

**TOWN OF WATERTOWN
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2010

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Report Summary:

<u>Highlights</u>	<u>January 1, 2009</u>	<u>January 1, 2010</u>
<u>Contributions</u>		
Funding Schedule FY 2011	\$7,996,038	\$8,608,733
Funding Schedule FY 2012	8,322,377	8,965,000
<u>Funded Ratios</u>		
GAS No. 25	54.3%	57.3%
<u>Participants</u>		
Actives	512	475
Retirees and Beneficiaries	342	350
Vested	0	0
Inactives	145	156
Disabled	<u>62</u>	<u>64</u>
Total	1,061	1,045
<u>Payroll</u>		
Payroll of Active Members	\$25,266,728	\$25,403,413
Average Payroll	49,349	53,481
<u>Normal Cost</u>		
Employer	1,544,429	1,456,008
Employee	2,125,553	2,180,116
Administrative Expenses	<u>225,000</u>	<u>225,000</u>
Total	3,894,982	3,861,124
<u>Actuarial Accrued Liabilities</u>		
Actives	67,651,351	69,135,665
Retirees, Beneficiaries, Disabilities and Inactives	<u>75,720,713</u>	<u>86,827,470</u>
Total	144,633,508	155,963,135
<u>Actuarial Value of Assets</u>	<u>78,514,694</u>	<u>89,432,797</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$66,118,814	\$66,530,338

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2010, of the Watertown Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2010.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Town of Watertown 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, 2010.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- 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 year, the total unfunded actuarial accrued liability increased by 0.62% to \$66,530,338. The increase is the result of net unfavorable actuarial experience during the preceding year. The sources of the (gain)/loss are as follows:

Asset (Gain)/Loss	(4,435,030)
Salary Increases	3,647,753
New Participants	0
Active - Retirements	(333,208)
Active - Terminations	(306,874)
Active - Mortality	(30,090)
Active - Disabilities	738,915
Inactive - Mortality and data adjustments	1,776,664
Other, including data, contribution interest, purchased service	<u>(16,954)</u>
Total	1,041,177

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Superannuation	\$2,574,649	\$2,596,111
Termination	273,810	246,119
Death	178,532	176,523
Disability	642,991	617,371
Administrative Expenses	<u>225,000</u>	<u>225,000</u>
Total Normal Cost	3,894,982	3,861,124
% of Pay	15.4%	15.2%
Employee Contributions	2,125,553	2,180,116
% of Pay	8.4%	8.6%
Employer Normal Cost	\$1,769,429	\$1,681,008
% of Pay	7.0%	6.6%

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 inactive. 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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuations	\$59,799,025	\$61,062,865
Termination	843,564	872,146
Death	2,101,390	2,119,225
Disability	4,907,372	5,081,429
Retirees and Inactives		
Retirees and Beneficiaries	60,715,952	67,233,334
Vested	0	0
Terminated (Refund)	1,261,444	2,657,060
Disabled	<u>15,004,761</u>	<u>16,937,076</u>
Total	\$144,633,508	\$155,963,135

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuation	\$83,604,461	\$85,378,168
Termination	1,961,284	1,877,995
Death	3,648,249	3,676,586
Disability	11,570,467	11,561,331
Retirees and Inactives		
Retirees and Beneficiaries	60,715,952	67,233,334
Vested	0	0
Terminated (Refund)	1,261,444	2,657,060
Disabled	<u>15,004,761</u>	<u>16,937,076</u>
Total	\$177,766,618	\$189,321,550

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Cash equivalents	\$948,633	\$405,178
Short term investments	0	0
Fixed income securities	10,197,375	14,117,227
Equities	13,599,884	19,052,781
International	2,953,976	7,811,534
Real Estate	9,469,986	5,314,386
Venture Capital	0	0
Other	34,036,495	34,426,419
Accounts receivable	253,875	196,323
Accounts payable	(83,318)	(21,396)
Accrued income	<u>90</u>	<u>90</u>
Total Market Value	\$71,376,995	\$81,302,542
Total Actuarial Value	\$78,514,694	\$89,432,797

Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.0%) 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 10%. The calculation of the actuarial value of assets as of January 1, 2010 is presented in Table V.

Table V

	<u>January 1, 2010</u>
(1) Market value at January 1, 2009	\$71,376,995
(2) 2009 Contributions	\$10,847,500
(3) 2009 Payments	(\$10,653,369)
(4) Net interest adjustment at 8.0% on (1), (2), and (3) to December 31, 2009	\$5,717,925
(5) Expected market value on January 1, 2010	\$77,289,052
(1) + (2) + (3) + (4)	
(6) Actual market value on January 1, 2010	\$81,302,542
(7) 2009 (Gain) / Loss	(\$4,013,491)
(8) 80% of 2009 (Gain) / Loss	(\$3,210,793)
(9) 2008 (Gain) / Loss	\$32,877,440
(10) 60% of 2008 (Gain) / Loss	\$19,726,464
(11) 2007 (Gain) / Loss	\$1,491,111
(12) 40% of 2007 (Gain) / Loss	\$596,445
(13) 2006 (Gain) / Loss	(\$5,295,895)
(14) 20% of 2006 (Gain) / Loss	\$0
Actuarial value on January 1, 2010, (6) + (8) + (10) + (12) + (14)	
(15) but not less than 90% nor greater than 110% of (6)	\$89,432,797
(16) Ratio of actuarial value to market value	110.00%
(17) Market Value Return for 2008	-26.2%
(18) Actuarial Value Return for 2008	-19.8%
(19) Market Value Return for 2009	13.6%
(20) Actuarial Value Return for 2009	13.6%

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actuarial Accrued Liability	\$144,633,508	\$155,963,135
Actuarial Assets	<u>78,514,694</u>	<u>89,432,797</u>
Unfunded Actuarial Accrued Liability	\$66,118,814	\$66,530,338
Funded Status	54.3%	57.3%

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 unfunded actuarial accrued liability by June 30, 2022
\$ 66,530,338 over 12 years with 4.5% increasing payments
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The pension appropriation is shown in Table VII.

Table VII

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Normal cost	\$1,769,429	\$1,681,008
Amortization payment of the accrued liability	9,248,571	6,602,749
Amortization payment of 1992 ERI liability	<u>0</u>	<u>0</u>
Total cost	\$11,018,000	\$8,283,757
% of Pay	43.6%	32.6%
Fiscal 2011 cost	\$7,996,038	\$8,608,733
Fiscal 2012 cost	\$8,322,377	\$8,965,000

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 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 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 12 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 33.9% of payroll, decreasing to 32.6.0% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 5.5%. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Appropriation Forecast

Fiscal Year	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2011	\$25,403,413	\$2,180,116	\$1,746,955	\$6,861,778	\$8,608,733	33.9	57.3
2012	\$26,546,567	\$2,308,172	\$1,794,442	\$7,170,558	\$8,965,000	33.8	59.9
2013	\$27,741,162	\$2,443,339	\$1,842,665	\$7,493,233	\$9,335,898	33.7	62.7
2014	\$28,989,514	\$2,585,996	\$1,891,594	\$7,830,428	\$9,722,022	33.5	65.6
2015	\$30,294,043	\$2,736,545	\$1,941,196	\$8,182,798	\$10,123,994	33.4	68.7
2016	\$31,657,274	\$2,895,407	\$1,991,431	\$8,551,024	\$10,542,455	33.3	72.0
2017	\$33,081,852	\$3,063,025	\$2,042,257	\$8,935,820	\$10,978,077	33.2	75.5
2018	\$34,570,535	\$3,239,865	\$2,093,624	\$9,337,932	\$11,431,556	33.1	79.1
2019	\$36,126,209	\$3,426,418	\$2,145,479	\$9,758,138	\$11,903,617	33.0	82.9
2020	\$37,751,889	\$3,623,201	\$2,197,761	\$10,197,255	\$12,395,016	32.8	86.9
2021	\$39,450,724	\$3,830,755	\$2,250,404	\$10,656,131	\$12,906,535	32.7	91.1
2022	\$41,226,006	\$4,049,652	\$2,303,335	\$11,135,657	\$13,438,992	32.6	95.5
2023	\$43,081,176	\$4,280,493	\$2,356,472	\$0	\$2,356,472	5.5	100.0
2024	\$45,019,829	\$4,523,908	\$2,409,727	\$0	\$2,409,727	5.4	100.0
2025	\$47,045,722	\$4,780,563	\$2,463,003	\$0	\$2,463,003	5.2	100.0
2026	\$49,162,779	\$5,051,156	\$2,516,194	\$0	\$2,516,194	5.1	100.0
2027	\$51,375,104	\$5,336,422	\$2,569,185	\$0	\$2,569,185	5.0	100.0
2028	\$53,686,984	\$5,637,133	\$2,621,850	\$0	\$2,621,850	4.9	100.0
2029	\$56,102,898	\$5,890,804	\$2,739,834	\$0	\$2,739,834	4.9	100.0
2030	\$58,627,529	\$6,155,891	\$2,863,126	\$0	\$2,863,126	4.9	100.0
2031	\$61,265,767	\$6,432,906	\$2,991,967	\$0	\$2,991,967	4.9	100.0
2032	\$64,022,727	\$6,722,386	\$3,126,605	\$0	\$3,126,605	4.9	100.0
2033	\$66,903,750	\$7,024,894	\$3,267,302	\$0	\$3,267,302	4.9	100.0
2034	\$69,914,418	\$7,341,014	\$3,414,331	\$0	\$3,414,331	4.9	100.0
2035	\$73,060,567	\$7,671,360	\$3,567,976	\$0	\$3,567,976	4.9	100.0
2036	\$76,348,293	\$8,016,571	\$3,728,535	\$0	\$3,728,535	4.9	100.0
2037	\$79,783,966	\$8,377,316	\$3,896,319	\$0	\$3,896,319	4.9	100.0
2038	\$83,374,244	\$8,754,296	\$4,071,653	\$0	\$4,071,653	4.9	100.0
2039	\$87,126,085	\$9,148,239	\$4,254,878	\$0	\$4,254,878	4.9	100.0
2040	\$91,046,759	\$9,559,910	\$4,446,347	\$0	\$4,446,347	4.9	100.0
2041	\$95,143,863	\$9,990,106	\$4,646,433	\$0	\$4,646,433	4.9	100.0
2042	\$99,425,337	\$10,439,660	\$4,855,522	\$0	\$4,855,522	4.9	100.0

* Calendar basis

** Beginning of Fiscal Year

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
(1) Actuarial Accrued Liability	\$144,633,508	\$155,963,135
(2) Actuarial Value of Assets	<u>78,514,694</u>	<u>89,432,797</u>
(3) Unfunded Actuarial Accrued Liability	66,118,814	66,530,338
(4) Funded Ratio (2)/(1)	54.3%	57.3%
(5) Covered Payroll	\$25,266,728	\$25,403,413
(6) UAAL as a percentage of payroll: (3)/(5)	261.7%	261.9%
(7) Annual Required Contribution (ARC)	\$7,682,372	\$8,608,733
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2010.

The normal cost for employees on that date was:	\$2,180,116	8.6% of pay
The normal cost for the employer was:	1,456,008	5.7% of pay
The actuarial liability for active members was:		\$69,135,665
The actuarial liability for retired and inactive members was:		86,827,470
Total actuarial accrued liability:		155,963,135
System assets as of that date:		89,432,797
Unfunded actuarial accrued liability:		\$66,530,338

The ratio of system's assets to total actuarial liability was 57.3%

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

Investment Return:	8.0%
Rate of Salary Increase:	5.0%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/10	\$89,432,797	\$155,963,135	\$66,530,338	57.3%	\$25,403,413	261.9%
01/01/09	78,514,694	144,633,508	66,118,814	54.3%	25,266,728	261.7%
01/01/08	97,038,107	140,549,411	43,511,304	69.0%	24,654,987	176.5%
01/01/06	77,395,170	130,484,841	53,089,671	59.3%	22,327,190	237.8%
01/01/04	72,563,856	120,699,469	48,135,613	60.1%	21,673,650	222.1%
01/01/02	70,633,407	111,494,385	40,860,978	63.4%	19,735,159	207.0%
01/01/01	66,804,435	100,876,281	34,071,846	66.2%	19,379,204	175.8%
01/01/00	67,485,797	93,900,795	26,414,998	71.9%	18,231,939	144.9%
01/01/99	56,172,432	90,052,933	33,880,501	62.4%	15,732,197	215.4%

Attach Copy of Current Approved Funding Schedule

EXHIBITS

Age/Service Distribution with Salary as of January 1, 2010

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
20-24		1	0	0	0	0	0	0	0	0	1
		22,008	0	0	0	0	0	0	0	0	22,008
25-29		39	4	0	0	0	0	0	0	0	43
		38,652	58,425	0	0	0	0	0	0	0	40,491
30-34		19	14	2	0	0	0	0	0	0	35
		40,635	62,174	71,681	0	0	0	0	0	0	51,025
35-39		10	24	13	1	0	0	0	0	0	48
		45,763	66,141	71,682	43,494	0	0	0	0	0	62,924
40-44		18	7	13	8	4	0	0	0	0	50
		32,969	59,865	67,723	78,582	94,695	0	0	0	0	58,007
45-49		17	13	14	6	16	1	0	0	0	67
		33,998	41,381	61,270	78,837	72,151	122,674	0	0	0	55,579
50-54		10	15	20	14	17	14	3	0	0	93
		30,680	40,185	42,556	45,538	75,392	97,021	111,223	0	0	57,762
55-59		9	11	15	11	7	6	8	2	0	69
		28,357	33,945	40,716	42,738	63,208	88,068	100,161	67,603	0	52,418
60-64		2	4	10	6	7	7	5	1	2	44
		25,489	44,009	34,546	46,906	49,068	59,391	73,585	81,248	59,635	49,581
65-69		0	3	7	1	1	1	0	1	1	15
		0	50,662	38,464	33,848	45,165	49,436	0	108,282	62,748	48,048
70+		1	1	0	1	4	2	1	0	0	10
		40,712	28,813	0	28,760	41,535	24,967	4,560	0	0	31,892
Total Employees		126	96	94	48	56	31	17	4	3	475
Average Salary		36,383	51,891	52,021	54,101	68,073	81,435	88,673	81,184	60,673	53,481

Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	1	0	1	19,266	0	19,266
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	0	0	0	0	0	0
50-54	1	1	2	16,354	806	17,160
55-59	11	4	15	512,397	52,232	564,629
60-64	37	15	52	1,560,812	178,767	1,739,579
65-69	26	20	46	903,234	284,442	1,187,676
70-74	28	15	43	804,265	238,257	1,042,522
75-79	27	21	48	732,421	355,142	1,087,562
80-84	32	30	62	728,228	380,532	1,108,760
85-89	15	37	52	369,046	533,612	902,658
90-94	7	10	17	157,942	98,981	256,924
95-99	4	8	12	41,275	81,340	122,614
Total	189	161	350	5,845,240	2,204,111	8,049,350
Average (Age/Payment)	73.5	78.6	75.8	30,927	13,690	22,998
Frequency Percent	54.0	46.0	100	72.6	27.4	100

Disabled Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	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	56,913	56,913
35-39	0	0	0	0	0	0
40-44	1	0	1	29,060	0	29,060
45-49	0	0	0	0	0	0
50-54	1	0	1	25,148	0	25,148
55-59	3	1	4	116,262	55,082	171,343
60-64	14	1	15	495,660	29,031	524,691
65-69	9	0	9	266,101	0	266,101
70-74	5	2	7	207,652	35,726	243,377
75-79	11	1	12	311,877	9,542	321,419
80-84	7	1	8	202,786	4,899	207,685
85-89	6	0	6	148,262	0	148,262
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	57	7	64	1,802,808	191,192	1,994,000
Average (Age/Payment)	71.5	65.8	70.9	31,628	27,313	31,156
Frequency Percent	89.1	10.9	100	90.4	9.6	100

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
2010	\$10,405,653	\$2,180,116	\$8,608,733	\$7,015,539	\$7,398,735
2011	10,765,997	2,308,172	8,965,000	7,606,587	8,113,762
2012	11,062,689	2,443,339	9,335,898	8,257,985	8,974,533
2013	11,392,069	2,585,996	9,722,022	8,977,646	9,893,595
2014	11,761,286	2,736,545	10,123,994	9,769,984	10,869,236
2015	12,132,265	2,895,407	10,542,455	10,641,054	11,946,651
2016	12,550,346	3,063,025	10,978,077	11,597,257	13,088,012
2017	13,059,083	3,239,865	11,431,556	12,642,037	14,254,375
2018	13,573,113	3,426,418	11,903,617	13,780,784	15,537,706
2019	14,121,854	3,623,201	12,395,016	15,021,743	16,918,106
2020	14,656,154	3,830,755	12,906,535	16,374,652	18,455,788
2021	15,243,204	4,049,652	13,438,992	17,849,502	20,094,942
2022	15,853,768	4,280,493	2,356,472	18,999,094	9,782,290
2023	16,488,788	4,523,908	2,409,727	19,759,783	10,204,629
2024	17,149,244	4,780,563	2,463,003	20,553,487	10,647,809
2025	17,836,155	5,051,156	2,516,194	21,381,847	11,113,043
2026	18,550,579	5,336,422	2,569,185	22,246,601	11,601,629
2027	19,293,620	5,637,133	2,621,850	23,149,590	12,114,953
2028	20,066,423	5,890,804	2,739,834	24,090,281	12,654,496
2029	20,870,180	6,155,891	2,863,126	25,073,003	13,221,840
2030	21,706,132	6,432,906	2,991,967	26,099,934	13,818,675
2031	22,575,568	6,722,386	3,126,605	27,173,389	14,446,812
2032	23,479,829	7,024,894	3,267,302	28,295,821	15,108,188
2033	24,420,310	7,341,014	3,414,331	29,469,838	15,804,874
2034	25,398,461	7,671,360	3,567,976	30,698,215	16,539,090
2035	26,415,793	8,016,571	3,728,535	31,983,898	17,313,211
2036	27,473,873	8,377,316	3,896,319	33,330,024	18,129,785
2037	28,574,335	8,754,296	4,071,653	34,739,929	18,991,542
2038	29,718,876	9,148,239	4,254,878	36,217,165	19,901,406
2039	30,716,349	9,559,910	4,446,347	37,773,088	21,062,996

amounts in thousands

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2010, and does not take into account any subsequent changes.

1. Administration

Each of the 107 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.

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:

<u>Date of Hire</u>	<u>Member Contribution Rate</u>
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

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.)

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

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:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
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

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. If termination is involuntary, the participant is vested after six years.

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 \$648.48 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).

b. **Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. 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, 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 \$12,000. 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, 2010.

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 8.0% per annum.

5. Salary Scale

It is assumed that salaries including longevity will increase at a rate of 5% 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 \$12,000 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. For 2007, the asset smoothing was fresh started at market value.

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:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
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. 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:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
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

11. 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:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

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).

12. 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.

13. 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 2010 is \$225,000 and is 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. Normal Cost

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

7. Unfunded Actuarial Accrued Liability

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

8. Valuation Method

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. Vested Liability

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 Town of Watertown Retirement System contributing as of January 1, 2010, 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.

Buck Consultants, LLC

Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 08-4086

March 2010