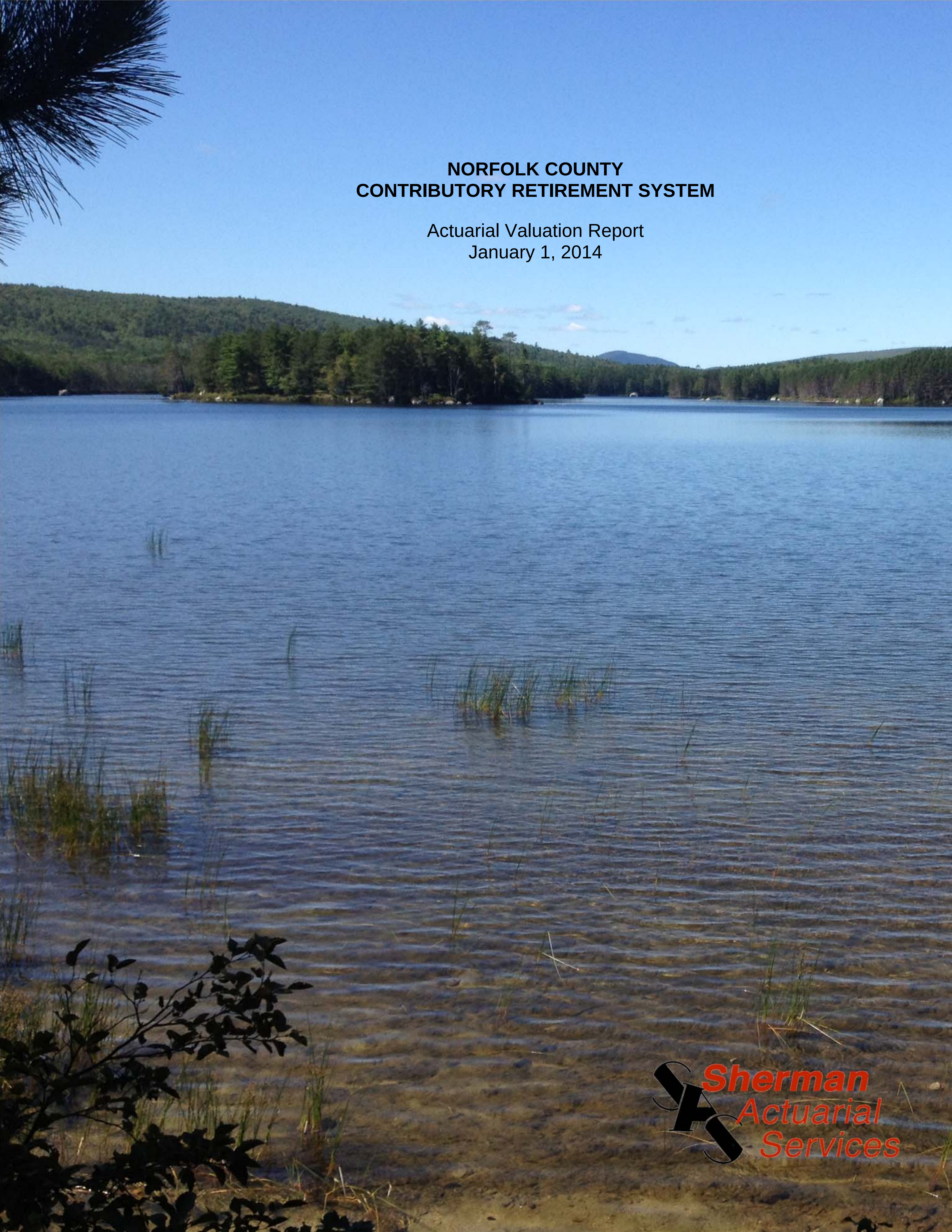
NORFOLK COUNTY
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report
January 1, 2014



Sherman Actuarial Services

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Report Summary:

Highlights	**January 1, 2012**	**January 1, 2014**
Contributions		
Funding Schedule FY 2015	$49,280,000	$49,280,000
Funding Schedule FY 2016	54,208,000	54,208,000
Funded Ratios		
GAS No. 25	53.9%	55.8%
Participants		
Actives	5,008	5,153
Retirees and Beneficiaries	2,613	2,691
Inactives	2,154	2,249
Disabled	328	332
Total	10,103	10,425
Payroll		
Payroll of Active Members	$229,095,409	$246,722,941
Average Payroll	45,746	47,879
Normal Cost		
Employer	10,528,885	11,954,750
Employee	19,571,812	21,275,861
Administrative Expenses	1,450,000	1,550,000
Total	31,550,697	34,780,611
Actuarial Accrued Liabilities		
Actives	547,208,005	594,018,063
Retirees, Beneficiaries, Disabilities and Inactives	581,752,283	653,578,709
Total	1,128,960,288	1,247,596,772
Actuarial Value of Assets	608,235,096	696,682,779
Unfunded Actuarial Accrued Liabilities	$520,725,192	$550,913,993

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2014, of Norfolk County Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2014.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Norfolk County Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2014.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last two years, the total unfunded actuarial accrued liability increased by 5.8% to $550,913,993. The increase is the result of the expected increase, plus a change in the COLA Base, offset by the net favorable actuarial experience during the preceding years. The sources of actuarial (gains) and losses are as follows:

Assets	2,017,191
Salary Increases	(8,240,677)
New Participants	2,696,920
Active - Retirements	(9,144,419)
Active - Terminations	5,420,550
Active - Mortality	(602,300)
Active - Disabilities	(987,504)
Inactive - Mortality and data adjustments	(2,861,110)
Other, includes data adjustments, buybacks, interest on ASF	(288,882)
Total Actuarial (Gain) / Loss	(11,990,232)

The increase in the COLA base to $15,000 added $16,742,696 to the unfunded accrued liability.

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Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	January 1, 2012	January 1, 2014
Superannuation	$21,268,096	$22,390,061
Termination	2,528,461	3,239,594
Death	1,278,015	2,076,634
Disability	5,026,125	5,524,322
Administrative Expenses	1,450,000	1,550,000
Total Normal Cost	31,550,697	34,780,611
% of Pay	13.8%	14.1%
Employee Contributions	19,571,812	21,275,861
% of Pay	8.5%	8.6%
Employer Normal Cost	$11,978,885	$13,504,750
% of Pay	5.2%	5.5%

Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits based on the past service of the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II

	January 1, 2012	January 1, 2014
Actives		
Superannuations	$496,548,173	$545,634,001
Termination	9,499,919	2,414,026
Death	14,393,390	16,322,553
Disability	26,766,523	29,647,483
Retirees and Inactives		
Retirees and Beneficiaries	464,716,266	527,399,494
Terminated (Refund)	0	0
Disabled	101,912,469	110,137,908
Total	$1,128,960,288	$1,247,596,772

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Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table III

	January 1, 2012	January 1, 2014
Actives		
Superannuation	$656,051,507	$711,964,709
Termination	19,472,470	21,357,284
Death	23,588,155	30,221,594
Disability	71,175,129	78,475,060
Retirees and Inactives		
Retirees and Beneficiaries	464,716,266	527,399,494
Terminated (Refund)	0	0
Disabled	101,912,469	110,137,908
Total	$1,352,039,544	$1,495,597,356

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Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	January 1, 2012	January 1, 2014
Cash equivalents	$12,873,999	$19,348,766
Short term investments	0	0
Fixed income securities	117,940,196	137,345,662
Equities	268,159,076	349,917,564
International	37,032,914	71,292,586
Real Estate	46,944,913	78,276,084
Venture Capital	0	0
Other	88,400,983	86,989,775
Accounts receivable	4,503,322	10,803,122
Accounts payable	(1,318,597)	(2,352,628)
Accrued income	930,305	1,231,989
Total Market Value	$575,467,110	$752,852,919
Total Actuarial Value	$608,235,096	$696,682,779

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Actuarial Value of Assets

The actuarial value of assets is determined by projecting the actuarial value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.25%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2014 is presented in Table V.

Table V

		January 1, 2014
(1)	Market value at January 1, 2013	$645,753,871
(2)	2013 Contributions	$71,935,492
(3)	2013 Benefit Payments	($76,939,502)
(4)	Net interest adjustment at 8.5% on (1), (2), and (3) to December 31, 2013	$53,068,279
(5)	Expected market value on January 1, 2014 (1) + (2) + (3) + (4)	$693,818,140
(6)	Actual market value on January 1, 2014	$752,852,919
(7)	2013 (Gain) / Loss	($59,034,779)
(8)	80% of 2013 (Gain) / Loss	($47,227,823)
(9)	2012 (Gain) / Loss	($28,410,423)
(10)	60% of 2012 (Gain) / Loss	($17,046,254)
(11)	2011 (Gain) / Loss	$44,755,465
(12)	40% of 2011 (Gain) / Loss	$17,902,186
(13)	2010 (Gain) / Loss	($48,991,245)
(14)	20% of 2010 (Gain) / Loss	($9,798,249)
(15)	Actuarial value on January 1, 2014, (6) + (8) + (10) + (12) + (14)	$696,682,778
(16)	but not less than 80% nor greater than 120% of (6)	$696,682,778
(17)	Ratio of actuarial value to market value	92.54%
(18)	2013 Market Value Return on Assets	17.43%
(19)	2013Actuarial Value Return on Assets	13.29%
(20)	2012 Market Value Return on Assets	13.21%
(21)	2012Actuarial Value Return on Assets	2.78%

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

Table VI

	January 1, 2012	January 1, 2014
Actuarial Accrued Liability	$1,128,960,288	$1,247,596,772
Actuarial Assets	608,235,096	696,682,779
Unfunded Actuarial Accrued Liability	$520,725,192	$550,913,993
Funded Status	53.9%	55.8%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2031
  $ 523,034,558 over 17 years with 4.0% increasing payments
- Increasing amortization of the 2002 Early Retirement Incentive by June 30, 2028
  $ 8,505,599 over 14 years with 4.5% increasing payments
- Increasing amortization of the 2003 Early Retirement Incentive by June 30, 2028
  $ 5,385,381 over 14 years with 4.5% increasing payments
- Interest adjustment for payments deposited semiannually.

The Board opted to use funding relief granted under Chapter 32 of the Massachusetts General Laws. Appropriations after FYE14 will be increased 10% per year while necessary in order to achieve full funding status by 2031. The pension appropriation is shown in Table VII.

Table VII

	January 1, 2012	January 1, 2014
Employer Normal cost	$11,978,885	$13,504,750
Amortization payment of the unfunded liability	36,305,682	42,694,539
Amortization payment of 2002 ERI liability	692,616	756,354
Amortization payment of 2003 ERI liability	438,535	478,891
Total cost	$49,415,718	$57,434,534
% of Pay	21.6%	23.3%
Fiscal 2015 cost	$49,280,000	$49,280,000
Fiscal 2016 cost	$54,208,000	$54,208,000

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4% per year. The employee contribution rate is expected to increase to 10.5% by 2044 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 26 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 21% of payroll, increasing to 22.7% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 4% thereafter. The increase in the cost as a percentage of payroll is a result of the increase in amortization payments exceeding the increase in employee deductions.

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Appropriation Forecast

Fiscal Year Ending	Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2015	$246,722,941	$21,275,861	$14,337,308	$34,942,692	$49,280,000	20.0	55.8
2016	$257,825,473	$22,434,875	$14,768,458	$39,439,542	$54,208,000	21.0	57.4
2017	$269,427,620	$23,655,116	$15,209,379	$44,418,621	$59,628,000	22.1	59.5
2018	$281,551,863	$24,939,749	$15,660,077	$49,931,523	$65,591,600	23.3	61.6
2019	$294,221,696	$26,292,096	$16,120,538	$56,030,310	$72,150,848	24.5	63.8
2020	$307,461,673	$27,715,652	$16,590,729	$60,786,186	$77,376,915	25.2	66.0
2021	$321,297,448	$29,214,087	$17,070,594	$63,225,805	$80,296,399	25.0	68.3
2022	$335,755,833	$30,791,257	$17,560,050	$65,763,376	$83,323,426	24.8	70.6
2023	$350,864,846	$32,451,213	$18,058,989	$68,402,834	$86,461,823	24.6	73.1
2024	$366,653,764	$34,198,213	$18,567,273	$71,148,272	$89,715,545	24.5	75.7
2025	$383,153,183	$36,036,729	$19,084,734	$74,003,948	$93,088,682	24.3	78.3
2026	$400,395,076	$37,971,461	$19,611,167	$76,974,288	$96,585,455	24.1	81.1
2027	$418,412,855	$40,007,344	$20,146,333	$80,063,901	$100,210,234	24.0	84.0
2028	$437,241,433	$42,149,564	$20,689,951	$83,277,577	$103,967,528	23.8	87.0
2029	$456,917,298	$44,403,569	$21,241,698	$84,191,665	$105,433,363	23.1	90.1
2030	$477,478,576	$46,775,082	$21,801,206	$87,559,332	$109,360,538	22.9	93.3
2031	$498,965,112	$49,270,113	$22,368,054	$91,061,705	$113,429,759	22.7	96.6
2032	$521,418,542	$51,894,978	$22,941,772	$0	$22,941,772	4.4	100.0
2033	$544,882,376	$54,656,309	$23,521,829	$0	$23,521,829	4.3	100.0
2034	$569,402,083	$57,561,072	$24,107,634	$0	$24,107,634	4.2	100.0
2035	$595,025,177	$60,616,585	$24,698,530	$0	$24,698,530	4.2	100.0
2036	$621,801,310	$63,830,533	$25,293,788	$0	$25,293,788	4.1	100.0
2037	$649,782,369	$67,210,988	$25,892,605	$0	$25,892,605	4.0	100.0
2038	$679,022,576	$70,766,426	$26,494,096	$0	$26,494,096	3.9	100.0
2039	$709,578,591	$74,505,752	$27,097,288	$0	$27,097,288	3.8	100.0
2040	$741,509,628	$77,858,511	$28,316,666	$0	$28,316,666	3.8	100.0
2041	$774,877,561	$81,362,144	$29,590,916	$0	$29,590,916	3.8	100.0
2042	$809,747,052	$85,023,440	$30,922,507	$0	$30,922,507	3.8	100.0
2043	$846,185,669	$88,849,495	$32,314,020	$0	$32,314,020	3.8	100.0
2044	$884,264,024	$92,847,723	$33,768,151	$0	$33,768,151	3.8	100.0
2045	$924,055,905	$97,025,870	$35,287,718	$0	$35,287,718	3.8	100.0
2046	$965,638,421	$101,392,034	$36,875,665	$0	$36,875,665	3.8	100.0

* Calendar basis

** Beginning of Fiscal Year

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GASB Statements No. 25 and No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to $0. The required disclosure information is shown in Table VIII.

Table VIII

		January 1, 2012	January 1, 2014
(1)	Actuarial Accrued Liability	$1,128,960,288	$1,247,596,772
(2)	Actuarial Value of Assets	608,235,096	696,682,779
(3)	Unfunded Actuarial Accrued Liability	520,725,192	550,913,993
(4)	Funded Ratio (2)/(1)	53.9%	55.8%
(5)	Covered Payroll	$229,095,409	$246,722,941
(6)	UAAL as a percentage of payroll: (3)/(5)	227.3%	223.3%
(7)	Annual Required Contribution (ARC)	$42,714,640	$49,280,000
(8)	Net Pension Obligation	$0	$0

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PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Sherman Actuarial Services as of January 1, 2014.

The normal cost for employees on that date was:	$21,275,861	8.6% of pay
The normal cost for the employer was:	11,954,750	4.8% of pay

The actuarial liability for active members was:	$594,018,063
The actuarial liability for retired and inactive members was:	653,578,709
Total actuarial accrued liability:	1,247,596,772
System assets as of that date:	696,682,779
Unfunded actuarial accrued liability:	$550,913,993

The ratio of system's assets to total actuarial liability was 55.8%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.25%
Rate of Salary Increase:	4.00%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b-a)/c
01/01/14	$696,682,779	$1,247,596,772	$550,913,993	55.8%	$246,722,941	223.3%
01/01/12	608,235,096	1,128,960,288	520,725,192	53.9%	229,095,409	227.3%
01/01/10	600,790,835	1,001,881,055	401,090,220	60.0%	223,332,595	179.6%
01/01/08	596,157,147	907,719,124	311,561,977	65.7%	223,814,977	139.2%
01/01/07	533,077,948	855,677,413	322,599,465	62.3%	219,620,865	146.9%
01/01/05	467,186,566	762,900,650	295,714,084	61.2%	196,639,163	150.4%
01/01/03	415,150,776	675,275,257	260,124,481	61.5%	185,281,985	140.4%
01/01/00	371,646,793	533,959,970	162,313,177	69.6%	163,542,978	99.2%
01/01/97	258,771,070	392,463,080	133,692,010	65.9%	126,219,194	105.9%

Attach Copy of Current Approved Funding Schedule

GASB Statements No. 67 and No. 68

Effective for periods beginning after June 15, 2013, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which amend GASB Statements No. 25 and No. 27, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

The statement requires the system to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position. The statement of fiduciary net position presents the following items as of the end of the plan's reporting period, as applicable:

- Assets
- Deferred outflows of resources (consumption of net assets by the employers that is applicable to a future reporting period)
- Liabilities
- Deferred inflows of resources (acquisition of net assets by the employers that is applicable to a future reporting period)
- Fiduciary net position (Assets + Deferred outflows – Liabilities – Deferred inflows)

The system is considered a cost-sharing multiple-employer pension plan since pension obligations exist for employees of more than one employer and plan assets can be used to pay the benefits of the employees of any employer.

This report does not include all items required under GASB Statements No. 67 and No. 68. Rather, it provides all items required that are not readily available from other sources such as the Annual Statement of the Financial Condition prepared by the Board, Chapter 32 of the Massachusetts General Laws and investment reports prepared by the plan's investment consultant.

Discount Rate

The discount rate, and all other actuarial assumptions, are the as those described in Exhibit 6. The discount rate was selected based on a projection of employer and employee contributions, benefit payments, expenses and the long term expected rate of return on trust assets. Under Chapter 32 of the Massachusetts Laws, employers are required to make the necessary contributions to the trust such that the plan reaches a full funding status by 2040. In addition, Chapter 32 also gives the Retirement Board the right to go directly to the Assessors of the community and add an additional property tax to bills for amounts not paid by employer.

Based on these laws and assumptions, the pensions 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.

The Board selected 8.25% as the long term expectation of investment returns. The average return for the 29 years ending as of December 31, 2013 was 8.97%. The average return for the past 5 years ending December 31, 2013 was 13.05%.

Assets

The Net Position Restricted for Pensions, shown in page 7, is $752,852,919. The 2013 Annual Statement of the Financial Condition contains the values for previous years and the changes in Net Position Restricted for Pensions. Investments are reported at fair value.

Net Pension Liability as of December 31, 2013 – GASB Statement No. 67

The following presents the net pension liability of the system calculated using the discount rate of 8.25%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.25%) or 1-percentage-point higher (9.25%) than the current rate:

	1% Decrease (7.25%)	**Current Discount Rate (8.25%)**	**1% Increase (9.25%)**
Total Pension Liability	$ 1,376,016,705	$ 1,247,596,772	$ 1,137,305,216
Plan Fiduciary Net Position	$ 752,852,919	$ 752,852,919	$ 752,852,919
Net Pension Liability	$ 623,163,786	$ 494,743,853	$ 384,453,297

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 60.3%.

Net Pension Liability as of June 30, 2014 – GASB Statement No. 68

The following presents the net pension liability of the system calculated using the discount rate of 8.25%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.25%) or 1-percentage-point higher (9.25%) than the current rate:

	1% Decrease (7.25%)	**Current Discount Rate (8.25%)**	**1% Increase (9.25%)**
Total Pension Liability	$ 1,397,944,128	$ 1,267,478,617	$ 1,155,428,668
Plan Fiduciary Net Position*	$ 773,686,542	$ 773,686,542	$ 773,686,542
Net Pension Liability	$ 624,257,586	$ 493,792,075	$ 381,742,126

*Estimated

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 61.0%.

Schedules of Required Supplementary Information

	2013
Total Pension Liability – Beginning	n/a
Total Pension Liability – Ending (a)	$ 1,247,596,772
Plan Fiduciary Net Position – Beginning	n/a
Plan Fiduciary Net Position – Ending (b)	$ 752,852,919
Net Pension Liability – Ending (a) – (b)	$ 494,743,853
Plan Fiduciary Net Positions as a percentage of the Total Pension Liability	60.3%
Covered-employee payroll	$246,722,941
Net Pension Liability as a percentage of Covered-employee Payroll	200.5%

EXHIBITS

H:\Norfolk\Report\[ACT1.XLS]Actives

Age/Service Distribution with Salary as of January 1, 2014

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	3	0	0	0	0	0	0	0	0	3
	21,550	0	0	0	0	0	0	0	0	21,550
20-24	113	3	1	0	0	0	0	0	0	117
	28,196	27,065	35,465	0	0	0	0	0	0	28,229
25-29	292	49	0	0	0	0	0	0	0	341
	35,012	52,685	0	0	0	0	0	0	0	37,552
30-34	155	152	29	0	0	0	0	0	0	336
	40,254	53,773	56,158	0	0	0	0	0	0	47,743
35-39	116	104	79	22	0	0	0	0	0	321
	36,699	53,418	63,124	66,370	0	0	0	0	0	50,652
40-44	167	108	124	120	25	2	0	0	0	546
	32,772	47,593	60,758	73,198	73,231	54,108	0	0	0	52,875
45-49	225	188	136	115	91	40	1	0	0	796
	29,525	37,195	51,746	64,006	73,138	74,990	54,674	0	0	47,417
50-54	179	228	210	145	65	82	28	3	0	940
	33,949	33,908	40,878	50,853	67,124	76,920	72,845	52,626	0	45,355
55-59	99	162	215	159	59	92	42	26	3	857
	29,769	34,035	38,502	44,060	56,177	68,308	86,616	85,075	65,963	45,963
60-64	54	97	136	105	64	72	24	21	11	584
	36,952	39,549	38,639	41,509	47,711	56,442	84,141	80,014	92,380	46,709
65-69	22	28	38	33	35	28	10	6	5	205
	29,296	33,538	39,319	38,308	43,668	44,643	57,097	79,646	82,265	41,856
70+	5	18	16	16	8	22	12	3	7	107
	16,431	43,324	33,842	39,263	25,855	39,102	55,740	36,046	55,380	39,845
Total Employees	1,430	1,137	984	715	347	338	117	59	26	5,153
Average Salary	33,449	41,622	46,113	53,475	60,382	64,715	76,850	78,579	77,426	46,038

H:\Norfolk\Report\[RET1.XLS]Retirees

Retiree Distribution as of January 1, 2014

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	1	1	0	4,644	4,644
35-39	0	0	0	0	0	0
40-44	3	0	3	30,062	0	30,062
45-49	7	3	10	127,658	31,235	158,892
50-54	23	9	32	557,772	76,910	634,682
55-59	80	57	137	2,865,840	639,337	3,505,177
60-64	177	133	310	6,875,286	2,081,593	8,956,879
65-69	254	249	503	9,632,486	4,441,673	14,074,159
70-74	241	267	508	7,302,658	4,753,214	12,055,872
75-79	165	230	395	4,450,217	3,942,335	8,392,551
80-84	133	213	346	2,799,154	3,060,741	5,859,895
85-89	90	176	266	1,745,735	1,957,358	3,703,094
90-94	36	102	138	461,550	897,160	1,358,711
95+	13	29	42	127,383	184,727	312,111
Total	1222	1469	2691	36,975,802	22,070,927	59,046,729
Average (Age/Payment)	72.10	75.86	74.15	30,258	15,024	21,942
Frequency Percent	45.4	54.6	100	62.6	37.4	100

H:\Norfolk\Report\[DIS1.XLS]Disabled

Disabled Retiree Distribution as of January 1, 2014

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	1	1	0	5,031	5,031
25-29	0	0	0	0	0	0
30-34	1	0	1	31,611	0	31,611
35-39	1	1	2	32,373	48,393	80,766
40-44	6	3	9	209,673	87,596	297,269
45-49	22	1	23	840,548	51,429	891,977
50-54	21	6	27	876,878	144,339	1,021,216
55-59	38	7	45	1,418,222	134,022	1,552,244
60-64	41	9	50	1,565,005	193,678	1,758,683
65-69	59	11	70	2,002,672	219,900	2,222,573
70-74	42	8	50	1,261,785	202,079	1,463,865
75-79	27	4	31	760,498	100,217	860,715
80-84	13	4	17	300,395	48,100	348,496
85-89	1	2	3	16,266	27,292	43,559
90-94	3	0	3	54,505	0	54,505
95-99	0	0	0	0	0	0
Total	275	57	332	9,370,431	1,262,079	10,632,510
Average (Age/Payment)	64.61	63.89	64.49	34,074	22,142	32,026
Frequency Percent	82.8	17.2	100	88.1	11.9	100

H:\Norfolk\[Norfolk14_Val 8 25% 15k COLA v2.xlsx]Cash Flow

EXHIBIT 4 - CASHFLOW FORECAST:

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2014	$95,282,654	$21,275,861	$49,280,000	$66,594,071	$41,867,278
2015	84,136,502	22,434,875	54,208,000	67,939,367	60,445,740
2016	88,907,539	23,655,116	59,628,000	69,770,084	64,145,661
2017	94,170,661	24,939,749	65,591,600	71,434,012	67,794,700
2018	99,296,793	26,292,096	72,150,848	72,903,647	72,049,798
2019	104,371,404	27,715,652	77,376,915	76,157,780	76,878,943
2020	109,539,899	29,214,087	80,296,399	82,214,830	82,185,416
2021	114,631,733	30,791,257	83,323,426	88,710,604	88,193,554
2022	119,758,816	32,451,213	86,461,823	95,698,421	94,852,641
2023	124,879,798	34,198,213	89,715,545	103,233,615	102,267,575
2024	129,711,233	36,036,729	93,088,682	111,389,960	110,804,138
2025	134,729,591	37,971,461	96,585,455	120,240,688	120,068,014
2026	139,942,101	40,007,344	100,210,234	129,845,468	130,120,944
2027	145,356,278	42,149,564	103,967,528	140,269,054	141,029,868
2028	150,979,921	44,403,569	105,433,363	151,534,015	150,391,026
2029	156,821,136	46,775,082	109,360,538	163,605,545	162,920,029
2030	162,888,339	49,270,113	113,429,759	176,698,970	176,510,502
2031	169,190,275	51,894,978	22,941,772	195,579,836	101,226,310
2032	175,736,025	54,656,309	23,521,829	203,745,977	106,188,091
2033	182,535,021	57,561,072	24,107,634	212,315,992	111,449,677
2034	189,597,061	60,616,585	24,698,530	221,314,485	117,032,539
2035	196,932,322	63,830,533	25,293,788	230,767,832	122,959,831
2036	204,551,375	67,210,988	25,892,605	240,704,319	129,256,538
2037	212,465,199	70,766,426	26,494,096	251,154,292	135,949,615
2038	220,685,198	74,505,752	27,097,288	262,150,320	143,068,161
2039	229,223,218	77,858,511	28,316,666	273,691,628	150,643,587
2040	238,091,564	81,362,144	29,590,916	285,848,306	158,709,802
2041	247,303,013	85,023,440	30,922,507	298,660,496	167,303,430
2042	256,870,842	88,849,495	32,314,020	312,171,350	176,464,023
2043	265,492,360	92,847,723	33,768,151	326,480,496	187,604,011

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2014, and does not take into account any subsequent changes.

1. Administration

Each of the 105 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

(i) Group 1: Most general employees in State and local government

(ii) Group 2: Certain specified hazardous duty positions

(iii) Group 3: State police officers and inspectors

(iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

Chapter 176 of the Acts of 2011 created different plan provisions within these groups for those hired on or after April 2, 2012.

3. Salary

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. Member Contributions

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of $30,000

For Group 1 employees who become members on or after April 2, 2012, the Contribution Rate shall be 6% after the completion of 30 years of service.

5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.). For employees who become members on or after April 2, 2012, the averaging period shall be five years.

6. Creditable Service

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. Service Retirement

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

(i) completion of 20 years of service

(ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member

(iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service

(iv) for a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table for those hired prior to April 2, 2012:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For those hired after April 1, 2012 who retire with less than 30 years of service, the following rates are applied:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
67 or Over	.0250	.0250	.0250
66	.0235	.0250	.0250
65	.0220	.0250	.0250
64	.0205	.0250	.0250
63	.0190	.0250	.0250
62	.0175	.0250	.0250
61	.0160	.0235	.0250
60	.0145	.0220	.0250
59		.0205	.0250
58		.0190	.0250
57		.0175	.0250
56		.0160	.0235
55		.0145	.0220
54			.0205
53			.0190
52			.0175
51			.0160
50			.0145

For those hired after April 1, 2012 who retire with at least 30 years of service, the following rates are applied:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
67 or Over	.02500	.02500	.02500
66	.02375	.02500	.02500
65	.02250	.02500	.02500
64	.02125	.02500	.02500
63	.02000	.02500	.02500
62	.01875	.02500	.02500
61	.01750	.02375	.02500
60	.01625	.02250	.02500
59		.02125	.02500
58		.02000	.02500
57		.01875	.02500
56		.01750	.02375
55		.01625	.02250
54			.02125
53			.02000
52			.01875
51			.01750
50			.01625

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus $751.80 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability

a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55 or age 60 if hired on or after April 2, 2012).

b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55 (age 60 if hired on or after April 2, 2012). If the member was a veteran, the benefit is 50% of the member's final rate of salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55 (age 60 if hired on or after April 2, 2012), he will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits

a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of $250 per month to the surviving spouse, plus $120 for the first child, plus $90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of $250 per month plus $120 for the first child and $90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is $15,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

(i) Option A – Life annuity

(ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member

(iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. **Member Data**

   The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. **Valuation Date**

   January 1, 2014.

3. **Actuarial Cost Method**

   The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. **Rate of Investment Return**

   It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.25% per annum.

5. **Salary Scale**

   It is assumed that salaries including longevity will increase at a rate of 4.0% per year.

6. **Cost-of-Living Increases**

   Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and $15,000 per year.

7. **Value of Investments**

   Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of asset returns greater than or less than the assumed rate of return.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

Service	General Employees	Police and Fire Employees
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

9. Annual Rate of Mortality

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table for males and females, adjusted to 2015 with Scale AA. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired prior to April 2, 2012:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired on or after April 2, 2012:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0000	0.0000	0.0100
51	0.0000	0.0000	0.0100
52	0.0000	0.0000	0.0200
53	0.0000	0.0000	0.0200
54	0.0000	0.0000	0.0200
55	0.0000	0.0000	0.0500
56	0.0000	0.0000	0.0750
57	0.0000	0.0000	0.1500
58	0.0000	0.0000	0.1000
59	0.0000	0.0000	0.1000
60	0.0500	0.0650	0.1000
61	0.0650	0.0650	0.1500
62	0.2000	0.1500	0.2000
63	0.2000	0.1300	0.2000
64	0.3000	0.1500	0.3000
65	0.2500	0.1250	1.0000
66	0.2200	0.1800	1.0000
67	0.4000	0.2500	1.0000
68	0.3000	0.2000	1.0000
69	0.3000	0.2000	1.0000
70	1.0000	1.0000	1.0000

12. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained Age	General Employees	Police and Fire Employees
20	0.0001	0.0020
30	0.0003	0.0060
40	0.0010	0.0060
50	0.0019	0.0250

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

14. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2015 is $1,550,000. The costs are anticipated to increase at 4.5% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. <u>Normal Cost</u>

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. <u>Unfunded Actuarial Accrued Liability</u>

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. <u>Valuation Method</u>

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. <u>Vested Liability</u>

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the Norfolk County Retirement System contributing as of January 1, 2014, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Sherman Actuarial Services, LLC

Daniel W. Sherman

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Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 11-4086

October, 2014