonds was 4% to 5% during Fiscal Year 2015.

Total capital assets (net of depreciation) were approximately $5.9 billion at June 30, 2015, a $137.8 million, or 2.3%, decrease over June 30, 2014. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Overview of the Financial Statements

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

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

Financial Analysis of the Authority

Net Position

The Authority's total net position at June 30, 2016 was approximately $1.7 billion, a $7.5 million decrease from June 30, 2015. Total assets decreased $150.8 million, or 1.9%, to $7.8 billion, and total liabilities decreased $91.9 million, or 1.5%, to $6.2 billion.

The Authority's total net position at June 30, 2015 was approximately $1.7 billion, a $44.8 million decrease from June 30, 2014. Total assets decreased $166.3 million, or 2.0%, to $7.9 billion, and total liabilities decreased $167.0 million, or 2.6%, to $6.3 billion.

Net Position
(Dollars in thousands)

	2016	2015	2014	Percentage change 2016–2015	Percentage change 2015–2014
Current assets	$ 134,180	130,438	126,567	2.9%	3.1%
Restricted assets	652,426	675,664	718,750	(3.4)	(6.0)
Capital assets	5,776,418	5,935,338	6,073,139	(2.7)	(2.3)
Other assets	1,235,670	1,208,077	1,197,311	2.3	0.9
Total assets	7,798,694	7,949,517	8,115,767	(1.9)	(2.0)
Deferred outflows of resources from pension	39,153	14,601	—	168.2	100.0
Deferred outflows of resources from derivative instruments	59,615	44,183	40,977	34.9	7.8
Deferred outflows of resources from refunding debt	94,840	73,204	73,617	29.6	(0.6)
Current liabilities	282,777	356,568	371,594	(20.7)	(4.0)
Payable from restricted assets	148,191	159,064	217,707	(6.8)	(26.9)
Long-term debt	5,545,040	5,601,104	5,697,812	(1.0)	(1.7)
Long-term capital lease	29,223	30,114	30,938	(3.0)	(2.7)
Other liabilities	202,770	153,028	148,803	32.5	2.8
Total liabilities	6,208,001	6,299,878	6,466,854	(1.5)	(2.6)
Deferred inflows of resources from pension	5,586	6,983	—	(20.0)	100.0
Deferred inflows of resources from regulated activities	74,606	63,051	7,092	18.3	789.0
Net position:					
Net investment in capital assets	800,438	788,429	774,390	1.5	1.8
Restricted	306,949	290,362	271,424	5.7	7.0
Unrestricted	596,722	632,802	710,601	(5.7)	(10.9)
Total net position	$ 1,704,109	1,711,593	1,756,415	(0.4)%	(2.6)%

Changes in Net Position

The decrease in net position at June 30, 2016 was $7.5 million, or 0.4%, as compared with June 30, 2015. The Authority's total operating revenues increased by 4.2% to $697 million and total operating expenses increased 3.3% to $272 million.

The decrease in net position at June 30, 2015 was $44.8 million, or 2.6%, as compared with June 30, 2014. The Authority's total operating revenues increased by 3.2% to $668.6 million and total operating expenses decreased 3.7% to $263.4 million.

Changes in Net Position
(Dollars in thousands)

		2016	2015	2014	Percentage change 2016–2015	Percentage change 2015–2014
Operating revenues:						
Customer services	$	683,501	661,305	639,691	3.4%	3.4%
Other		13,472	7,299	8,326	84.6	(12.3)
Total operating revenues		696,973	668,604	648,017	4.2	3.2
Operating expenses:						
Operations		98,972	102,322	100,778	(3.3)	1.5
Maintenance		30,978	28,323	29,453	9.4	(3.8)
Payments in lieu of taxes		8,129	7,966	7,872	2.0	1.2
Engineering, general, and administrative		133,959	124,792	135,401	7.3	(7.8)
Total operating expenses		272,038	263,403	273,504	3.3	(3.7)
Depreciation and amortization		197,128	194,000	193,062	1.6	0.5
Operating income		227,807	211,201	181,451	7.9	16.4
Nonoperating items:						
Regulatory accounting provisions		(72,162)	(41,634)	(3,808)	73.3	993.3
Net nonoperating expenses		(204,259)	(217,218)	(225,293)	(6.0)	(3.6)
Capital grants and contributions		38,190	6,429	5,958	494.0	7.9
Changes in derivative related accounts		2,940	2,940	2,940	–	–
Total nonoperating items		(235,291)	(249,483)	(220,203)	(5.7)	13.3
Change in net position		(7,484)	(38,282)	(38,752)	(80.5)	(1.2)
Total net position – beginning of year		1,711,593	1,756,415	1,795,167	(2.6)	(2.2)
Restatement to comply with GASB 68		—	(6,540)	—	(100.0)	100.0
Total net position – end of year	$	1,704,109	1,711,593	1,756,415	(0.4)%	(2.6)%

During Fiscal Year 2016, the increases in customer service revenues were primarily due to the 3.4% increase in the rate revenue requirement ($22.1 million).

During Fiscal Year 2015, the increases in customer service revenues were primarily due to the 3.43% increase in the rate revenue requirement ($21.6 million).

Total operating costs, before depreciation and amortization, were approximately $272 million in Fiscal Year 2016. The 3.3% increase in total operating expenses over Fiscal Year 2015 is the result of increases in pension and OPEB expenses totaling $9.3 million and increases in maintenance costs of $2.7 million due to a fire at the Nut Island facility, offset by a decrease in pollution remediation expense of $3.3 million

Total operating costs, before depreciation and amortization, were approximately $263.4 million in Fiscal Year 2015. The 3.7% decrease in total operating expenses over Fiscal Year 2014 is the result of a decrease in utility and maintenance costs.

In Fiscal Year 2016, net nonoperating expenses decreased $13 million, or 6%, due to a $3.3 million increase in investment income, an $8.8 million decrease in interest expense and debt service assistance receipts of $874,000. The increase in investment income was primarily due to an increase in the unrealized gain on investments. Lower long-term interest rates have caused the market values of investments to increase. A rise in short-term interest rates during Fiscal Year 2016 also caused increases in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt.

In Fiscal Year 2015, net nonoperating expenses decreased $8.1 million, or 3.6%, due to due to a $10.5 million increase in investment income offset by a $1.6 million increase in interest expense and no debt service assistance. The increase in investment income was primarily due to an increase in the unrealized gain on investments. Lower long-term interest rates have caused the market values of investments to increase.

Operating Costs by Functionality
(Dollars in thousands)

	2016	2015	2014	Percentage change 2016–2015	Percentage change 2015–2014
Wastewater treatment and transport	$ 96,427	93,870	94,703	2.7%	(0.9)%
Water treatment and transport	35,630	35,545	35,395	0.2	0.4
Water and wastewater quality	8,767	8,041	7,731	9.0	4.0
Metering and monitoring	4,980	6,662	6,094	(25.2)	9.3
Facilities planning, design, and construction	9,753	9,504	9,318	2.6	2.0
Management information systems	10,346	10,162	10,325	1.8	(1.6)
Administration and support	50,145	48,625	47,997	3.1	1.3
Total direct operating costs	216,048	212,409	211,563	1.7	0.4
Indirect operating costs	55,990	50,994	61,941	9.8	(17.7)
Total operating costs	$ 272,038	263,403	273,504	3.3	(3.7)%

Wastewater and water treatment and transport experienced increased spending due to contractual salary increases which were offset by decreases in chemical and utility costs. In addition, metering and monitoring experienced decreased maintenance costs. Management information systems costs increased due to increased purchases of computer hardware. Administration and support expenses increased due to higher health insurance and workers' compensation expenses.

Other Post-Employment Benefits (OPEB) Irrevocable Trust

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

An initial deposit of $10.8 million was made to the trust upon establishment of the trust. The balance of trust at June 30, 2016 was $16.1 million.

Capital Assets and Debt Administration

Capital Assets

As of June 30, 2016 and 2015, the Authority had $5.8 billion and $5.9 billion of capital assets (net of depreciation), respectively. This includes land, construction in progress, plant and equipment for the water and sewer systems, furniture and fixtures, leasehold improvements, and motor vehicles and equipment. The Authority's net capital assets decreased approximately $158.9 million, or 2.7%, during Fiscal Year 2016, primarily due to the rate of depreciation being higher than the rate of capitalization.

Capital Assets
(Net of depreciation, dollars in thousands)

	2016	2015	2014	Percentage change 2016–2015	Percentage change 2015–2014
Land	$ 29,868	23,750	23,741	25.8%	—%
Construction in progress	115,758	205,582	193,180	(43.7)	6.4
Plant and equipment, water, and sewer systems	5,624,679	5,701,134	5,852,085	(1.3)	(2.6)
Furniture and fixtures	274	503	425	(45.5)	18.4
Leasehold improvements	303	315	327	(3.8)	(3.7)
Motor vehicles and equipment	5,536	4,054	3,381	36.6	19.9
	$ 5,776,418	5,935,338	6,073,139	(2.7)%	(2.3)%

Debt Administration

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

Bond Resolutions

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

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

In April 2015, the Authority released $46.3 million in reserves as authorized under a 2007 amendment to the General Bond Resolution. Of the $46.3 million, $25 million came from the Renewal and Replacement reserve and the balance from the Community Obligation and Revenue Enhancement reserve. The $46.3 million was deployed to defease debt of $36.3 million, and $10 million was deposited into the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The 2007 amendment also included new calculations for determining the Debt Service Reserve Fund requirement. At June 30, 2015 these new calculations resulted in an excess in the Debt Service Reserve of $67.1 million, which was used to defease debt in Fiscal Year 2016.

The 2007 General Bond Resolution amendment was accomplished as a result of the Authority's history of meeting its debt service obligations and the completion of major projects. The Authority continues to have over $275 million in reserves after this activity.

Credit Rating

The Authority's $3.3 billion Senior Lien General Revenue Bonds are rated Aa1 from Moody's Investors Service, AA+ by Standard and Poors Ratings Services and AA+ from FitchRatings. The $905 million Subordinate Lien General Revenue Bonds are rated Aa2 from Moody's Investors Service, AA by Standard and Poors Ratings Services and AA from FitchRatings. Some of the Authority's revenue bonds are enhanced by bond insurance. The credit ratings of these bond series will be the higher rating of either the Authority or the firm providing the enhancement. In the case of bonds enhanced by a letter of credit, the rating will be the highest of the Authority's, the provider or, if available, a joint rating. The subordinated debt of $1.0 billion with the Massachusetts Clean Water Trust is not rated as the Authority's debt.

Economic Factors and Next Year's Budget

In June 2016, the Board approved the Fiscal Year 2017 Current Expense Budget (CEB), which totals $719.6 million in expenses.

The $719.6 million expense total is comprised of $455.1 million (63.2%) in capital financing costs and $264.5 million (36.8%) in operating expenses, of which $226.5 million (85.6%) is for direct expenses and $38 million (14.4%) is for indirect expenses. The total represents an increase of $54.6 million from Fiscal Year 2016 spending, which is comprised of $2.8 million in higher operating costs and $51.8 million in higher debt service costs.

The Fiscal Year 2017 rate revenue requirement approved by the Board is $694.9 million; an increase of 3.3% compared with the Fiscal Year 2016 budget.

Fiscal Year 2017 budgeted nonrate revenue totals $24.8 million, a decrease of $10 million from actual Fiscal Year 2016 nonrate revenue. The nonrate revenue budget is comprised of $9.5 million in investment income, $14.5 million in other user charges and other revenue and $.8 million in entrance fees.

CIP 10 Year Plan

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

Major planned and ongoing projects include:

- Improvement and replacement of equipment on Deer Island and at major headworks facilities to ensure continued efficient and effective operations.
- In December, 2015 the Authority achieved substantial completion of the long-term CSO control plan, resulting in closing CSO outfalls and reducing CSO discharges to Boston Harbor and the Mystic, Charles, and Neponset River systems.
- Commitment to long-term redundancy plan for the metropolitan water tunnel system and an emergency pump station at the Wachusett reservoir.
- Completion of covered storage facilities to provide safe, reliable storage for water treated at John J. Carroll water treatment plan and transported through the MetroWest Tunnel and Hultman Aqueduct.
- Dedication to using resources efficiently, responding to climate change and reducing the environmental impacts of the Authority's daily operations by installing alternative energy sources and promotion of improved self-generation.
- Enhanced commitment to the community assistance programs for both the sewer and water systems to improve local infrastructure, including a new initiative to provide interest-free loans to assist communities in replacing lead service lines.
- Continued investment for the upgrade of Management Information Systems to ensure the availability, integrity and security of data.
- Continue the Residuals Asset Protection program for maintaining and improving the operations and infrastructure of the biosolids processing in the long term.

Contacting the Authority's Financial Management

This report is designed to provide our bondholders, member communities and other interested parties with a general overview of the Authority's finances and to demonstrate the Authority's accountability for the revenue it receives. If you have questions about this report or need additional information, contact the Massachusetts Water Resources Authority, Finance Division, 100 First Avenue, Boston, MA 02129.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Net Position

June 30, 2016 and 2015

(Dollars in thousands)

Assets		2016	2015
Unrestricted current assets:			
Cash and cash equivalents (note 4)	$	67,711	41,451
Investments (note 4)		35,218	58,031
Intergovernmental loans (note 7)		30,564	30,587
Accounts receivable		687	369
Total unrestricted current assets		134,180	130,438
Restricted assets:			
Investments (note 4)		651,031	673,198
Interest receivable		1,395	2,466
Total restricted assets		652,426	675,664
Capital assets:			
Capital assets – not being depreciated (note 8)		145,626	229,332
Capital assets – being depreciated – net (note 8)		5,630,792	5,706,006
Total capital assets		5,776,418	5,935,338
Regulatory assets (note 3)		706,641	767,283
Other assets, net (notes 7 and 10)		529,029	440,794
Total assets		7,798,694	7,949,517
Deferred Outflows of Resources			
Deferred outflows from pension (note 10)		39,153	14,601
Deferred outflows from derivative instruments (note 6)		59,615	44,183
Deferred outflows from refunding debt		94,840	73,204
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses		52,702	59,320
Commercial paper notes (note 6)		49,000	130,000
Current portion of long-term debt (note 6)		181,075	167,248
Total current liabilities		282,777	356,568
Payable from restricted assets:			
Accounts payable for construction		14,588	16,060
Accrued interest on bonds payable		76,182	85,548
Reserves (note 5)		57,421	57,456
Total payable from restricted assets		148,191	159,064
Retainage on construction in progress		7,479	8,248
Long-term debt – less current portion (note 6)		5,545,040	5,601,104
Long-term capital lease (note 9)		29,223	30,114
Net pension liability (note 10)		28,749	—
Other postemployment benefits (note 11)		106,927	100,597
Liability for derivative instruments (note 6)		59,615	44,183
Total liabilities		6,208,001	6,299,878
Deferred Inflows of Resources			
Deferred inflows from pension (note 10)		5,586	6,983
Deferred inflows from regulated activities (note 3)		74,606	63,051
Net Position			
Net investment in capital assets		800,438	788,429
Restricted		306,949	290,362
Unrestricted		596,722	632,802
Total net position	$	1,704,109	1,711,593

Commitments and contingencies (notes 9, 10, 11, 12, and 13)

See accompanying notes to financial statements.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Revenues, Expenses, and Changes in Net Position

Years ended June 30, 2016 and 2015

(Dollars in thousands)

	2016	2015
Operating revenues (note 2):		
Customer services	$ 683,501	661,305
Other	13,472	7,299
Total operating revenues	696,973	668,604
Operating expenses:		
Operations	98,972	102,322
Maintenance	30,978	28,323
Payments in lieu of taxes	8,129	7,966
Engineering, general, and administrative	133,959	124,792
Total operating expenses	272,038	263,403
Income from operations before depreciation	424,935	405,201
Depreciation and amortization	197,128	194,000
Operating income	227,807	211,201
Regulatory accounting provisions:		
Change in reserves (note 5)	35	44,633
Change in regulatory provisions, net (note 3)	(72,197)	(86,267)
Total regulatory accounting provisions	(72,162)	(41,634)
Nonoperating revenues (expenses):		
Debt service grant	874	—
Investment income	19,276	15,949
Interest expense	(224,409)	(233,167)
Changes in derivative related accounts	2,940	2,940
Total nonoperating expenses	(201,319)	(214,278)
Net loss before capital grants and contributions	(45,674)	(44,711)
Capital grants and contributions	38,190	6,429
Decrease in net position	(7,484)	(38,282)
Total net position, beginning of year	1,711,593	1,756,415
Restatement to comply with GASB Statement No. 68 (note 2a)	—	(6,540)
Total net position, end of year	$ 1,704,109	1,711,593

See accompanying notes to financial statements.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Cash Flows

Years ended June 30, 2016 and 2015

(Dollars in thousands)

		2016	2015
Cash flows from operating activities:			
Cash received from customers	$	683,183	661,941
Cash paid to suppliers for goods and services		(148,588)	(125,248)
Cash paid to employees for services		(143,495)	(138,669)
Cash paid in lieu of taxes		(8,129)	(7,966)
Other operating receipts		7,444	6,271
Net cash provided by operating activities		390,415	396,329
Cash flows from capital and related financing activities:			
Proceeds from sale of revenue bonds, loans, and notes		151,595	113,915
Capital grants for construction		5,155	6,429
Debt service grant		874	—
Capital lease principal payments		(891)	(829)
Capital lease interest payments		(2,326)	(2,388)
Repayment of debt		(278,467)	(232,024)
Interest paid on debt		(213,614)	(221,871)
Plant expenditures		(91,810)	(114,369)
Net cash used for capital and related financing activities		(429,484)	(451,137)
Cash flows from investing activities:			
Purchases of short-term investments		(131,143)	(2,070)
Sales and maturities of short-term investments		218,729	21,200
Changes in restricted money market investments		(32,912)	9,880
Interest received		10,655	9,761
Net cash provided by investing activities		65,329	38,771
Net (decrease) increase in cash and cash equivalents		26,260	(16,037)
Cash and cash equivalents, beginning of year		41,451	57,488
Cash and cash equivalents, end of year	$	67,711	41,451
Reconciliation of operating income to net cash provided by operating activities:			
Operating income	$	227,807	211,201
Adjustments to reconcile operating income to net cash provided by operating activities:			
Depreciation and amortization		197,128	194,000
Change in other accounts		(34,310)	(322)
Change in accounts payable		(210)	(8,550)
Net cash provided by operating activities	$	390,415	396,329

Noncash capital and related financing activities:

In fiscal 2016, general revenue refunding bonds in the aggregate principal amount of $681,615 were issued to defease $761,430 of bonds outstanding.

In fiscal 2015, general revenue refunding bonds in the aggregate principal amount of $170,800 were issued to defease $194,615 of bonds outstanding.

See accompanying notes to financial statements.

(1) Organization

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

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

(2) Summary of Significant Accounting Policies

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

(a) Basis of Presentation

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

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

In addition, the Authority applies the provisions of GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, to provide a better matching of revenues and expenses. The effect of this policy has been to defer certain outflows of resources, which will be recovered through future revenues in accordance with the Authority's rate model, and to record deferred inflows of resources for revenue collected through current rates for costs expected to be incurred in the future. The effects of the Authority's accounting policies are discussed further in note 3.

The Authority has implemented GASB Statement No. 68, *Accounting and Financial Reporting for Pensions.* This Statement requires that the net pension liability (asset) be reflected on the Statements of Net Position, as well as deferred inflows and outflows from pension activities. The Authority's 2015 Statement of Net Position reflects a net pension asset due to the fair value of pension assets at the measurement date exceeding pension liability. In accordance with the Statement, the Authority has restated Net Position as of July 1, 2014.

In April, 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. In no event shall any part of the principal or income of the Trust be paid or revert back to the Authority or be used for any purpose whatsoever other than for the exclusive benefit of retirees and their beneficiaries.

The Authority has implemented GASB Statement No. 72, *Fair Value Measurement and Application.* This Statement requires that certain assets, primarily investments, and liabilities be recorded at fair value.

(b) Capital Assets

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

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

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

(c) Interest Cost and Principal Payments on Construction

During Fiscal Years 2016 and 2015, none of the Authority's interest expense was capitalized to construction in progress in accordance with its current policy of recovering such costs through rates as incurred. Rates collected for principal payments on debt related to assets under construction are deferred until the related asset is completed and depreciation commences.

(d) Depreciation

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

	Years
Plant and equipment, water and sewerage systems	5–100
Motor vehicles and equipment	5
Furniture and fixtures	7
Leasehold improvements	3–5

(e) Revenue Recognition

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

(f) Cash and Cash Equivalents

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

(g) Payments in Lieu of Taxes

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

(h) Investments

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

(i) Use of Estimates

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

(j) Compensated Absences

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

(k) Pensions

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

(3) Regulatory Assets and Deferred Inflows from Regulatory Activities

In accordance with GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, regulatory assets and deferred inflows from regulatory activities result primarily from differences between depreciation on property, plant, and equipment not financed by grants or capital contributions, which is recovered through rates as principal payments on debt service, and from amounts determined by the Board to be utilized in a subsequent year to reduce customer billings (rate stabilization).

(Dollars in thousands)

A summary of the activity of regulatory assets and deferred inflows for Fiscal Years 2016 and 2015 is as follows:

		Sewer	Water	Total
Balance – June 30, 2014 – net	$	649,228	141,271	790,499
Difference between depreciation of capital assets not financed by grants or capital contributions, and debt service in excess of interest expense		(25,504)	(4,804)	(30,308)
Other – net		(45,130)	(10,829)	(55,959)
Balance – June 30, 2015 – net		578,594	125,638	704,232
Difference between depreciation of capital assets not financed by grants or capital contributions, and debt service in excess of interest expense		(33,355)	(27,286)	(60,641)
Other – net		(6,639)	(4,917)	(11,556)
Balance – June 30, 2016 – net	$	538,600	93,435	632,035

The net balance at June 30, 2016 and 2015 is presented on the statements of net position as follows:

		2016	2015	Current year change
Regulatory assets	$	706,641	767,283	(60,642)
Deferred inflows from regulatory activities		(74,606)	(63,051)	(11,555)
Net change	$	632,035	704,232	(72,197)

The balance in the rate stabilization reserve was $36,512 at June 30, 2016 and 2015, respectively.

(4) Deposits and Investments

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

(a) Custodial Credit Risk – Deposits

The custodial credit risk for deposits and certificates of deposit is the risk that, in the event of a bank failure, the Authority's deposits may not be recovered. The deposits in the bank in excess of the insured amount are uninsured and uncollateralized.

The bank deposits at June 30, 2016 and 2015 were $63,111 and $41,993, respectively. Of these amounts, $62,611 and $41,743 were exposed to custodial credit risks as uninsured and uncollateralized.

(Dollars in thousands)

(b) Investments

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

The following guaranteed investment contract was in force as of June 30, 2016 and 2015, respectively. Such contracts are fully collateralized and recorded at cost:

Investment agreement provider	Rate	Maturity	2016	2015
Wells Fargo Bank, N.A.	5.17%	August 1, 2016	$ 14,456	14,456
Total			$ 14,456	14,456

Proceeds from the maturity of the guaranteed investment contract were received in August, 2016.

(c) Credit Ratings

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

The guaranteed investment contracts and Massachusetts Municipal Depository Trust funds are not rated.

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

(d) Concentration Risk

The Authority has no investments, at fair value, which exceeds 5% of the Authority's total investments as of June 30, 2016. At June 30, 2015, the following investment with the Federal Farm Credit Bureau (FFCB) exceeded 5%:

	June 30, 2015	
Investment	Fair Value	% of Investments
2.97% FFBC U.S. Security	$ 46,681	6.4%

(Dollars in thousands)

(e) Interest Rate Risk

The following is a listing of the Authority's fixed income investments and related maturity schedule as of June 30, 2016 and 2015:

June 30, 2016

Investment type		Fair value	Investment maturities (in years) <1	1–3	4–8	>9
Mass Municipal Depository Trust	$	502,203	502,203	—	—	
U.S. agency obligations		169,590	—	19,325	32,607	117,658
Guaranteed investment contract		14,456	14,456	—	—	—
Total	$	686,249	516,659	19,325	32,607	117,658

June 30, 2015

Investment type		Fair value	Investment maturities (in years) <1	1–3	4–8	>9
Mass Municipal Depository Trust	$	469,289	469,289	—	—	—
U.S. agency obligations		247,484	—	—	38,817	208,667
Guaranteed investment contract		14,456	—	14,456	—	—
Total	$	731,229	469,289	14,456	38,817	208,667

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

(f) Investment Values

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

The Authority has the following recurring fair value measurements as of June 30, 2016 and 2015: US Government agency obligations $ 169,590 and $247,484 (Level 2), respectively, and MMDT $502,203 and $469,289 (NAV), respectively. The guaranteed investment contract, $14,456, is measured at amortized cost.

(Dollars in thousands)

(g) Restricted Investments by Fund

The following summarizes restricted investments as of June 30, 2016 and 2015 by various funds and accounts established by the Authority for debt covenants and other purposes:

		2016	2015
Restricted investments:			
Construction	$	119,743	72,375
Debt service reserves		153,766	215,749
Debt service		266,342	256,852
Revenue redemption		26,407	25,025
Revenue		54,246	74,618
Renewal and replacement reserve		10,172	8,466
Insurance		14,000	14,000
Insurance related escrow deposits		6,355	6,113
Total restricted investments	$	651,031	673,198

(5) Bond Resolution Reserves

The components of the reserves required by the general and supplemental bond resolutions at June 30, 2016 and 2015 are as follows:

Reserves		Sewer	Water	2016 Total	2015 Total
Renewal and replacement	$	2,544	1,457	4,001	4,001
Insurance		7,000	7,000	14,000	14,000
Operating		26,121	13,299	39,420	39,455
Total	$	35,665	21,756	57,421	57,456

A renewal and replacement reserve of $6,000 was established through grant receipts transferred from the Commonwealth in 1985 and is included in restricted net position at June 30, 2016 and 2015.

In April, 2015, the Authority released $46,300 in reserves as authorized under a 2007 amendment to the General Bond Resolution. Of the $46,300, $25,000 came from the Renewal and Replacement reserve and the balance from the Community Obligation and Revenue Enhancement reserve.

During 2015, modifications to the Resolution included new calculations for determining the debt service reserve fund balance. The new calculation allows for the debt service reserve fund level to be set at 50% of the maximum annual debt service or $149,031 at June 30, 2016.

(Dollars in thousands)

(6) Notes Payable and Long-Term Debt

Long-term debt at June 30, 2016 and 2015 consisted of the following:

		2016	2015
General Revenue Bonds:			
1993 Series C, 5 1/4%, issued December 2, 1993	$	—	10,065
2002 Series J, 5% to 5 1/2%, issued December 18, 2002, due 2016 to 2042		274,180	282,030
2006 Series A, 4%, issued March 16, 2006		—	62,320
2007 Series A, 4 3/8% to 5%, issued February 1, 2007		—	198,000
2009 Series A, 5%, issued February 19, 2009		—	64,240
2010 Series A, 4%, issued May 6, 2010, due 2020 to 2030		5,185	85,150
2011 Series B, 3% to 5%, issued May 19, 2011, due 2016 to 2041		79,845	134,785
2012 Series A, 3% to 5%, issued April 19, 2012, due 2018 to 2042		98,085	132,620
2014 Series D, 5%, issued November 19, 2014, due 2016 to 2044		68,275	70,665
2016 Series B, 3% to 5%, issued May 12, 2016, due 2017 to 2040		65,970	—
		591,540	1,039,875
General Revenue Refunding Bonds:			
2005 Series A, 5% to 5 1/4%, issued April 14, 2005, due 2016 to 2034		263,845	307,050
2005 Series B, 5%, issued April 14, 2005, due 2031 to 2035		75,245	80,290
2006 Series B, 5%, issued March 16, 2006, due 2016 to 2026		31,485	172,575
2007 Series B, 5 1/4%, issued February 1, 2007, due 2023 to 2038		647,950	647,950
2009 Series B, 4% to 5%, issued February 19, 2009, due 2016 to 2022		157,480	268,115
2010 Series B, 5%, issued May 6, 2010, due 2016 to 2027		107,945	165,235
2011 Series C, 3 1/8% to 5 1/4%, issued December 8, 2011, due 2018 to 2042		321,160	327,160
2012 Series B, 4 1/4% to 5%, issued April 19, 2012, due 2026 to 2029		86,775	86,775
2013 Series A, 3% to 5%, issued March 27, 2013, due 2016 to 2036		165,640	169,825
2014 Series E, 5%, issued November 19, 2014, due 2016 to 2020		25,295	28,245
2014 Series F, 4% to 5%, issued November 19, 2014, due 2021 to 2041		141,410	141,525
2016 Series C, 3% to 5%, issued May 12, 2016, due 2017 to 2040		681,615	—
		2,705,845	2,394,745

(Dollars in thousands)

		2016	2015
General Revenue Bonds with the Massachusetts Clean Water Trust:			
1995 Series A, 5%%, issued November 21, 1995	$	—	340
1998 Series C, 4 3/4% to 5 3/8%, issued July 9, 1998, due 2016 to 2018		1,375	2,035
1999 Series E Sewer, 4 3/4% to 5 3/8%, issued October 6, 1999, due 2016 to 2029		6,309	6,649
1999 Series E Water, 4 3/4% to 5 3/8%, issued October 6, 1999, due 2016 to 2019		3,060	3,760
1999 Series F, 5 3/4% to 6%, issued November 3, 1999, due 2016 to 2029		215,625	232,560
2000 Series E Sewer, 5 1/4% to 5 5/8%, issued November 1, 2000, due 2016 to 2030		48,240	50,478
2000 Series E Water, 5 1/4% to 5 5/8%, issued November 1, 2000, due 2016 to 2020		3,985	4,705
2001 Series C Water, 5% to 5 1/4%, issued July 26, 2001, due 2017 to 2021		1,720	2,030
2001 Series D Sewer, 5 3/8% to 5 3/4%, issued July 26, 2001, due 2016 to 2029		2,512	2,983
2001 Series D Water, 5 1/2% to 5 3/4%, issued July 26, 2001, due 2016 to 2019		433	532
2002 Series H Sewer, 5% to 5 1/4%, issued October 31, 2002, due 2016 to 2032		62,715	65,370
2002 Series H Water, 5% to 5 1/4%, issued October 31, 2002, due 2016 to 2022		14,100	15,845
2002 Series I Sewer, 5 1/4% to 5 5/8%, issued October 31, 2002, due 2016 to 2030		1,720	1,807
2002 Series I Water, 5 1/4% to 5 5/8%, issued October 31, 2002, due 2016 to 2020		10	12
2003 Series A Water, 5%, issued October 31, 2002, due 2016 to 2022		646	728
2003 Series B Water, 5% to 5 1/4%, issued July 24, 2003, due 2017 to 2021		1,555	1,834
2003 Series C Sewer, 4% to 5 1/2%, issued November 6, 2003, due 2016 to 2033		22,896	23,798
2003 Series C Water, 4 3/4% to 5 1/4%, issued November 6, 2003, due 2016 to 2023		10,165	11,240

(Dollars in thousands)

		2016	2015
2004 Series C Sewer, 4% to 5 1/4%, issued October 26, 2004, due 2016 to 2033	$	7,770	8,076
2004 Series C Water, 5%, issued October 26, 2004, due 2016 to 2022		647	758
2004 Series D Sewer, 4 1/2% to 5 1/4%, issued November 29, 2004, due 2016 to 2034		41,670	43,115
2004 Series D Water, 5% to 5 1/4%, issued November 29, 2004, due 2016 to 2024		7,290	7,925
2005 Series C Sewer, 4% to 5 1/4%, issued November 3, 2005, due 2016 to 2033		4,978	5,245
2005 Series C Water, 4% to 5 1/4%, issued November 3, 2005, due 2016 to 2023		532	588
2005 Series D Sewer, 2 3/10%, issued November 16, 2005, due 2016 to 2035		47,338	49,509
2005 Series D Water, 0% to 2%, issued November 16, 2005, due 2016 to 2025		7,668	8,412
2005 Series E Sewer, 2%, issued November 16, 2005, due 2016 to 2025		223	243
2005 Series E Water, 2%, issued November 16, 2005, due 2016 to 2025		50	55
2006 Series C Sewer, 5% to 5 1/4%, issued October 26, 2006, due 2016 to 2034		6,237	6,543
2006 Series D Sewer, 2% to 2 3/10%, issued December 14, 2006, due 2016 to 2036		46,055	48,584
2006 Series D Water, 0% to 2%, issued December 14, 2006, due 2016 to 2026		16,850	18,333
2006 Series E Sewer, 2%, issued December 14, 2006, due 2016 to 2026		224	243
2006 Series E Water, 2%, issued December 14, 2006, due 2016 to 2026		101	108
2007 Series C Sewer, 2% to 2 3/10%, issued November 9, 2007, due 2016 to 2035		2,804	3,043
2007 Series C Water, 2%, issued November 9, 2007, due 2016 to 2025		1,532	1,683
2007 Series D Sewer, 2 3/10%, issued November 9, 2007, due 2016 to 2036		18,540	19,218
2007 Series E Sewer, 2% to 2 2/5%, issued December 18, 2007, due 2016 to 2037		45,780	47,817
2007 Series E Water, 2%, issued December 18, 2007, due 2016 to 2027		12,946	13,891

(Continued)

(Dollars in thousands)

		2016	2015
2008 Series G Sewer, 2%, issued December 9, 2008, due 2016 to 2026	$	3,744	4,062
2008 Series G Water, 2%, issued December 9, 2008, due 2016 to 2026		788	852
2009 Series C Sewer, 2% to 2 2/5%, issued March 18, 2009, due 2016 to 2038		64,834	68,865
2009 Series C Water, 2%, issued March 18, 2009, due 2016 to 2028		21,079	22,484
2009 Series D Sewer, 2% to 2 2/5%, issued December 15, 2009, due 2016 to 2037		8,525	8,960
2009 Series D Water, 2%, issued December 15, 2009, due 2016 to 2027		893	958
2010 Series D Sewer, 2% to 2 2/5%, issued July 8, 2010, due 2016 to 2040		22,276	23,124
2010 Series D Water, 2%, issued July 8, 2010, due 2016 to 2030		18,151	19,179
2011 Series A Sewer, 2% to 2 2/5%, issued March 15, 2011, due 2016 to 2038		4,678	4,944
2011 Series A Water, 2%, issued March 15, 2011, due 2016 to 2028		4,073	4,350
2012 Series C Sewer, 2% to 2 2/5%, issued June 6, 2012, due 2016 to 2040		6,601	6,976
2012 Series C Water, 2%, issued June 6, 2012, due 2016 to 2030		3,240	3,421
2012 Series D Sewer, 2% to 2 2/5%, issued June 13, 2012, due 2016 to 2042		38,462	40,367
2012 Series D Water, 2%, issued June 13, 2012, due 2016 to 2032		7,524	7,886
2013 Series B Sewer, 2% to 2 2/5%, issued May 22, 2013, due 2017 to 2043		27,435	28,972
2013 Series B Water, 2%, issued May 22, 2013, due 2017 to 2033		7,543	7,906
2014 Series C Sewer, 2% to 2 2/5%, issued May 30, 2014, due 2016 to 2042		4,571	4,743
2014 Series C Water, 2%, issued May 30, 2014, due 2016 to 2032		5,232	5,499

(Dollars in thousands)

		2016	2015
2015 Series A Sewer, 2% to 2 2/5%, issued January 7, 2015, due 2017 to 2045		46,459	47,933
2015 Series A Water, 2%, issued January 7, 2015, due 2017 to 2035		15,168	15,807
2015 Series B Sewer, 2% to 2 2/5%, issued May 14, 2015, due 2016 to 2043		3,202	3,388
2015 Series B Water, 2%, issued May 14, 2015, due 2016 to 2033		2,053	2,193
2016 Series A Sewer, 2% to 2 2/5%, issued March 11, 2016, due 2017 to 2046		39,281	—
2016 Series A Water, 2%, issued March 11, 2016, due 2017 to 2036		13,684	—
		1,035,797	1,042,964
General Revenue Bonds (variable rates):			
1999 Series B, 0.01% to 0.45%, issued January 29, 1999, due 2017 to 2028		58,600	58,600
		58,600	58,600
General Revenue Refunding Bonds (variable rates):			
2002 Series C, 0.01% to 0.40%, issued August 15, 2002, due 2020	$	35,120	35,120
2008 Series A, 0.01% to 0.44%, issued May 29, 2008, due 2017 to 2037		234,845	285,725
2008 Series C, 0.01% to 0.49%, issued May 29, 2008, due 2016 to 2026		105,620	109,820
2008 Series E, 0.02% to 0.49%, issued May 29, 2008, due 2020 to 2037		133,640	133,640
2008 Series F, 0.01% to 0.44%, issued May 29, 2008, due 2025 to 2029		50,000	50,000
2012 Series E, 0.46% to 0.88%, issued November 15, 2012, due 2016 to 2031		62,830	62,830
2012 Series F, 0.41% to 0.83%, issued November 15, 2012, due 2016 to 2031		60,300	60,300
2012 Series G, 0.71% to 1.13%, issued November 15, 2012, due 2016 to 2023		49,780	52,580
2014 Series A, 0.47% to 0.66%, issued May 20, 2014, due 2022 to 2025		50,000	50,000
2014 Series B, 0.61% to 0.80%, issued May 20, 2014, due 2018 to 2022		64,755	64,755
		846,890	904,770
Revolving Loan:			
2015 Series C, issued November 1, 2015, due 2018		79,000	—
		5,317,672	5,440,954

(Dollars in thousands)

		2016	2015
Less:			
Unamortized bond premiums and discounts		365,669	248,648
Current portion of long-term debt		(181,075)	(167,248)
		184,594	81,400
Long-term debt, net	$	5,502,266	5,522,354

Long-term obligations at June 30, 2016 and 2015 consisted of the following:

		2016 beginning balance	Additions	Reductions	2016 ending balance	Due within one year
General revenue bonds	$	1,098,475	65,970	514,305	650,140	35,830
General revenue refunding bonds		3,299,515	681,615	428,395	3,552,735	82,905
General revenue bonds with the Massachusetts Clean Water Trust		1,076,000	52,965	93,168	1,035,797	62,340
Borrowings associated with derivative instruments		45,714	—	2,940	42,774	—
Revolving loan		—	100,000	21,000	79,000	—
	$	5,519,704	900,550	1,059,808	5,360,446	181,075

		2015 beginning balance	Additions	Reductions	2015 ending balance	Due within one year
General revenue bonds	$	1,175,995	73,105	150,625	1,098,475	13,890
General revenue refunding bonds		3,317,135	170,800	188,420	3,299,515	93,225
General revenue bonds with the Massachusetts Clean Water Trust		1,064,204	69,321	57,525	1,076,000	60,133
Borrowings associated with derivative instruments		48,654	—	2,940	45,714	—
	$	5,605,988	313,226	399,510	5,519,704	167,248

The Authority is required to establish water and sewer rates and charges at a level sufficient to provide, among other things, primary and subordinated debt service coverage ratios of 120% and 110%, respectively. For the year ended June 30, 2016, the Authority had primary and subordinated debt service coverage ratios of 170% and 120%, respectively.

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

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

On June 2, 2010, the Authority executed Bond Anticipation Notes with the Massachusetts Clean Water Trust (formerly the Massachusetts Water Pollution Abatement Trust) for funding under the American Reinvestment and Recovery Act of 2009 (ARRA). The principal on these notes, totaling $33,036, is forgiven upon issuance of a Project Completion Certificate and the Authority's compliance with the requirements of ARRA. The Authority has drawn down $33,036 to date, which is presented as long-term debt on the Authority's June 30, 2015 statement of net position. In July and November 2015, the Massachusetts Clean Water Trust cancelled $27,550 and $5,486 of these notes, respectively, as all ARRA requirements were met.

On May 12, 2016, the Authority issued General Revenue Bonds, 2016 Series B for $65,970 and General Revenue Refunding Bonds, 2016 Series C for $681,615.

The proceeds from the Series B bonds were used to finance new construction projects and retire a portion of the revolving loan. The interest rate on these bonds is 3% to 5%.

The proceeds from the Series C bonds were used to refund $5,045 of General Revenue Refunding Bonds 2005 Series B, $62,320 of General Revenue Bonds 2006 Series A, $138,440 of General Revenue Refunding Bonds 2006 Series B, $188,150 of General Revenue Bonds 2007 Series A, $64,240 of General Revenue Bonds 2009 Series A, $99,260 of General Revenue Refunding Bonds 2009 Series B, $79,965 of General Revenue Bonds 2010 Series A, $44,995 of General Revenue Refunding Bonds 2010 Series B, $50,920 of General Revenue Bonds 2011 Series B and $28,095 of General Revenue Bonds 2012 Series A .

The interest rate on the Series C bonds is 3% to 5%. The cash flow required to make principal and interest payments on the refunding bonds is approximately $188,275 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is $111,311.

On November 1, 2015, the Authority entered into a revolving credit agreement with a bank. The Authority shall repay the loan at the Commitment Termination Date, November 17, 2018, at which point the Authority can elect to convert the revolving loan into a term loan. Interest is payable at the 1 month LIBOR rate, 0.8% at June 30, 2016. Initial drawdown was $100,000, which was reduced to $79,000 at June 30, 2016.

On November 19, 2014, the Authority issued General Revenue Bonds, 2014 Series D for $73,105 and General Revenue Refunding Bonds, 2014 Series E and 2014 Series F for $28,245 and $142,555, respectively.

The proceeds from the Series D bonds were used to finance new construction projects and to pay a portion of outstanding commercial paper notes.

The proceeds from the Series E bonds were used to refund $38,405 of General Revenue Refunding Bonds 2004 Series B. The proceeds from the Series F bonds were used to refund $6,080 of General Revenue Refunding Bonds 2005 Series A, $87,670 of General Revenue Bonds 2006 Series A, $41,470 of General Revenue Refunding Bonds 2006 Series B, $12,205 of General Revenue Bonds 2009 Series A and $8,785 of General Revenue Bonds 2010 Series A.

(Dollars in thousands)

The interest rate on these bonds is 4% to 5%. The cash flow required to make principal and interest payments on the refunding bonds is approximately $56,425 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is $20,169.

Synthetic Fixed Rate Swap Transactions

In connection with several of its bond issues, the Authority has entered into various interest rate swap agreements to reduce the impact of changes in interest rates on its variable rate debt. Under these agreements, the Authority pays a fixed interest rate (ranging from 4.0% to 6.6%) and receives interest from the swap counterparties at a variable rate (either Securities Industry and Financial Markets Association (SIFMA) rate or a percentage of LIBOR). The SIFMA rate is based on the seven-day high-grade market index of tax-exempt variable rate demand obligations.

Item	Objective	Effective date	Current notional amount	Termination date	Fixed payable swap rate	Variable receivable swap rate	Fair value at June 30, 2016	Fair value at June 30, 2015
A	Hedge changes in cash flows on the 2008 Series A Bonds	April 4, 2011	$ 133,300	August 1, 2030	5.144%	67% LIBOR PLUS 0.13%	$ (17,241)	(10,676)
B	Hedge changes in cash flows on the 2008 Series E Bonds	October 28, 2008	133,300	August 1, 2030	5.494	SIFMA	(26,630)	(20,492)
C	Hedge changes in cash flows on the 2008 Series A and 2008 Series E Bonds	August 1, 2030	70,400	August 1, 2037	6.585	67% LIBOR PLUS 0.13%	(3,021)	(1,896)
D	Hedge changes in cash flows on the 2008 Series C Bonds	May 29, 2008	92,935	November 1, 2026	3.994	SIFMA	(10,660)	(10,366)
E	Hedge changes in cash flows on the 2008 Series C and 2012 Series G Bonds	May 29, 2008	61,960	November 1, 2026	4.033	SIFMA	(2,063)	(577)
F	Hedge changes in cash flows on the 2008 Series A Bonds	August 15, 2002	50,710	August 1, 2015	4.127	67% LIBOR	—	(176)
						Total	$ (59,615)	(44,183)

All of the above are pay-fixed interest rate swap agreements. Under these interest rate swap agreements, the Authority incurred net interest expense of $19,788 and $22,334 in Fiscal Year 2016 and Fiscal Year 2015, respectively.

For the swap effective on April 4, 2011, with a current notional amount of $133,300, the fixed rate paid by the Authority is as follows: 4.120% from execution through August 2013, 5.144% from August 2013 through August 2019, and 6.585% from, August 2019 through August 2030.

For the swap execution on October 28, 2008, with a current notional amount of $133,300, the fixed rate paid by the Authority is as follows: 4.470% from execution through August 2013, 5.494% from August 2013 through August 2019, and 6.935% from August 2019 through August 2030.

(Dollars in thousands)

The aggregate fair value balance of the derivative instruments at June 30, 2016 and 2015 is $(59,615) and $(44,183), respectively, and is reflected on the Authority's statements of net position as a liability for derivative instruments. This liability is offset by deferred outflows from derivative instruments. The original notional amounts of the interest rate swaps totaled $885,895.

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

Risk Disclosure

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

The following represents the credit ratings of the counterparties as of June 30, 2016:

Derivative instrument	Counterparty credit rating
Derivative A	A
Derivative B	AA
Derivative C	A
Derivative D	A
Derivative E	A

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

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

Rollover Risk – The Authority can be exposed to rollover risk on hedging derivative instruments that are hedges of debt that terminate prior to the maturity of the debt. The Authority currently has no rollover risk.

(Dollars in thousands)

When Derivative instruments A and B terminate in 2030, those bond series will then be hedged by Derivative instrument C.

Swap Payments and Associated Bonds Outstanding

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

Using rates as of June 30, 2016, debt service requirements of the hedged variable rate bonds and net swap payments, assuming current interest rates remain constant, were as follows:

	Variable-rate		Interest rate	
	Principal	**Interest**	**swaps, net**	**Total**
Fiscal year ending June 30:				
2017	$ 7,200	532	18,394	26,126
2018	25,000	524	17,427	42,951
2019	26,000	494	16,058	42,552
2020	27,000	425	16,699	44,124
2021	70,400	344	15,671	86,415
2022–2026	147,200	1,007	43,435	191,642
2027–2031	48,295	453	19,247	67,995
2032–2036	41,800	311	13,984	56,095
2037–2038	28,600	19	1,467	30,086
Total	$ 421,495	4,109	162,382	587,986

Demand Bonds

Included in variable rate long-term debt of $905,490 is $617,825 of subordinated variable rate demand obligations (VRDOs). The bonds were issued on various dates from 1999 through 2008. Subordinated VRDOs are subject to purchase on the demand of the holder at a price equal to principal plus accrued interest. The ability of the Authority to purchase such bonds, if not remarketed, is secured through letters of credit and standby bond purchase agreements with various nationally recognized financial institutions that expire between May 2017 and December 2020. The VRDOs are classified as long-term debt because the liquidity agreement for each series contains term out provisions that, if demand is made to repurchase the bonds, calls for a three to five year amortization to repay the bonds.

In 2014, $114,755 of 2014 Series A and B General Revenue Refunding Bonds were issued as direct-purchase bonds, to be held by the purchaser for a specific period of time and are not subject to purchase or remarketing at the demand of the holder and therefore do not require a letter of credit or standby bond purchase agreement. The $50,000 of Series A and $64,755 of Series B have been purchased through May 2017 and May 2019, respectively. These bonds, in addition to 2012 Series E, F & G General Revenue Refunding Bonds, totaling $172,910, have three to five year term out provisions beginning at the expiration date.

(Dollars in thousands)

At June 30, 2016, the following bonds outstanding are considered defeased in-substance:

Description	Redemption date	Redemption price		Outstanding principal amount
1992 Series A	2016–2019	100	$	160,250
1998 Series B	2016	100		6,885
2002 Series J	2017	100		14,500
2005 Series A	2017	100		66,370
2005 Series B	2017	100		5,045
2006 Series A	2016, 2018	100		200,000
2006 Series B	2016–2018	100		251,890
2007 Series A	2017	100		200,000
2009 Series A	2016, 2019	100		80,125
2009 Series B	2017, 2019	100		113,550
2010 Series A	2016–2020	100		93,710
2010 Series B	2017, 2019, 2020	100		58,130
2011 Series B	2017-2021	100		59,650
2011 Series C	2016	100		6,000
2012 Series A	2016–2018, 2020, 2022	100		44,285
2013 Series A	2017-2022	100		4,995
2014 Series D	2017–2019	100		3,755
2014 Series E	2019	100		2,950
2014 Series F	2018, 2020	100		1,145

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

In June 2016, the Authority used funds on hand to defease $1,910 of the 2012 Series A General Revenue bonds outstanding and $2,450 of the 2009 Series B and $720 of the 2011 Series C General Revenue Refunding bonds outstanding.

In September 2015, the Authority used funds on hand to defease $420 of the 2011 Series B General Revenue bonds outstanding and $8,705 of the 2005 Series A and $115 of the 2014 Series F General Revenue Refunding bonds outstanding.

In August 2015, the Authority used funds on hand to defease $7,850 of the 2002 Series J, $9,850 of the 2007 Series A, $850 of the 2011 Series B, $4,530 of the 2012 Series A and $1,315 of the 2014 Series D General Revenue bonds outstanding and $8,050 of the 2005 Series A, $2,650 of the 2006 Series B, $8,925 of the 2009 Series B, $3,400 of the 2010 Series B, $5,280 of the 2011 Series C, $4,185 of the 2013 Series A and $2,950 of the 2014 Series E General Revenue Refunding bonds outstanding.

(Dollars in thousands)

In June 2015, the Authority used funds on hand to defease $2,595 of the 2010 Series A, $2,395 of the 2011 Series B, $1,000 of the 2012 Series A and $2,440 of the 2014 Series D General Revenue bonds outstanding and $12,250 of the 2005 Series A, $2,890 of the 2006 Series B, $2,915 of the 2009 Series B, $10 of the 2013 Series A and $1,030 of the 2014 Series F General Revenue Refunding bonds outstanding.

In April 2015, the Authority used funds on hand to defease $6,650 of the 2002 Series J, $2,960 of the 2011 Series B and $3,210 of the 2012 Series A General Revenue bonds outstanding and $19,450 of the 2005 Series A General Revenue Refunding bonds outstanding.

At June 30, 2016, outstanding bonds that are redeemable before their scheduled due dates are as follows:

Description	Redemption date	Redemption price	Outstanding principal amount
2002 Series J	on or after August 1, 2012	100	$ 1,000
2005 Series A	August 2017	100	231,920
2005 Series B	August 2017	100	75,245
2006 Series B	August 2018	100	30,430
2009 Series B	August 2019	100	80,175
2010 Series A	August 2020	100	3,795
2010 Series B	August 2020	100	69,570
2011 Series B	August 2021	100	69,465
2011 Series C	August 2021	100	291,160
2012 Series A	August 2022	100	92,645
2012 Series B	August 2022	100	86,775
2013 Series A	August 2023	100	46,515
2014 Series D	August 2024	100	59,485
2014 Series F	August 2024	100	93,655
2016 Series B	August 2026	100	54,775
2016 Series C	August 2026	100	610,650

The variable rate General Revenue Bonds are subject to redemption prior to maturity at the option of the Authority in whole or in part, on any interest payment date for bond Series 1999B and 2002C and on any business day for bond Series 2008A, 2008C through F, 2012G, 2014A and 2014B, respectively. Series 2012E and 2012F are subject to redemption prior to maturity on any interest payment date after November 15, 2014 and November 3, 2014, respectively.

During Fiscal Year 2016, the Authority executed loan agreements with the Massachusetts Clean Water Trust providing for 2016 Series A Sewer and Water loans in the principal amounts of $39,281 and $13,684, respectively. All proceeds for these loans were received by June 30, 2016.

During Fiscal Year 2015, the Authority executed loan agreements with the Massachusetts Clean Water Trust providing for 2015 Series A Sewer and Water loans in the principal amounts of $47,933 and $15,807, respectively and 2015 Series B Sewer and Water loans in the principal amounts of $3,388 and $2,193, respectively. All proceeds for these loans were received by June 30, 2015.

(Dollars in thousands)

Federal and Commonwealth subsidies for purposes of offsetting principal payments aggregating $42,693 will be recognized as capital grants in aid of construction over the term of the loans.

Interest is payable semiannually on all debt, except on the commercial paper, on which interest is payable upon maturity and the General Revenue Bonds with variable interest rates on which interest is payable monthly. The Senior General Revenue Bonds and the General Revenue Refunding Bonds are collateralized equally and ratably by a lien and pledge on substantially all of the Authority's cash and revenues, except the operating fund. The subordinated debt series, including the commercial paper interest are collateralized equally and ratably by a subordinated pledge on substantially all of the Authority's revenues and cash and investments, except the operating, senior debt service, and debt service reserve funds. Premiums, discounts, issuance costs, and the excess of reacquisition price over the carrying amount of the defeased debt are being amortized over the lives of the respective issues.

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

		Principal	Interest	Total
Year ending June 30:				
2017	$	181,075	211,681	392,756
2018		277,963	213,828	491,791
2019		219,270	205,087	424,357
2020		231,982	202,404	434,386
2021		271,980	190,631	462,611
2022–2026		1,432,512	762,876	2,195,388
2027–2031		1,206,248	466,522	1,672,770
2032–2036		777,934	257,022	1,034,956
2037–2041		623,025	87,933	710,958
2042–2046		95,683	5,477	101,160
Total	$	5,317,672	2,603,461	7,921,133

The Authority issued commercial paper notes of $49,000 to finance capital expenditures, which are secured by $100,000 and $150,000 irrevocable direct-pay letters of credit which expire on December 8, 2018, and April 19, 2019, respectively. These letters of credit carry a fee of 0.65% and 0.195% per annum, respectively, on the amount available. The maximum aggregate principal amount of commercial paper which may be outstanding at any one time is $250,000.

(Dollars in thousands)

Commercial paper at June 30, 2016 and 2015 consisted of the following:

	2016 Beginning balance	Additions	Reductions	2016 Ending balance
0.46% commercial paper	—	49,000	—	49,000
0.15% commercial paper	$ 34,000	—	34,000	—
0.33% commercial paper	47,000	—	47,000	—
0.11% commercial paper	49,000	—	49,000	—
	$ 130,000	49,000	130,000	49,000

	2015 Beginning balance	Additions	Reductions	2015 Ending balance
0.15% commercial paper	$ —	34,000	—	34,000
0.33% commercial paper	—	47,000	—	47,000
0.11% commercial paper	—	49,000	—	49,000
0.21% commercial paper	34,000	—	34,000	—
0.31% commercial paper	87,000	—	87,000	—
0.17% commercial paper	49,000	—	49,000	—
	$ 170,000	130,000	170,000	130,000

(7) Accounts Receivable/Intergovernmental Loans

The Authority has entered into various interest-free loan agreements with certain member communities. Under these agreements, the Authority loaned these communities $24,239 and $30,094 in Fiscal Year 2016 and 2015, respectively, to be received in five or ten equal annual installments.

The long-term portion of these loans at June 30, 2016 and 2015, is $118,885 and $124,946, respectively, and is included in other assets. The loans due within one year total $30,564 and $30,587 at June 30, 2016 and 2015, respectively. This program is designed to assist member communities with sewer and water systems rehabilitation.

(Dollars in thousands)

(8) Capital Assets

Capital assets at June 30, 2016 and 2015 consisted of the following:

		2015	Additions	Disposals/ transfers	2016
Capital assets – not being depreciated:					
Land	$	23,750	6,118	—	29,868
Construction in progress		205,582	18,110	(107,934)	115,758
Total capital assets – not being depreciated		229,332	24,228	(107,934)	145,626
Capital assets – being depreciated:					
Plant and equipment – water and sewage system		9,064,765	99,845	—	9,164,610
Furniture and fixtures		17,508	—	—	17,508
Leasehold improvements		2,423	—	—	2,423
Motor vehicles and equipment		5,452	1,971		7,423
Total capital assets – being depreciated		9,090,148	101,816	—	9,191,964
Less accumulated depreciation for:					
Plant and equipment – water and sewage system		3,363,631	176,300	—	3,539,931
Furniture and fixtures		17,005	229	—	17,234
Leasehold improvements		2,108	12	—	2,120
Motor vehicles and equipment		1,398	489	—	1,887
Total accumulated depreciation		3,384,142	177,030	—	3,561,172
Total capital assets – being depreciated – net		5,706,006	(75,214)	—	5,630,792
Capital assets – net	$	5,935,338	(50,986)	(107,934)	5,776,418

(Dollars in thousands)

Capital assets at June 30, 2015 and 2014 consisted of the following:

		2014	Additions	Disposals/ transfers	2015
Capital assets – not being depreciated:					
Land	$	23,741	9	—	23,750
Construction in progress		193,180	39,186	(26,784)	205,582
Total capital assets – not being depreciated		216,921	39,195	(26,784)	229,332
Capital assets – being depreciated:					
Plant and equipment – water and sewage system		9,039,342	25,423	—	9,064,765
Furniture and fixtures		17,177	331	—	17,508
Leasehold improvements		2,423	—	—	2,423
Motor vehicles and equipment		4,430	1,022	—	5,452
Total capital assets – being depreciated		9,063,372	26,776	—	9,090,148
Less accumulated depreciation for:					
Plant and equipment – water and sewage system		3,187,257	176,374	—	3,363,631
Furniture and fixtures		16,752	253	—	17,005
Leasehold improvements		2,096	12	—	2,108
Motor vehicles and equipment		1,049	349	—	1,398
Total accumulated depreciation		3,207,154	176,988	—	3,384,142
Total capital assets – being depreciated – net		5,856,218	(150,212)	—	5,706,006
Capital assets – net	$	6,073,139	(111,017)	(26,784)	5,935,338

Depreciation and amortization for Fiscal Years 2016 and 2015 was $197,128 and $194,000, respectively.

(Dollars in thousands)

(9) Leases

(a) Operating

The Authority leases electrical power assets, office space in Boston, and other property under long-term operating leases. Future minimum rental payments required under operating leases having initial or remaining non-cancelable lease terms in excess of one year at June 30, 2016 are as follows:

Year ending June 30:		
2017	$	2,331
2018		3,170
2019		3,150
2020		3,125
2021		2,435
2022–2023		6,445
Total	$	20,656

Rental expense was $4,846 and $6,268 in Fiscal Years 2016 and 2015, respectively.

(b) Capital

In Fiscal Year 2003, the Authority entered into a 30-year capital lease agreement for the new maintenance facility. The interest rate for the capital lease is 7.83%. Future minimum lease payments for the capital lease at June 30, 2016 are as follows:

		Principal	Interest	Total
Year ending June 30:				
2017	$	963	2,254	3,217
2018		1,041	2,176	3,217
2019		1,126	2,091	3,217
2020		1,217	2,000	3,217
2021		1,316	1,901	3,217
2022–2026		8,365	7,720	16,085
2027–2031		12,358	3,727	16,085
2032		2,837	113	2,950
Total	$	29,223	21,982	51,205

Under this lease, the Authority is also responsible for “Additional Rent,” as defined in the lease. The Additional Rent includes real estate taxes, assessments, and other government charges.

The associated capital asset is reported in plant and equipment – water and sewage system at a cost of $37,134 with $17,330 of accumulated depreciation as of June 30, 2016.

(10) Retirement Benefits

(a) Plan Description

The Enabling Act provided for the establishment of the Massachusetts Water Resources Authority Employees' Retirement System (the Plan), a contributory single-employer retirement system that is separate from the State Employees Retirement System. The Plan is a defined benefit pension plan covering those employees not employed by the MDC prior to July 1, 1985. Complete financial statements for the Plan can be obtained from the Authority's administrative offices at Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

(b) Benefits Provided

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

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

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

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

(Dollars in thousands)

(c) Employees covered by benefit terms

At December 31, 2014, the date of the Plan's latest actuarial valuation, the following employees were covered by the benefit terms:

Retired participants and beneficiaries receiving benefits	476
Inactive participants entitled to a return of their employee contributions	47
Inactive participants with a vested right to a deferred or immediate benefit	48
Active participants	1,090
	1,661

(d) Contributions

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

The Authority's 2016 and 2015 contributions to the plan were based on an amount approved by the Retirement Board and the Authority's board of directors, which is based on an actuarially determined amount. The Authority's Enabling Act requires funding to be made in accordance with the Retirement Board's recommendation.

(e) Net Pension Liability (Asset)

The Plan's net pension liability (asset) was measured as of December 31, 2015 and 2014, and the total pension liability (asset) used to calculate the net pension liability (asset) was determined by an actuarial valuation as of those dates.

(Dollars in thousands)

Actuarial assumptions. The total pension liability (asset) in the December 31, 2015 and 2014 actuarial valuations were determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	4%
Salary increases	Based on years of service, starting at 6% at 0 years of service decreasing to 4.25% after 9 years of service
Investment rate of return	7.75%
Cost of living adjustments	3% of first $12,000
Mortality rates:	
Pre-retirement:	RP-2000 Employee Mortality Table projected generationally from 2005 with Scale AA
Healthy retiree:	RP-2000 Healthy Annuitant Mortality Table projected generationally from 2005 with Scale AA
Disabled retiree:	RP-2000 Healthy Annuitant Mortality Table set forward two years projected generationally from 2005 with Scale AA

(Dollars in thousands)

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

Asset Class	Target Allocation (%)	Long-Term Expected Rate of Return (%)	
		December 31, 2015	December 31, 2014
Domestic Bonds	25	4.76	4.25
Domestic Equity	18	6.49	6.4
International Equity	17	7.16 - 9.46	7.07 - 9.26
Real Estate	6	4.37	4.3
Private Equity	9	11.04	11.26
Hedge Funds	9	3.6 - 4.13	3.44 - 3.77
Fixed Income	16	1.68 - 4.76	1.53 - 4.25
Cash	0	1.11	0.96
	100		

(f) Discount rate.

The discount rate used to measure the total pension liability was 7.75%. The projection of cash flows used to determine the discount rate assumed that Plan member contributions will be made at the current contribution rate and that the Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

(Dollars in thousands)

(g) Changes in the Net Pension Liability (Asset)

	Increase (Decrease)		
	Total Pension Liability (a)	**Plan Fiduciary Net Position (b)**	**Net Pension Liability (Asset) (a) - (b)**
Balances at 6/30/2014	$ 415,793	$ 416,351	$ (558)
Changes for the year			
Service cost	10,529	—	10,529
Interest	33,587	—	33,587
Differences between expected and actual experience	(8,380)	—	(8,380)
Contributions - employer	—	12,630	(12,630)
Contributions - employee	—	8,245	(8,245)
Net investment income	—	20,484	(20,484)
Benefit payments	(12,963)	(12,963)	—
Administrative expenses	—	(408)	408
Other changes	4,921	16	4,905
Net changes	27,694	28,004	(310)
Balances at 6/30/2015	$ 443,487	$ 444,355	$ (868)
Changes for the year			
Service cost	10,638	—	10,638
Interest	34,598	—	34,598
Differences between expected and actual experience	—	—	—
Contributions - employer	—	8,159	(8,159)
Contributions - employee	—	8,402	(8,402)
Net investment loss	—	(530)	530
Benefit payments	(15,390)	(15,390)	—
Administrative expenses	—	(412)	412
Other changes	—	—	—
Net changes	29,846	229	29,617
Balances at 6/30/2016	$ 473,333	$ 444,584	$ 28,749

(Dollars in thousands)

(h) Sensitivity of the net pension liability (asset) to changes in the discount rate.

The following presents the net pension liability (asset), calculated using the discount rate of 7.75%, as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75%) or 1-percentage-point higher (8.75%) than the current rate:

	1% Decrease (6.75%)	Current Discount (7.75%)	1% Increase (8.75%)
Net Pension Liability (Asset) as of June 30, 2016	$87,765	$28,749	($21,500)

(i) Pension expense and deferred outflows of resources and deferred inflows of resources related to pensions.

For the year ended June 30, 2016, the Authority recognized pension expense of $11,827 and reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflow of Resources	Deferred Inflow of Resources
Differences between expected and actual experience	$ -	$ 5,586
Changes of assumptions	3,280	-
Net difference between projected and actual earnings on pension plan investments	35,873	-
	$ 39,153	$ 5,586

(Dollars in thousands)

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

Year ended June 30:		
2017	$	9,048
2018		9,048
2019		9,048
2020		6,423

(11) Other Postemployment Benefits (OPEB)

(a) Plan Description

In addition to providing the pension benefits described, the Authority provides postemployment health care and life insurance benefits for retired employees through the Group Insurance Commission (GIC). The GIC is a quasi-independent state agency that administers an agent multi-employer defined benefit OPEB plan. The benefits, benefit levels, employee contributions and employer contributions are governed by the Authority and can be amended by the Authority. As of January 1, 2014, the actuarial valuation date, approximately 529 retirees and survivors and 1,088 active employees meet the eligibility requirements. The plan does not issue a separate financial report.

In April, 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. An initial deposit of $10.8 million was made to the trust upon establishment of the trust. The balance of trust at June 30, 2016 was $16.1 million.

(b) Benefits Provided

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

(c) Funding Policy

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

(d) Annual OPEB Costs and Net OPEB Obligation

The Authority's Fiscal Year 2016 annual OPEB expense is calculated based on the annual required contribution of the employer (ARC), an amount actuarially determined in accordance with the parameters of GASB Statement No. 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover the normal cost per year and amortize the unfunded actuarial liability over a period of thirty years. The following table shows the components of the Authority's annual OPEB cost for the year ending June 30, 2016, the amount actually contributed to the plan, and the change in the Authority's net OPEB obligation based on an actuarial valuation as of January 1, 2015:

(Dollars in thousands)

Annual Required Contribution (ARC)	$	14,996
Interest on net OPEB obligation		6,539
Adjustment to ARC		(5,401)
Annual OPEB cost		16,134
Contributions made		(9,804)
Increase in net OPEB obligation		6,330
Net OPEB obligation – beginning of year		100,597
Net OPEB obligation – end of year	$	106,927

The Authority's annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation were as follows:

Fiscal year ended		Annual OPEB cost	Percentage of OPEB cost contributed		Net OPEB obligation
2016	$	16,134	61%	$	106,927
2015		15,692	95		100,597
2014		15,897	22		99,756

(e) Funded Status and Funding Progress

The funded status of the plan as of January 1, 2014, the date of the most recent actuarial valuation, was as follows:

Actuarial accrued liability (AAL)	$	167,744
Actuarial value of plan assets		—
Unfunded actuarial accrued liability (UAAL)	$	167,744
Funded ratio (actuarial value of plan assets/AAL)		—%
Covered payroll (active plan members)	$	85,993
UAAL as a percentage of covered payroll		195.1%

Actuarial valuations of an ongoing plan involve estimates of the value of reported amount and assumptions about the probability of occurrence of events far into the future. Examples included assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contributions of the employer are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents multiyear trend information that shows whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liabilities for benefits.

(f) Actuarial Methods and Assumptions

Projections of benefits for financial reporting purposes are based on the plan as understood by the Authority and the plan members and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the Authority and plan members to that point. The actuarial methods and assumptions used include techniques that are designed to reduce short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

In the January 1, 2014 actuarial valuation the projected unit credit cost method was used. The actuarial value of assets was not determined as the Authority had not advance funded its obligation as of the valuation date. The actuarial assumptions included a 6.5% investment rate of return and an initial annual healthcare cost trend rate of 9.5% which decreases to a 5.5% long-term trend rate for all healthcare benefits after ten years. The amortization costs for the initial UAAL is a level percentage of payroll for a period of 30 years, on an open basis. This has been calculated assuming the amortization payment increases at a rate of 3.25%.

(12) Commitments and Contingencies

(a) General

The Authority’s capital improvement program continues to proceed. As part of this program, the Authority has entered into a number of contracts for the design and construction of infrastructure and improvements to its facilities. Commitments under these contracts aggregated approximately $445,736 at June 30, 2016.

The Authority’s operating and construction plans are designed to comply with the Federal District Court’s schedule of actions. The Authority has incurred capital expenditures of approximately $10,706,000 from Fiscal Years 1986 through 2016, including those projects required to comply with the Federal District Court’s schedule. The Authority anticipates spending an additional $1,993,545 on these projects through Fiscal Year 2023. These capital expenditures have been forecasted based upon certain preliminary assumptions and estimates, which may change significantly as design and construction of the necessary facilities proceed. Funding is expected to come from various federal and state grants, as available and approved, and from the Authority’s debt proceeds. To date, federal appropriations for the Boston Harbor Project have aggregated $810,000.

(b) Boston Harbor Case

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

In March 2006, the Authority reached agreement with the United States and the Massachusetts Department of Environmental Protection (DEP) on the scope and schedule for the remaining CSO projects which was filed with the Court as part of a joint motion to amend the Court Schedule. In April 2006, the Court allowed the joint motion and issued an Order with a schedule. Under the Order, the Authority now has a three year performance assessment period, from 2018 through 2020, to conduct analyses which will compare project benefits of the CSO program against actual performance results and to report those findings to the district court.

As part of the agreement, DEP agreed to reissue and EPA agreed to approve five (5) consecutive variances of no more than three years duration each, through the year 2020, for the Charles River and Alewife Brook/Upper Mystic River that are consistent with and limited to the requirements in the Authority's revised Long Term CSO Control Plan. Variances have most recently been issued by DEP in or about August 2013. The variances will respectively remain in place for the Charles River until October 1, 2016 and for the Alewife/Upper Mystic until September 1, 2016. In addition, the United States and the Authority agreed to withdraw the February 27, 1987 *Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows* and replace it with a Second Stipulation that requires the Authority to implement the CSO requirements set forth in the Court Schedule and to meet the levels of control described in the Authority's long term CSO control plan. Upon completion of the long term CSO control plan and with results that demonstrate performance parameters are as predicted, the stipulation makes the Authority responsible for only those CSO outfalls which it owns and operates.

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

(c) Deer Island Submarine Power Cable

In 2004, the United States Army Corps of Engineers (Corps) asserted that Boston Edison Co. (NStar), its subsidiary Harbor Energy Electric Company (HEEC), and the Authority were in violation of a permit (MA BOSS 198900530, dated August 31, 1989) which authorized the installation of a submarine electric power cable. The cable runs under the channel bed of Boston Harbor and extends from South Boston to Deer Island and is used to provide electric power for Deer Island operations. The Corps alleges that the power cable, in places, has been installed at depths less than those required by the permit. The Corps has demanded that the permittees develop plans and an implementation schedule for bringing the cable's depth and location into compliance with the permit. The demand has been made in connection with and in anticipation of a Massachusetts Port Authority project known as the Boston Harbor Deep Draft Navigation Improvement Project. The Project involves dredging operations intended to deepen the harbor channel so as to make it navigable by deep-draft vessels. The intended route of the Project's dredging operations will come very close to the depth at which the cable is believed to be located. The Project has now received the various design, environmental and state and federal funding approvals necessary to the start of the work. Project dredging operations in the vicinity of the cable is scheduled to begin in the fall of 2017.

The Authority has responded to the Corps stating that it had become a co-permittee only to facilitate issuance of the permit, that it did not install and has never owned the cable, and therefore, it has neither any right nor financial responsibility, nor the ability, to move or alter the position of the cable. In May 2005, the Department of Justice (DOJ) advised the permittees that the matter had been referred to DOJ by the Corps for the purpose of either commencing a lawsuit to compel the relocation of the cable or negotiating an amicable resolution that would bring the permittees into compliance with the permit's conditions. The Authority has informed the Court in the Boston Harbor Case of its position in its Compliance and Progress report filed on June 15, 2005 as well as in more recent filings. Discussions among the interested parties over the years has produced a method proposed and intended by NSTAR and HEEC for protection of the cable from the Massport Project by way of carefully exposing it and placing concrete mats over it, without either moving it or burying it deeper in the channel. The Authority has advised NSTAR and HEEC that it has no financial responsibility whatsoever for the costs of either protecting or relocating the cable.

In June 2016 it was determined by the Corps that the requirements for the finished depth of dredge for the Project will need to be three feet deeper than first suggested. This "last minute" development has required NSTAR to evaluate whether its intended cable protection measures are still feasible. That development also potentially affected the schedule for the Project and the federal and state funding for it. As a result, the United States, acting on behalf of the Corps, commenced a lawsuit (C.A. No. 16-11470-RGS) in federal district court against NSTAR, HEEC and the Authority to spur quick action by NSTAR and HEEC. The ultimate relief sought under the Complaint, if the parties are unable to resolve the matter, is the assessment of penalties for the placement of an obstruction (the cable) in the harbor channels and the entry of injunctive relief whereby the parties would be enjoined from maintaining the cable in its present location. The Authority has filed an Answer to the Complaint and has asserted crossclaims against NSTAR and HEEC seeking, *inter alia,* indemnification from any loss of use of the cable, from any increased costs of using substitute sources of power for Deer Island during any relocation or protection activities, and from any penalties that may be imposed by the district court.

Through this and various other legal and regulatory proceedings, the Authority has continued to assert its claim that it has never owned the cable and has neither the right to move or protect the cable nor the responsibility to reimburse NSTAR or HEEC for its costs of relocating, moving or replacing the cable.

(d) Miscellaneous

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

(13) Risk Management

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

Buildings, plants, and equipment are fully insured on an all risk replacement basis to the extent that losses exceed $2,500 per occurrence, up to a limit of $300,000. The Authority maintains insurance coverage for general liability, automobile liability, marine liability, and employers' liability to the extent that losses exceed $2,500 per occurrence, up to a limit of $25,000. In addition to the primary liability insurance, the Authority maintains excess liability policies with additional limits of $75,000. The Authority also maintains public officials' errors and omissions insurance with a limit of $5,000 per occurrence with a $1,000 deductible. All insurance policies are renewed on an annual basis.

(14) Subsequent Events

On August 24, 2016 the Authority issued General Revenue Refunding Bonds, 2016 Series D, for $104,260.

REQUIRED SUPPLEMENTARY INFORMATION

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedule of Funding Progress

Required Supplementary Information

June 30, 2016

(Unaudited)

(Dollars in thousands)

Other postemployment benefits

Actuarial valuation	**Assets (a)**	**Actuarial Accrued Liability (AAL) – (b)**	**Unfunded AAL (UAAL) (b-a)**	**Funded ratio (a/b)**	**Covered payroll (c)**	**UAAL as a percentage of covered payroll ((b-a)/(c))**
	$				$	
January 1, 2014	—	167,744	167,744	—	85,993	195.1
January 1, 2012*	—	179,595	179,595	—	82,679	217.2
January 1, 2010	—	192,096	192,096	—	81,372	236.1
January 1, 2008	—	180,833	180,833	—	79,298	228.0

*Actuarial accrued liability and unfunded actuarial accrued liability is from revised January 1, 2012 actuarial valuation.

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Employer Contributions - Last Ten Years

Required Supplementary Information- GASB No. 68

(Unaudited)

(Dollars in thousands)

	Measurement Date Year End December 31,									
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Actuarially determined contribution	8,159	7,808	5,919	5,766	5,512	5,343	5,621	5,334	4,259	4,904
Contributions in relation to the actuarially determined contribution	8,159	12,630	12,447	10,490	7,363	5,343	5,621	8,630	11,358	4,904
Contribution deficiency (excess)	$ -	$ (4,822)	$ (6,528)	$ (4,724)	$ (1,851)	$ -	$ -	$ (3,296)	$ (7,099)	$ -
Employee covered payroll	$ 89,169	$ 88,646	84,829	84,829	82,870	82,870	81,962	82,314	75,444	75,444
Contributions as a percentage of employee covered payroll	9.15%	14.25%	14.67%	12.37%	8.89%	6.45%	6.86%	10.48%	15.05%	6.50%

Notes to Required Supplementary Information

Valuation date	Actuarial determined contributions for fiscal 2016 and 2017 are determined with the January 1, 2015 actuarial valuation.
Actuarial cost method	Entry age normal
Amortization method	Payments increase at 4.5% per year
Remaining amortization period	9 years from July 1, 2015
Asset valuation method	Market value of assets as reported in the Plan's annual statement less unrecognized return in each of the last five years. Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 10% of the market value.

Actuarial assumptions:

Investment rate of return	7.75%
Discount rate	7.75%
Inflation rate	4%
Projected salary increases	Based on years of service, ranging from 6% at 0 years of service decreasing to 4.25% after 9 years of service.
Cost of living adjustments	3% on first $12,000

Plan membership:

Retired participants and beneficiaries receiving benefits	476
Inactive participants entitled to a return of their employee contributions	47
Inactive participants with a vested right to a deferred or immediate benefit	48
Active participants	1,090
Total	1,661

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Changes in the Employer's Net Pension Liability and Related Ratios - Last Ten Years

Required Supplementary Information- GASB No. 68

June 30, 2016

(Unaudited)

(Dollars in thousands)

		Measurement Date December 31	
		2015	**2014**
Total Pension Liability			
Service Cost	$	10,638	10,529
Interest		34,598	33,587
Differences between expected and actual experience		-	(8,380)
Changes of assumptions		-	4,921
Changes of benefit terms		-	-
Benefit payments, including refunds of employee contributions		(15,390)	(12,963)
Net change in total pension liability	$	29,846	27,694
Total pension liability - beginning		443,487	415,793
Total pension liability - ending	$	473,333	443,487
Plan Fiduciary Net Position			
Contributions - employer	$	8,159	12,630
Contributions - employee		8,402	8,245
Net investment income		(530)	20,484
Benefit payments, including refunds of employee contributions		(15,390)	(12,963)
Administrative expenses		(412)	(408)
Other - military service fund contribution		-	16
Net change in fiduciary net position	$	229	28,004
Plan fiduciary net position - beginning		444,355	416,351
Plan fiduciary net position - end	$	444,584	444,355
Net pension liability (asset) - ending		28,749	(868)
Plan's fiduciary net position as a percentage of the total pension liability		93.93%	100.20%
Covered employee payroll		89,169	88,646
Net pension liability (asset) as a percentage of covered employee payroll		32.24%	-0.98%

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

See accompanying independent auditors’ report.

SUPPLEMENTAL SCHEDULES

MASSACHUSETTS WATER RESOURCES AUTHORITY

Accounts Established by the General Revenue Bond Resolution

Year ended June 30, 2016
(comparative totals for June 30, 2015)

(Dollars in thousands)

	Construction	Revenue	Debt service	Reserves	Total
Balance – June 30, 2015	$ 72,375	74,618	497,626	22,466	667,085
Proceeds from:					
Revenue bonds and loans	130,646	—	20,949	—	151,595
Cash received from customers	—	690,627	—	—	690,627
Interest income	285	3,843	12,272	1,727	18,127
Debt service grant	—	—	874	—	874
Grant receipts	—	—	5,155	—	5,155
Construction payments	(92,697)	887	—	—	(91,810)
Capital lease payments	(896)	—	(2,321)	—	(3,217)
Debt service payment	(1,296)	(16,006)	(474,779)	—	(492,081)
Other commonwealth payments	—	(59,079)	—	—	(59,079)
Interfund transfers	9,638	(394,035)	384,418	(21)	—
Transfers from (to) operating account	1,688	(246,609)	2,321	—	(242,600)
Balance – June 30, 2016	$ 119,743	54,246	446,515	24,172	644,676

	Sewer	Water	2016 total	2015 total
Restricted investments:				
Construction	$ 61,939	57,804	119,743	72,375
Debt service reserves	92,900	60,866	153,766	215,749
Debt service	183,695	82,647	266,342	256,852
Revenue redemption	5,815	20,592	26,407	25,025
Revenue	35,611	18,635	54,246	74,618
Renewal and replacement reserve	7,673	2,499	10,172	8,466
Insurance	7,000	7,000	14,000	14,000
Total restricted investments	$ 394,633	250,043	644,676	667,085

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2016

(Dollars in thousands)

Assets		**Sewer**	**Water**	**Combined total**
Unrestricted current assets:				
Cash and cash equivalents	$	42,085	25,626	67,711
Investments		21,446	13,772	35,218
Intergovernmental loans		8,844	21,720	30,564
Accounts receivable		57	630	687
Total unrestricted current assets		72,432	61,748	134,180
Restricted assets:				
Investments		398,856	252,175	651,031
Interest receivable		932	463	1,395
Total restricted assets		399,788	252,638	652,426
Capital assets:				
Capital assets – not being depreciated		84,341	61,285	145,626
Capital assets – being depreciated – net		3,309,024	2,321,768	5,630,792
Total capital assets		3,393,365	2,383,053	5,776,418
Regulatory assets		569,070	137,571	706,641
Other assets – net		377,086	151,943	529,029
Total assets		4,811,741	2,986,953	7,798,694
Deferred Outflows of Resources				
Deferred outflows from pension		25,684	13,469	39,153
Deferred outflows from derivative instruments		54,182	5,433	59,615
Deferred outflows from refunding debt		48,392	46,448	94,840
Liabilities				
Current liabilities:				
Accounts payable and accrued expenses		51,902	800	52,702
Commercial paper notes		15,000	34,000	49,000
Current portion of long-term debt		128,514	52,561	181,075
Total current liabilities		195,416	87,361	282,777
Payable from restricted assets:				
Accounts payable for construction		11,414	3,174	14,588
Accrued interest on bonds payable		51,312	24,870	76,182
Reserves		35,665	21,756	57,421
Total payable from restricted assets		98,391	49,800	148,191
Retainage on construction in progress		5,276	2,203	7,479
Long-term debt – less current portion		3,547,290	1,997,750	5,545,040
Long-term capital lease		20,167	9,056	29,223
Net pension liability		18,239	10,510	28,749
Other postemployment benefits		75,939	30,988	106,927
Liability for derivative instruments		54,182	5,433	59,615
Total liabilities		4,014,900	2,193,101	6,208,001
Deferred Inflows of Resources				
Deferred inflows from pension		3,665	1,921	5,586
Deferred inflows from regulated activities		30,470	44,136	74,606
Net Position				
Net investment in capital assets		225,978	574,460	800,438
Restricted		218,480	88,469	306,949
Unrestricted		446,506	150,216	596,722
Total net position	$	890,964	813,145	1,704,109
Commitments and contingencies				

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2015

(Dollars in thousands)

Assets		Sewer	Water	Combined total
Unrestricted current assets:				
Cash and cash equivalents	$	38,462	2,989	41,451
Investments		26,284	31,747	58,031
Intergovernmental loans		8,832	21,755	30,587
Accounts receivable		72	297	369
Total unrestricted current assets		73,650	56,788	130,438
Restricted assets:				
Investments		391,612	281,586	673,198
Interest receivable		1,184	1,282	2,466
Total restricted assets		392,796	282,868	675,664
Capital assets:				
Capital assets – not being depreciated		143,396	85,936	229,332
Capital assets – being depreciated – net		3,385,562	2,320,444	5,706,006
Total capital assets		3,528,958	2,406,380	5,935,338
Regulatory assets		602,426	164,857	767,283
Other assets – net		316,933	123,861	440,794
Total assets		4,914,763	3,034,754	7,949,517
Deferred Outflows of Resources				
Deferred outflows from pension		9,578	5,023	14,601
Deferred outflows from derivative instruments		40,247	3,936	44,183
Deferred outflows from refunding debt		44,888	28,316	73,204
Liabilities				
Current liabilities:				
Accounts payable and accrued expenses		48,729	10,591	59,320
Commercial paper notes		52,000	78,000	130,000
Current portion of long-term debt		126,208	41,040	167,248
Total current liabilities		226,937	129,631	356,568
Payable from restricted assets:				
Accounts payable for construction		13,335	2,725	16,060
Accrued interest on bonds payable		55,326	30,222	85,548
Reserves		36,080	21,376	57,456
Total payable from restricted assets		104,741	54,323	159,064
Retainage on construction in progress		4,460	3,788	8,248
Long-term debt – less current portion		3,619,053	1,982,051	5,601,104
Long-term capital lease		20,702	9,412	30,114
Other postemployment benefits		72,141	28,456	100,597
Liability for derivative instruments		40,247	3,936	44,183
Total liabilities		4,088,281	2,211,597	6,299,878
Deferred Inflows of Resources				
Deferred inflows from pension		4,581	2,402	6,983
Deferred inflows from regulated activities		23,832	39,219	63,051
Net Position				
Net investment in capital assets		234,429	554,000	788,429
Restricted		184,678	105,684	290,362
Unrestricted		473,675	159,127	632,802
Total net position	$	892,782	818,811	1,711,593
Commitments and contingencies				

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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

Year ended June 30, 2016

(Dollars in thousands)

		Sewer	Water	Combined total
Operating revenues:				
Customer services	$	448,613	234,888	683,501
Other		4,458	9,014	13,472
Total operating revenues		453,071	243,902	696,973
Operating expenses:				
Operations		57,051	41,921	98,972
Maintenance		22,814	8,164	30,978
Payments in lieu of taxes		—	8,129	8,129
Engineering, general, and administrative		82,821	51,138	133,959
Total operating expenses		162,686	109,352	272,038
Income from operations before depreciation		290,385	134,550	424,935
Depreciation and amortization		140,664	56,464	197,128
Operating income		149,721	78,086	227,807
Regulatory accounting provisions:				
Change in reserves		415	(380)	35
Change in regulatory provisions, net		(39,993)	(32,204)	(72,197)
Total regulatory accounting provisions		(39,578)	(32,584)	(72,162)
Nonoperating income (expense):				
Debt service grant		807	67	874
Investment income		9,244	10,032	19,276
Interest expense		(150,788)	(73,621)	(224,409)
Changes in derivative related accounts		2,528	412	2,940
Total nonoperating expenses		(138,209)	(63,110)	(201,319)
Net loss before capital grants and contributions		(28,066)	(17,608)	(45,674)
Capital grants and contributions		26,248	11,942	38,190
Decrease in net position		(1,818)	(5,666)	(7,484)
Total net position – beginning of year		892,782	818,811	1,711,593
Total net position – end of year	$	890,964	813,145	1,704,109

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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

Year ended June 30, 2015

(Dollars in thousands)

	Sewer	Water	Combined total
Operating revenues:			
Customer services	$ 442,571	218,734	661,305
Other	4,416	2,883	7,299
Total operating revenues	446,987	221,617	668,604
Operating expenses:			
Operations	61,956	40,366	102,322
Maintenance	20,339	7,984	28,323
Payments in lieu of taxes	—	7,966	7,966
Engineering, general, and administrative	79,505	45,287	124,792
Total operating expenses	161,800	101,603	263,403
Income from operations before depreciation	285,187	120,014	405,201
Depreciation and amortization	136,794	57,206	194,000
Operating income	148,393	62,808	211,201
Regulatory accounting provisions:			
Change in reserves	32,988	11,645	44,633
Change in regulatory provisions, net	(70,634)	(15,633)	(86,267)
Total regulatory accounting provisions	(37,646)	(3,988)	(41,634)
Nonoperating income (expense):			
Investment income	11,571	4,378	15,949
Interest expense	(152,099)	(81,068)	(233,167)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	(138,000)	(76,278)	(214,278)
Net loss before capital grants and contributions	(27,253)	(17,458)	(44,711)
Capital grants and contributions	4,989	1,440	6,429
Decrease in net position	(22,264)	(16,018)	(38,282)
Total net position – beginning of year	919,336	837,079	1,756,415
Restatement to comply with GASB Statement No. 68	(4,290)	(2,250)	(6,540)
Total net position – end of year	$ 892,782	818,811	1,711,593

See accompanying independent auditors' report.