

**NORTH DAKOTA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM**

*Actuarial Valuation Report as of July 1, 2006*

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The Parent of The Segal Company  
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October 11, 2006

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Public Employees Retirement System as of July 1, 2006.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems; and
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary

Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary

Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

/dqm

cc: Sparb Collins

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## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2006. The employer contribution requirements presented in Section VI of the report are based on:

1. The present provisions of the North Dakota Public Employees Retirement System;
2. The characteristics of covered active members, inactive non-retired members, pensioners and beneficiaries as of July 1, 2006;
3. The assets of the System as of June 30, 2006; and
4. Actuarial assumptions regarding investment earnings, salary increases, and rates of retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the North Dakota Public Employees Retirement System in accordance with the benefit provisions of the System.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the System will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the System experiences net actuarial losses and will decrease if the System experiences net actuarial gains.

## II. HIGHLIGHTS

- The present rate of contributions is not sufficient to meet the actuarially determined requirement for 2006-2007, based upon the actuarial assumptions and financing objectives approved by the Board. If unchanged, this difference will further increase the actuarial contribution requirement in future valuations.
- The PERS Board should continue to review these results and projected future performance to determine appropriate measures to mitigate the difference between the actuarial and statutory contribution rates.
- The employer actuarial contribution requirements for 2006-2007 are as follows:

	Amount	Percentage of Payroll	Statutory/ Approved Rate
Main System	\$37,041,461	6.90%	4.12%
Judges	577,889	12.36	14.52
National Guard	55,071	4.02	6.50*
Law Enforcement with prior Main service	479,646	12.07	8.31
Law Enforcement without prior Main service	30,443	7.43	6.43

\* Last year, the National Guard Approved Rate was 8.33%

- A comparison of this year's actuarial contribution rates to last year's rates as a percent of payroll are as follows:

	2006-2007	2005-2006
Main System	6.90%	6.03%
Judges	12.36	11.62
National Guard	4.02	1.58
Law Enforcement with prior Main service	12.07	12.03
Law Enforcement without prior Main service	7.43	7.61

- The Main System statutory rate of 4.12% of payroll is less than the actuarially determined rate of 6.90% of payroll by 2.78% of payroll. Last year, the Main System statutory rate was less than the actuarially determined rate by 1.91% of payroll. The contribution rate deficit this year is primarily attributable to a contribution shortfall and changes in the actuarial assumptions.

- The return on the market value of assets for 2005-2006 for the PERS Fund was 12.04%, and was 14.17% for the preceding year.
- The return on the actuarial value of assets for 2005-2006 for the PERS Fund was 7.77% compared to the investment return assumption of 8.00%. As a result, the PERS Fund experienced an investment loss on an actuarial value basis of approximately \$2.8 million.
- The ratio of the actuarial value of assets to the market value of assets for the PERS Fund is 82.8%. Last year, this ratio was 86.3%.
- A comparison of this year's funded ratio for PERS to the prior year is as follows:

	July 1, 2006	July 1, 2005
Actuarial Value of Assets	\$1,314,542,905	\$1,236,114,135
Actuarial Accrued Liability	1,480,456,701	1,361,154,300
Funded Ratio	88.8%	90.8%

- Table 6 details actuarial gains and losses in the Main System for many of the measured demographic assumptions. The gain/(loss) by source is measured each year, and a detailed analysis of the System's demographic assumptions is reviewed every fourth or fifth year by the completion of an experience study.
- There were changes to the actuarial assumptions since the preceding valuation as a result of the experience study conducted in 2005. The effect of these changes for PERS was to increase the actuarially determined contribution rate by 0.59% to 6.98%.

### III. MEMBER CHARACTERISTICS

Detailed information for all non-retired members as of July 1, 2006 was provided by the Retirement Office. The data included name, sex, date of birth, months of service, members' accumulated account balances, and annual salary rate.

#### *Active Members*

The age, service, compensation and account balance data for active members as of July 1, 2006 is summarized below:

	<u>Main System</u>	<u>Judges</u>	<u>National Guard</u>	<u>Law Enforcement with prior Main service</u>	<u>Law Enforcement without prior Main service</u>	<u>Total</u>
Number of active members	17,887	47	41	113	14	18,102
Average age	46.8	55.1	33.1	42.7	36.0	46.8
Average years of service	10.7	10.5	3.0	10.7	1.7	10.7
Total annual salary	\$536,574,504	\$4,676,506	\$1,371,485	\$3,973,958	\$409,698	\$547,006,151
Average annual salary	\$29,998	\$99,500	\$33,451	\$35,168	\$29,264	\$30,218
Total accumulated member contribution account balances	\$395,891,168	\$2,848,597	\$283,666	\$3,445,234	\$111,537	\$402,580,202

For the Main System, the number of active members represents an increase of 0.8% over the 17,745 active members last year. Among the members continuing in active service since the prior valuation, and have two or more years of full-time service, salaries increased by an average of 7.6%. Total payroll increased 5.6%, which was marginally less than assumed.

Distributions of the active members by sex, age, and service are presented in Tables 8-A, 8-B and 8-C of the Appendix. Tables 9-A, 9-B and 9-C present a distribution of these same members by sex, age, and actual salary. The table on the following page shows a breakdown of the active members who are currently eligible for benefits, as well as those who have not yet met the vesting requirements.



There are 22 members originally from the Main System that continue to be active members in the Judges System; one member from the Judges System is active in the Main System; 13 members originally from the Main System are active members in the Highway Patrol System; four members from the Highway Patrol System continue to be active members in the Main System. Liabilities for these members are carried in each system based on their service in that system.

The following table shows the number of active participants eligible for retirement:

<u>Active Members Eligible for:</u>	<u>Main System</u>	<u>Judges</u>	<u>National Guard</u>	<u>Law Enforcement with prior Main service</u>	<u>Law Enforcement without prior Main service</u>	<u>Total</u>
Retirement:						
Normal	508	1	2	36	0	547
Rule of 85	730	1	N/A	0	0	731
Early Retirement	<u>2,759</u>	<u>17</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2,776</u>
Total Retirement	3,997	19	2	36	0	4,054
Deferred Retirement	<u>9,574</u>	<u>19</u>	<u>6</u>	<u>47</u>	<u>0</u>	<u>9,646</u>
Total vested	13,571	38	8	83	0	13,700
Nonvested	<u>4,316</u>	<u>9</u>	<u>33</u>	<u>30</u>	<u>14</u>	<u>4,402</u>
Total	17,887	47	41	113	14	18,102

### ***Inactive Members***

There were 2,566 inactive members (including one from Judges, two from National Guard and four from Law Enforcement with prior Main service) as of July 1, 2006 with vested rights to deferred retirement benefits. The average deferred monthly benefit for this group was \$380. There were also 28 members from the Main System and four members from National Guard on leave of absence. For these groups, a liability is carried for their deferred retirement benefits.

#### IV. BENEFIT EXPERIENCE

##### *New Awards*

During the fiscal year ended in June 2006, 429 pensions became effective. The average monthly benefit for these pensioners was \$1,054 and their average age at retirement was 62.5. Last year, the average benefit among new pensioners was \$974. The new pensioners are presented in Tables 10-A, 10-B, 10-C, 11-A, 11-B and 11-C in Appendix B by sex, type of pension, monthly benefit and age on retirement date.

A breakdown of the new pension awards by type compared to last year is as follows:

	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Normal	121	91
Rule of 85	166	143
Early	121	116
Disability	<u>21</u>	<u>24</u>
Total	429	374

##### *Pensioners*

Since benefits became payable under the current retirement program, a total of 7,550 retirement pensions have been awarded, of which 5,571 remained on the June 2006 rolls (including 21 retired Judges and 10 retired members of the National Guard/Law Enforcement). In addition, 52 pensions were in suspended status as of June 30, 2006. Distributions of the pensioners are presented in Tables 12-A, 12-B, 12-C, 13-A, 13-B and 13-C in Appendix B by sex, type of pension, monthly benefit amount and current age.

For the pensions in force on July 1, 2006, the average monthly benefit was \$807, an increase from \$779 a year earlier. The average age of these pensioners on the valuation date was 72.0 years.

##### *Beneficiaries*

As of July 1, 2006, monthly benefit payments were being made to 616 beneficiaries, including six beneficiaries of Judges. The monthly payments to beneficiaries in payment status total \$326,325.

##### *Prior Service Pensioners*

As of July 1, 2006, there were 48 pensioners receiving monthly benefits of \$2,077 under the Special Prior Service Pension provisions of the System. The current average age of Prior Service pensioners was 94.5 years, and the average monthly benefit was \$43. Because of the relatively high average age and low benefits, the liability for the Special Prior Service Pensioners represented less than 0.01% of the total actuarial accrued liability for the System. Tables 14-A, 14-B, 14-C, 15-A, 15-B, and 15-C in Appendix B provide a breakdown of these pensioners by sex, type of pension, monthly benefit amount, and current age.

## V. ASSETS

### *Market Value of Assets*

As shown in the draft financial statements as of June 30, 2006, the combined market value of net assets of the North Dakota Public Employees Retirement System (PERS) and Highway Patrolmen's Retirement System (HPRS) was \$1,638,868,514 compared to \$1,480,185,590 a year earlier. This year's combined market value represents an increase of 10.72% over the market value one year earlier.

Based on schedules provided by the Retirement Office, the breakdown of the market value of net assets allocated to North Dakota PERS follows:

	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Main System	\$1,553,353,995	\$1,403,066,411
Judges	28,113,536	25,165,175
National Guard	1,912,469	1,693,912
Law Enforcement with prior Main service	3,771,742	3,032,184
Law Enforcement without prior Main service	<u>88,345</u>	<u>48,711</u>
Total	\$1,587,240,087	\$1,433,006,393

The rate of return on the market value basis for the PERS Fund was 12.04% for the year ended June 30, 2006.

### *Actuarial Value of Assets*

The actuarial value of assets is determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over five years.

The above procedure is applied to the combined assets of PERS and HPRS Retirement Income Funds to determine the combined actuarial value of the Systems. The combined actuarial value was \$1,357,301,265 as of June 30, 2006. The determination of the combined actuarial asset value is shown in Table 1. This table shows that there is approximately \$282 million of appreciation that will be recognized in future years.

Table 2 summarizes the combined investment results over the previous ten-year period. Over this period, the earnings of \$795,296,000 on an actuarial value basis represented an average annual return of 8.53%. For the 2005-2006 year, the actuarial rate of return on the combined assets was 7.79%.

The total actuarial value of assets is allocated to PERS (Main System, Judges, National Guard and Law Enforcement) and HPRS in proportion to the reported market value of assets. This allocation is illustrated in Table 3 and summarized below for the PERS Fund alone.

	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Main System	\$1,286,478,642	\$1,210,287,848
Judges	23,283,465	21,707,529
National Guard	1,583,896	1,461,172
Law Enforcement with prior Main service	3,123,735	2,615,568
Law Enforcement without prior Main service	<u>73,167</u>	<u>42,018</u>
Total	\$1,314,542,905	\$1,236,114,135

Chart 1 on page 13 is a graph showing the historical asset values for the PERS Fund on both an actuarial and market value basis. This graph illustrates that the market value of assets is now greater than the actuarial value.

Income and disbursements for 2006 and 2005 on an actuarial value basis are summarized in Table 4 for the PERS Fund. The progress of the PERS Fund for the last ten years is provided in Table 5. It shows that assets have increased consistently from year to year, although the amount of the increase has varied with fluctuations in investment income. Benefit payments have also increased consistently over the period, with the exception of one year.

A picture of the financial development of the PERS Fund over the last ten years is provided in Chart 2 on page 16. It shows that benefit payments and expenses continue to exceed contributions. However, over the long term, the excess of contributions over benefit payments and expenses, along with net investment income, served to increase the assets of the System.

Investment results on the actuarial basis are used to determine whether investment experience is meeting the System's actuarially assumed return. They do not, however, necessarily indicate the relative success of the System's investment program. Comparisons of performance with other funds, investment institutions, and market indices are generally based on rates of return that recognize market changes in full.

### ***Investment Return***

The investment returns for the last ten years for the combined fund are as follows:

<b><u>Year Ending June 30</u></b>	<b><u>Market Value</u></b>	<b><u>Actuarial Value</u></b>
1997	19.90%	13.14 %
1998	15.65	14.02
1999	10.88	14.73
2000	9.43	13.71
2001	(4.47)	9.36
2002	(6.94)	3.91
2003	5.19	2.18
2004	16.65	3.16
2005	14.17	4.36
2006	12.04	7.79

The above values demonstrate the fact that the volatility of market value returns is reduced by using an actuarial value of assets. Chart 3 on page 17 illustrates the smoothing effect that results from using an actuarial value of assets. By using an actuarial value that reduces the year-to-year fluctuations in investment return, year-to-year fluctuations in contribution requirements are reduced.

Investment return rates on the market value basis include all capital appreciation and depreciation. The returns on the actuarial value reflect only a portion of the capital appreciation and depreciation based on the adopted valuation method.

**TABLE 1**

***Determination of Actuarial Value of Assets  
(for PERS and HPRS) as of June 30, 2006 and 2005***

<u>Year Ending</u>	<u>Total Appreciation (Depreciation)</u>	<u>Of Total Appreciation</u>			
		<u>Percent Deferred</u>	<u>Amount Deferred</u>	<u>Percent Deferred</u>	<u>Amount Deferred</u>
June 30, 2002	\$(115,940,982)	0%	\$0	20%	\$(23,188,196)
June 30, 2003	22,232,141	20%	4,446,428	40%	8,892,856
June 30, 2004	156,289,529	40%	62,515,812	60%	93,773,717
June 30, 2005	154,870,262	60%	92,922,157	80%	123,896,210
June 30, 2006	152,103,565	80%	<u>121,682,852</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$281,567,249		\$203,374,587
(b) Total Appreciation (Depreciation) for last five Plan Years			369,554,515		121,384,031
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			73,910,903		24,276,806
			<u>July 1, 2006</u>		<u>July 1, 2005</u>
Market Value of Assets			\$1,638,868,514		\$1,480,185,590
Less: Deferred Appreciation (Depreciation)			<u>281,567,249</u>		<u>203,374,587</u>
Actuarial Value of Assets			\$1,357,301,265		\$1,276,811,003
Actuarial Value as a Percent of Market Value			82.82%		86.26%

**TABLE 2**

*Summary of Combined Investment Results for PERS and HPRS on Actuarial Value of Assets*

Year Ended June 30	Net Interest and Dividend Income*		Other Income**		Total Net Investment Income	
	Amount	Yield	Amount	Yield	Amount	Yield
1997	\$23,919,600	3.73%	\$60,428,700	9.41%	\$84,348,300	13.14%
1998	29,988,300	4.13	71,787,700	9.89	101,776,000	14.02
1999	31,722,100	3.84	89,864,100	10.89	121,586,200	14.73
2000	36,367,600	3.88	92,244,700	9.83	128,612,300	13.71
2001	41,086,800	3.89	57,734,900	5.47	98,821,700	9.36
2002	35,077,400	3.06	9,694,500	0.85	44,771,900	3.91
2003	33,595,900	2.84	(7,793,200)	(0.66)	25,802,700	2.18
2004	30,464,800	2.54	7,398,200	0.62	37,863,000	3.16
2005	29,115,600	2.38	24,276,800	1.98	53,392,400	4.36
2006	24,410,600	1.93	73,910,900	5.85	98,321,500	7.79
<b>Total for Last Ten Years</b>	<b>\$315,748,700</b>		<b>\$479,547,300</b>		<b>\$795,296,000</b>	
<b>Average Yield for last Ten Years***</b>				<b>8.53%</b>		

\* Net of investment expenses.

\*\* Includes write-up (down).

\*\*\* Each year's yield weighted by average fund value in that year.

**TABLE 3**

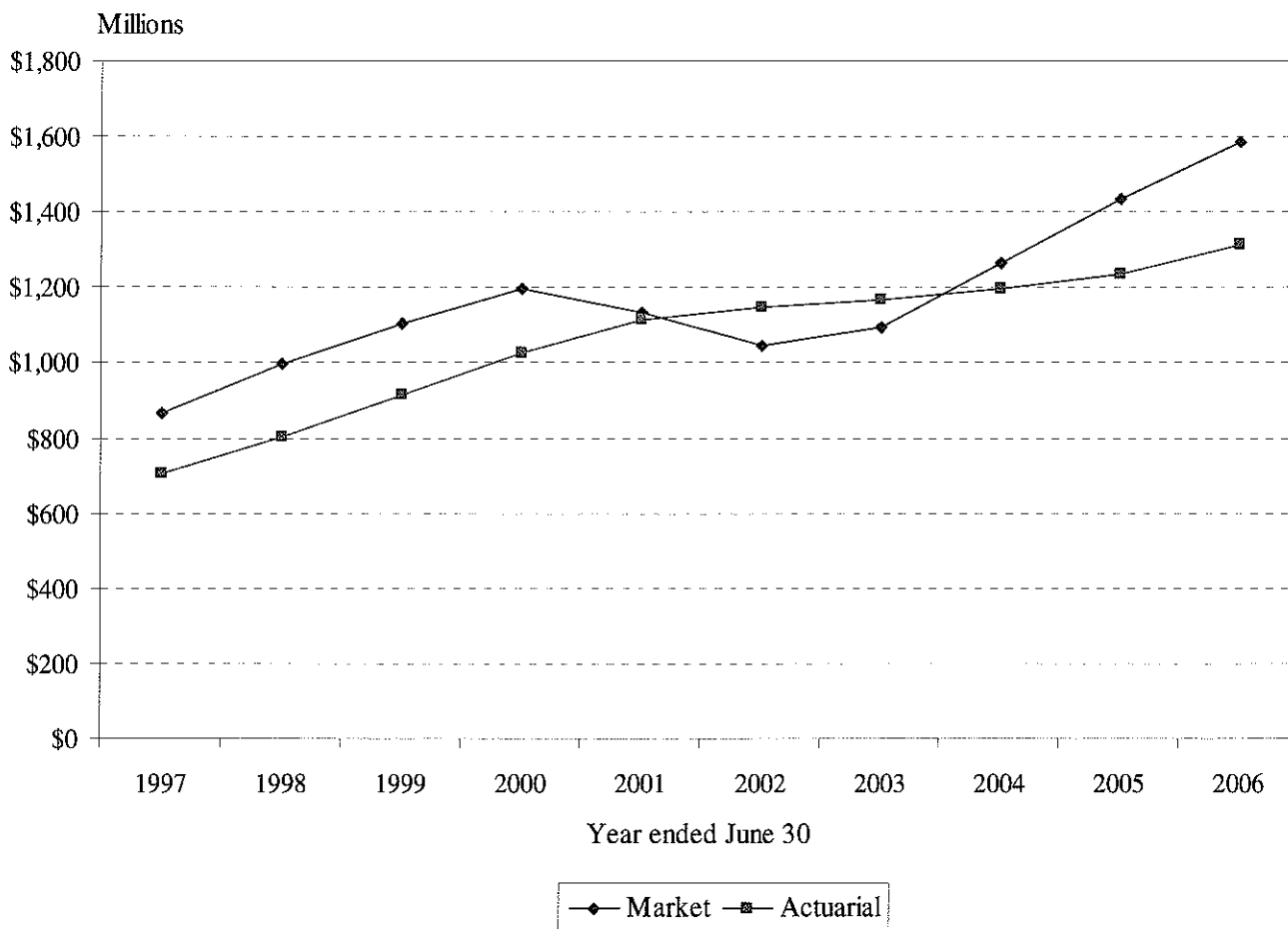
*Allocation of Combined (PERS and HPRS) Actuarial Value of Assets*

	July 1, 2006		July 1, 2005	
	<u>Market Value</u>	<u>Actuarial Value</u>	<u>Market Value</u>	<u>Actuarial Value</u>
PERS Main System	\$1,553,353,995	\$1,286,478,642	\$1,403,066,411	\$1,210,287,848
PERS Judges	28,113,536	23,283,465	25,165,175	21,707,529
PERS National Guard	1,912,469	1,583,896	1,693,912	1,461,172
PERS Law Enforcement with prior Main service	3,771,742	3,123,735	3,032,184	2,615,568
PERS Law Enforcement without prior Main service	<u>88,345</u>	<u>73,167</u>	<u>48,711</u>	<u>42,018</u>
PERS Combined	\$1,587,240,087	\$1,314,542,905	\$1,433,006,393	\$1,236,114,135
Highway Patrol	<u>51,628,427</u>	<u>42,758,360</u>	<u>47,179,197</u>	<u>40,696,868</u>
Total	\$1,638,868,514	\$1,357,301,265	\$1,480,185,590	\$1,276,811,003

*Note:* Allocation of the actuarial value of assets is in proportion to the market value of assets.



Chart 1  
Value of Assets for PERS



**TABLE 4**

*Summary Statement of Income and Disbursements for PERS  
for the Years Ended June 30, 2006 and 2005  
(Actuarial Value Basis)*

	<u>June 30, 2006</u>	<u>June 30, 2005</u>
Contribution Income:		
Employer Contributions	\$21,969,517	\$20,704,241
Member Contributions	20,805,715	19,671,214
Service Credit Repurchases	<u>3,702,908</u>	<u>4,426,282</u>
Total Contribution Income	\$46,478,140	\$44,801,737
Less: Administrative Expenses	<u>(1,037,535)</u>	<u>(1,072,277)</u>
Net Contribution Income	<u>\$45,440,605</u>	<u>\$43,729,460</u>
Teacher's Retirement Plan Transfer	\$0	\$0
Investment Income:		
Interest and Dividends	\$40,972,928	\$35,260,205
Miscellaneous Income	11,217	13,399
Less: Investment Expenses	<u>(17,349,505)</u>	<u>(7,095,993)</u>
Net Interest and Dividends	\$23,634,640	\$28,177,611
Write-up of Assets	<u>71,451,351</u>	<u>23,415,095</u>
Net Investment Income	<u>\$95,085,991</u>	<u>\$51,592,706</u>
Total Income Available for Benefit Payments and Reserves	<u>\$140,526,596</u>	<u>\$95,322,166</u>
Benefit Payments:		
Pension Benefits	\$(57,820,126)	\$(51,286,688)
Transfers to Other Plans	(41,271)	(21,131)
Refunds	<u>(4,236,429)</u>	<u>(4,433,294)</u>
Total Benefit Payments	<u>\$(62,097,826)</u>	<u>\$(55,741,113)</u>
Addition to Reserve for Future Benefit Payments	\$78,428,770	\$39,581,053
Actuarial Value of Assets, Start of Year	<u>1,236,114,135</u>	<u>1,196,533,082</u>
Actuarial Value of Assets, End of Year	<u>\$1,314,542,905</u>	<u>\$1,236,114,135</u>

**TABLE 5**

***Progress of the PERS Fund through June 30, 2006***  
*(Actuarial Value Basis)*

Year Ended June 30	Employer Contributions	Member Contributions*	Administrative Expenses	Net Investment Income	Benefit Payments	Fund at End Of Year
1996	-	-	-	-	-	\$621,662,772
1997	\$14,435,989	\$14,320,237	\$565,778	\$81,409,263	\$26,791,639	704,470,844
1998	15,078,427	15,061,818	605,241	98,273,502	30,988,902	801,290,448
1999	15,873,917	16,152,785	718,396	117,425,238	33,070,715	916,953,277
2000	16,521,248	16,618,771	800,529	124,281,079	46,572,021	1,027,001,825
2001	17,101,628	17,353,268	894,868	95,499,825	40,727,282	1,115,334,396
2002	18,244,655	18,439,125	983,258	43,304,595	44,338,684	1,150,000,829
2003	19,212,733	19,758,764	1,068,803	25,009,784	46,461,189	1,166,452,118
2004	23,522,192	22,152,045	995,879	36,594,962	51,192,356	1,196,533,082
2005	20,704,241	24,097,496	1,072,277	51,592,706	55,741,113	1,236,114,135
2006	21,969,517	24,508,623	1,037,535	95,085,991	62,097,826	1,314,542,905
<b>Total for Last Ten Years</b>	<b>\$182,664,547</b>	<b>\$188,462,932</b>	<b>\$8,742,564</b>	<b>\$768,476,945</b>	<b>\$437,981,727</b>	

\* Includes repurchases of service credit.

Chart 2  
Income and Disbursements for PERS

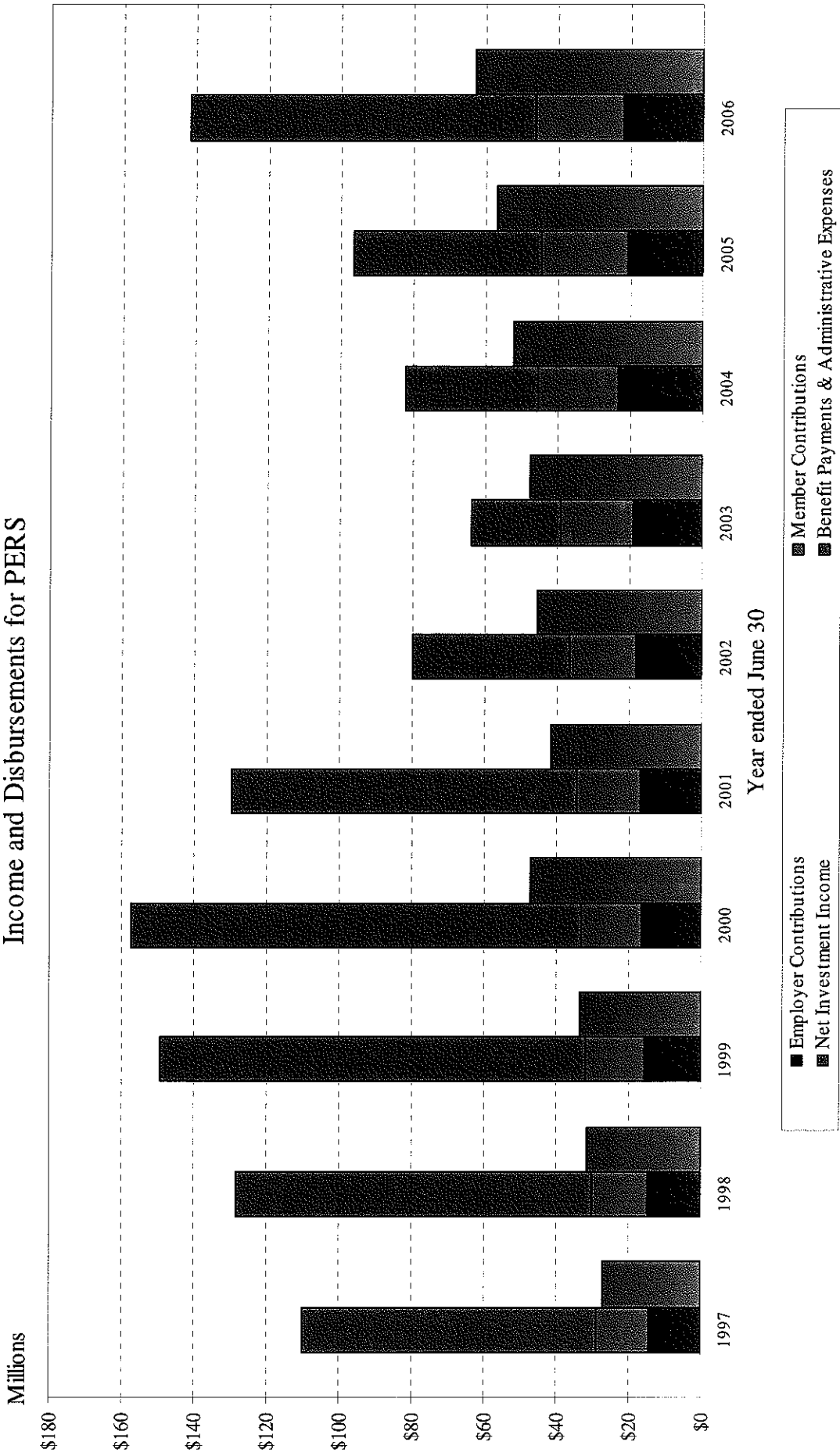
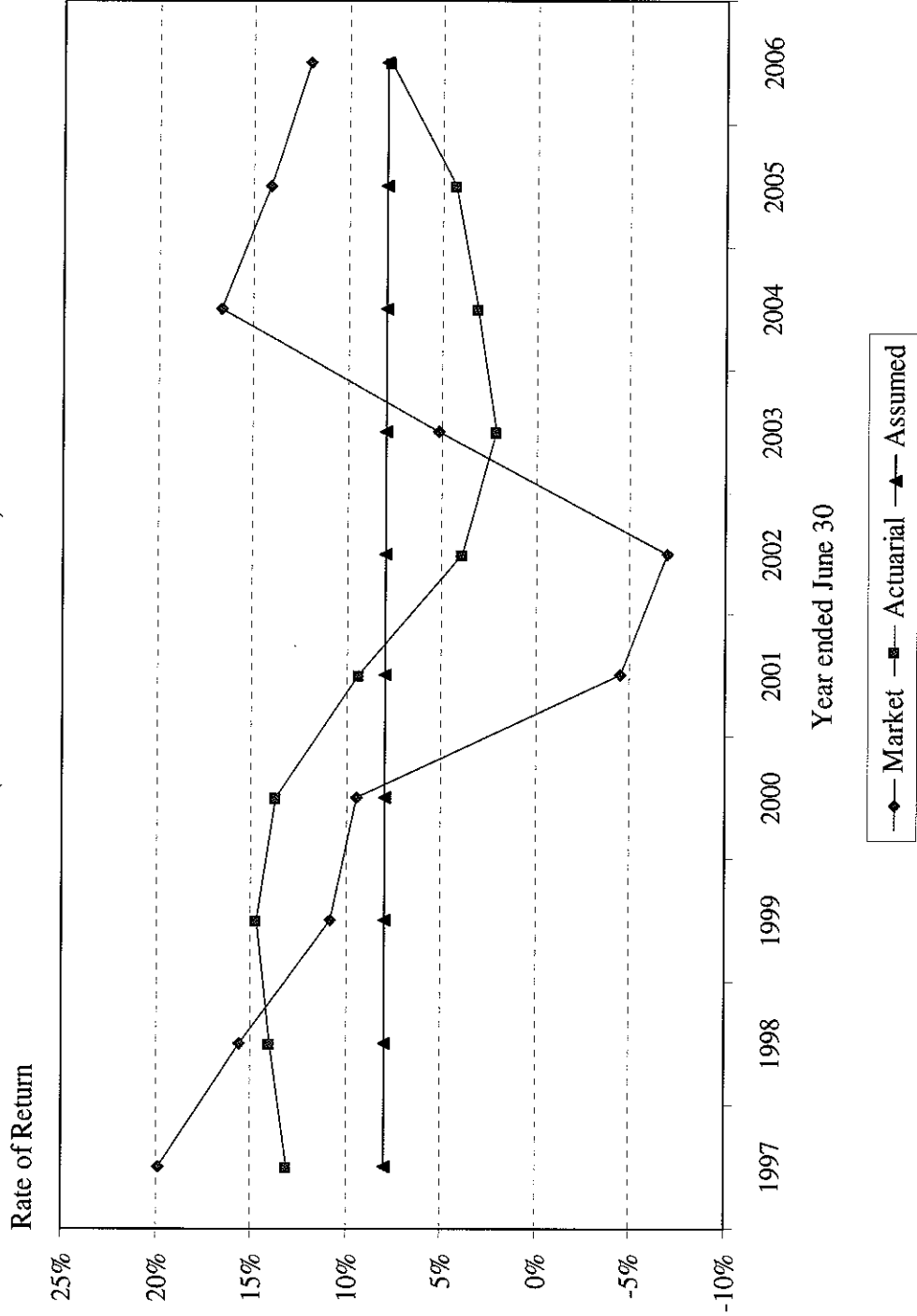


Chart 3  
Investment Returns  
(PERS and HPRS Combined)



## VI. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an open amortization schedule of 20 years with increasing payments. The calculated employer contribution requirements on this basis for fiscal year 2006-2007 are shown below as a dollar amount and as a percentage of the covered payroll of contributing employees.

### *Main System*

The components of the actuarial contribution requirements are shown below:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$46,374,326	8.64%
Less: Member contributions	<u>(21,462,980)</u>	<u>(4.00)</u>
Net employer normal cost	\$24,911,346	4.64%
Administrative expense allowance	710,000	0.13
Amortization payment (credit)	<u>11,420,115</u>	<u>2.13</u>
Total employer contribution requirement	\$37,041,461	6.90%

Covered payroll is \$536,574,504.

The statutory contribution rate is 4.12% of payroll. Hence, statutory contributions are less than the actuarial contribution requirement shown above by 2.78% of payroll. If unchanged, this difference will further increase the actuarial contribution requirement in future valuations.

The total employer actuarial contribution requirement was 6.03% of payroll last year. Since then, actual experience of the System during 2005-2006 has changed the actuarial contribution requirement. Table 6 presents a detailed explanation of the factors that changed the contribution requirement from July 1, 2005 to July 1, 2006.

## *Judges*

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$924,800	19.78%
Less: Member contributions	<u>(233,825)</u>	<u>(5.00)</u>
Net employer normal cost	\$690,975	14.78%
Administrative expense allowance	5,000	0.11
Amortization payment (credit)	<u>(118,086)</u>	<u>(2.53)</u>
Total employer contribution requirement	\$577,889	12.36%

Covered payroll is \$4,676,506.

The statutory contribution rate is 14.52% of payroll. Hence, statutory contributions exceed the actuarial contribution requirement shown above by 2.16% of payroll.

The net employer normal cost plus the administrative expense allowance is 14.89% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 12.36% of payroll reflects an amortization credit. By this measure, statutory contributions are less than the ultimate plan cost rate of 14.89% of payroll by 0.37% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	11.62%
Change in actuarial assumptions	0.48
Plan experience during the year	0.16
Effect of maintaining 20-year amortization schedule	<u>0.10</u>
Employer cost rate as of July 1, 2006	12.36%

*National Guard*

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$110,088	8.03%
Less: Member contributions	<u>(54,859)</u>	<u>(4.00)</u>
Net employer normal cost	\$55,229	4.03%
Administrative expense allowance	1,417	0.10
Amortization payment (credit)	<u>(1,575)</u>	<u>(0.11)</u>
Total employer contribution requirement	\$55,071	4.02%

Covered payroll is \$1,371,485.

The statutory contribution rate is 6.50% of payroll. Hence, statutory contributions exceed the actuarial contribution requirement shown above by 2.48% of payroll.

The net employer normal cost plus the administrative expense allowance is 4.13% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 4.02% of payroll reflects an amortization credit. By this measure, statutory contributions are greater than the ultimate plan cost rate of 4.13% of payroll by 2.37% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	1.58%
Change in actuarial assumptions	0.26
Plan experience during the year	2.17
Effect of maintaining 20-year amortization schedule	<u>0.01</u>
Employer cost rate as of July 1, 2006	4.02%



***Law Enforcement with prior Main service***

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$364,788	9.18%
Less: Member contributions	<u>(158,958)</u>	<u>(4.00)</u>
Net employer normal cost	\$205,830	5.18%
Administrative expense allowance	3,209	0.08
Amortization payment (credit)	<u>270,607</u>	<u>6.81</u>
Total employer contribution requirement	\$479,646	12.07%

Covered payroll is \$3,973,958.

The statutory contribution rate is 8.31% of payroll. Hence, statutory contributions are less than the actuarial contribution requirement shown above by 3.76% of payroll. If unchanged, this difference will further increase the actuarial contribution requirement in future valuations.

The net employer normal cost plus the administrative expense allowance is 5.26% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 12.07% of payroll reflects an amortization charge. By this measure, statutory contributions are greater than the ultimate plan cost rate of 5.26% of payroll by 3.05% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	12.03%
Change in actuarial assumptions	0.30
Plan experience during the year	(0.01)
Effect of maintaining 20-year amortization schedule	<u>(0.25)</u>
Employer cost rate as of July 1, 2006	12.07%

***Law Enforcement without prior Main service***

The components of the actuarial contribution requirement are shown below:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$42,977	10.49%
Less: Member contributions	<u>(16,388)</u>	<u>(4.00)</u>
Net employer normal cost	\$26,589	6.49%
Administrative expense allowance	374	0.09
Amortization payment (credit)	<u>3,480</u>	<u>0.85</u>
Total employer contribution requirement	\$30,443	7.43%

Covered payroll is \$409,698.

The statutory contribution rate is 6.43% of payroll. Hence, statutory contributions are less than the actuarial contribution requirement shown above by 1.00% of payroll. If unchanged, this difference will further increase the actuarial contribution requirement in future valuations.

The net employer normal cost plus the administrative expense allowance is 6.58% of payroll. This should be viewed as the ultimate plan cost rate, since the total employer contribution requirement of 7.43% of payroll reflects an amortization charge. By this measure, statutory contributions are less than the ultimate plan cost rate of 6.58% of payroll by 0.15% of payroll.

A reconciliation of the change in the cost rate since the previous valuation follows:

	<u>Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	7.61%
Change in actuarial assumptions	0.13
Plan experience during the year	(0.27)
Effect of maintaining 20-year amortization schedule	<u>(0.04)</u>
Employer cost rate as of July 1, 2006	7.43%

*Main System, Judges, National Guard and Law Enforcement Combined*

The components of the actuarial contribution requirement are shown below.

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>
Total normal cost	\$47,816,979	8.74%
Less: Member contributions	<u>(21,927,010)</u>	<u>(4.01)</u>
Net employer normal cost	\$25,889,969	4.73%
Administrative expense allowance	720,000	0.13
Amortization payment (credit)	<u>11,574,541</u>	<u>2.12</u>
Total employer contribution requirement	\$38,184,510	6.98%

Covered payroll is \$547,006,151.

**TABLE 6**

***Main System  
Explanation of Change in Employer Cost Rate***

	Percent of Payroll
<b>Employer Cost Rate as of July 1, 2005</b>	<b>6.03%</b>
<b><i>Retired Life Mortality</i></b>	0.11%
The release of liability due to deaths among retirees and beneficiaries was less than expected, increasing the employer cost rate.	
<b><i>Active Life Mortality</i></b>	0.02%
The release of liability due to deaths among active members was less than expected, increasing the employer cost rate.	
<b><i>Disability Incidence</i></b>	0.01%
The net change in liability due to disability retirements was less than expected, increasing the employer cost rate.	
<b><i>Withdrawal</i></b>	0.06%
The release of liability due to withdrawals prior to retirement was less than expected, increasing the employer cost rate.	
<b><i>Retirement</i></b>	(0.29)%
The actual liability due to non-disabled retirements was less than expected, decreasing the employer cost rate.	
<b><i>Investments</i></b>	0.04%
On an actuarial value basis, the rate of return on assets was more than the assumed rate of return, decreasing the employer cost rate.	
<b><i>Salary Scale</i></b>	0.04%
Salaries increased more than expected, increasing the employer cost rate.	
<b><i>Contributions</i></b>	0.09%
Actual contributions received by the System were less than the actuarially determined amount, increasing the required contributions in future years.	

**TABLE 6**

*Main System  
Explanation of Change in Employer Cost Rate (continued)*

	Percent of Payroll
<i>Administrative Expenses</i>	0.00%
Actual expenses were nearly equal to that expected.	
<i>New and Reinstated Members</i>	0.06%
The addition of new and reinstated members increases the employer cost rate.	
<i>Part-Time Experience</i>	(0.10)%
Some continuing active members earned less than one year of service during the current year, decreasing the employer cost rate.	
<i>Change in Size and Composition of Active Membership and Miscellaneous Experience</i>	0.31%
The demographic characteristics of the active membership changed during the year, increasing the employer cost rate.	
<i>Plan Provision Changes</i>	0.00%
There were no plan provisions changes.	
<i>Assumption Changes</i>	0.59%
Assumptions were changed as a result of the experience study conducted in 2005.	
<i>Funding Schedule</i>	(0.07)%
The effect of maintaining a 20-year funding schedule results in a small decrease in cost.	
<b>Employer Cost Rate as of July 1, 2006</b>	<b>6.90%</b>

## VII. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a retirement plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded the retirement plan is. This ratio can be calculated using different measures of the retirement plan's liabilities.

### *Funding Basis - Actuarial Accrued Liability*

This measure of liabilities is used in calculating pension costs. It uses the Entry Age Normal Actuarial Cost Method that spreads costs as a level percentage of payroll over a member's working career.

For determining plan costs, a smoothed value of assets (called the actuarial value) is used. Hence, the actuarial value of assets was used to calculate the funded ratios.

### *Disclosure Basis*

The accounting standard for disclosure of liabilities and funding status of the System is based on GASB Statement No. 25 (Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans). GASB Statement No. 25 allows the System to disclose its liabilities and funding status on the same bases used for funding the System. The actuarial value of assets is used for comparing assets and liabilities.

### *Historical Results*

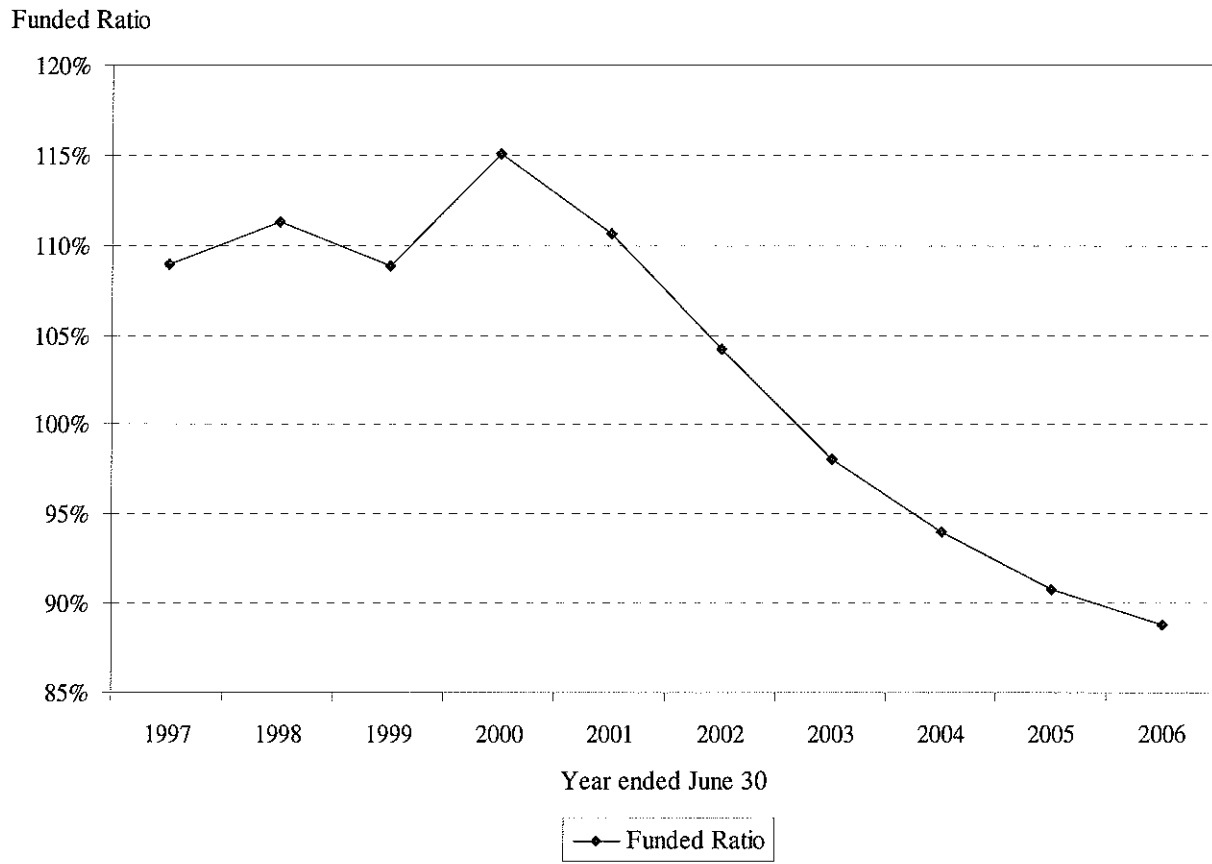
The funded ratios (under the GASB Statement No. 25 standard) for the last ten years are developed in Table 7. These ratios are graphed in Chart 4 on page 28. They show that the funded ratio has generally improved during the beginning of this period, but has deteriorated since July 1, 2000.

Funded ratios change over time due to several factors. These factors include the level of contributions, actual experience (including investment returns), plan amendments and changes in assumptions. In particular, we observe that in 1995, 1999 and 2001 benefit improvements were effective, decreasing the funded ratio from what it would have been otherwise. Also, the actuarial assumptions were changed in 1995, 2000 and 2006, changing the funded ratio from what it would have been otherwise.

**TABLE 7*****Funded Ratio for PERS***

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
1997	\$646,902,000	\$704,470,800	108.9%
1998	720,093,400	801,290,400	111.3
1999	842,717,700	916,953,300	108.8
2000	891,889,000	1,027,001,800	115.1
2001	1,008,722,500	1,115,334,400	110.6
2002	1,103,460,900	1,150,000,800	104.2
2003	1,188,830,500	1,166,452,100	98.1
2004	1,272,857,600	1,196,533,100	94.0
2005	1,361,182,100	1,236,114,100	90.8
2006	1,480,456,700	1,314,542,900	88.8

Chart 4  
Funded Ratio (PERS)





## VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS

The actuarial assumptions and cost methods used in the actuarial valuation as of July 1, 2006 are the same as those used in the previous valuation. A summary of the actuarial assumptions and cost methods follows. Details can be found in Exhibit II of Appendix A.

### *Investment Return*

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets of the System will be 8.00% per year, net of investment expenses.

### *Salary Increases*

Because the retirement benefits provided by the plan are based on a member's final average salary, increases in salaries affect the employer's contribution requirements. A salary scale is used in an actuarial valuation to project each member's future salary increases.

For the Main System, National Guard and Law Enforcement, the assumed salary increase is 7.00% during each of the first five years of service. After five years of service, salary increases are age-related. Sample age-related annual salary rate increases are as follows:

<u>Age</u>	<u>Increase</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70
60	4.70

For Judges, the assumed salary increase is 5.50% per year for all years of service.

Actuarial assumptions should be reasonable over the long term and should not be unduly influenced by transitory deviations. Actual salary increases that are greater than assumed produce actuarial losses that, if not offset by actuarial gains from other sources (such as investment gains), result in increasing future employer costs. On the other hand, salary increases that are less than projected produce actuarial gains, which can result in lowering future employer costs.

### ***Payroll Growth***

For the Main System, National Guard and Law Enforcement, the assumed payroll growth rate is 4.50% per annum. For Judges, the assumed payroll growth rate is 4.00% per annum.

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation uses the 1983 Group Annuity Mortality Table with males set back one year for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The table below shows sample mortality rates and life expectancies underlying the healthy mortality tables.

<u>Age</u>	<u>Retired Members</u>			
	<u>Males</u>		<u>Females</u>	
	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	5.7	25.2	2.5	30.3
60	8.4	21.0	4.2	25.7
65	13.9	17.0	7.1	21.3
70	24.8	13.3	12.4	17.2
75	40.4	10.2	24.0	13.4
80	67.1	7.6	42.9	10.2
85	106.0	5.6	69.9	7.6

### ***Disability Incidence Rates Before Retirement***

A percentage of members are assumed to become disabled while in active service. The incidence rates used are based on a study of disability incidence under the Social Security program. To reflect actual experience under the retirement system, 42% of the Social Security disability incidence rates are used for males and 30% are used for females.

### ***Withdrawal Rates Before Retirement***

The withdrawal rates used in this actuarial valuation reflect the expected percentage of members who will leave service at each age before retirement for reasons other than death or disability.

For the Main System, National Guard and Law Enforcement, special withdrawal rates are applied during the first five years of service to recognize higher turnover for short service members.

During the first five years of service, Main withdrawal rates vary with age and service as follows:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	18%	15%	12%	10%	15%
30 - 39	12	12	11	10	11
40 & Over	10	10	8	7	6

After five years of service, Main withdrawal rates vary with age and gender as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12.0%	12.0%
25 - 29	8.0	10.0
30 - 34	5.0	8.0
35 - 39	3.5	5.0
40 - 44	3.0	4.0
45 - 49	2.5	3.5
50 & Over	2.0	3.0

During the first five years of service, National Guard and Law Enforcement withdrawal rates vary with age and service as follows:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	23%	20%	17%	16%	15%
30 - 39	17	15	13	12	11
40 & Over	15	12	10	8	6

After five years of service, National Guard and Law Enforcement withdrawal rates vary with age and gender as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12%	12%
25 - 29	8	10
30 - 34	5	8
35 - 39	4	6
40 - 44	3	5
45 - 49	3	4
50 & Over	2	3

For Judges, withdrawal rates at each age are:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	6.0%	6.0%
25 - 29	4.0	5.0
30 - 34	2.5	4.0
35 - 39	2.0	3.0
40 - 44	1.5	2.5
45 - 49	1.5	2.0
50 & Over	1.0	1.5

Withdrawal rates end upon the earlier of early retirement and Rule of 85 (Main System and Judges) eligibility.

## ***Retirement***

The retirement rates reflect the expected percentage of members who will retire at each age. For Main System members, the rates vary with age, as follows:

<u>Age</u>	<u>Rule of 85 Eligible Rate</u>	<u>All Other Retirements</u>
55	4%	4%
56	6	4
57	6	4
58	6	4
59	6	4
60	8	6
61	15	12
62	35	25
63	25	20
64	25	20
65	40	30
66	20	20
67	20	20
68	20	20
69	20	20
70	100	100

The retirement rates for Judges begin at age 62. Thirty-five percent of Judges are assumed to retire at each age from 62 to 64, 50% are assumed to retire at each age from 65 to 69, and 100% of the remaining Judges are assumed to retire at age 70.

Retirement for members of the National Guard and Law Enforcement is assumed to occur at age 60.

Retirement for inactive vested members of the Main System and Judges is assumed to occur at the earlier of age 65 and Rule of 85. Retirement for inactive vested members of the National Guard is assumed to occur at age 55. Retirement for inactive vested members of the Law Enforcement is assumed to occur at the earlier of age 55 and Rule of 85.

Fifty percent of inactive vested Main System and Judges and 100% of inactive vested National Guard and Law Enforcement are assumed to elect a refund of employee contributions in lieu of a pension benefit.

## ***Annual Administrative Expenses***

Annual administrative expenses for all Systems combined are assumed to be \$720,000.

### ***Marital Status for Non-Retired Members***

At death, 75% of male members and 60% of female members are assumed to have spouses. Males are assumed to be five years older than their female spouses.

### ***Valuation of Assets***

Investments are valued at an adjusted market value. Interest and dividends are recognized immediately. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, beginning with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Actuarial Cost Method***

The System is funded using the Entry Age Normal Actuarial Cost Method. This method produces costs that remain relatively level as a percentage of covered payroll.

Under the Entry Age Normal Method, the total contribution requirement has three components - an annual normal cost, an allowance for administrative expenses and a payment with respect to the unfunded/(surplus) actuarial accrued liability. The annual normal cost is calculated for each member as the level percentage of pay required over the member's period of covered employment to pay the total expected benefits. The normal cost is determined as if the current benefit accrual rate had always been in effect. If the actuarial assumptions are met, the total normal cost rate will remain level as a percentage of payroll.

The normal cost payments are sufficient to finance the benefit program only if there are no changes in plan design and all actuarial assumptions are realized. To the extent that actual experience is less favorable than assumed, additional liabilities not funded through normal cost payments arise. Also, benefit liberalizations that improve earned benefits or benefit eligibility produce additional liabilities. The Board has adopted a schedule of amortizing this unfunded/(surplus) actuarial accrued liability over an open period of 20 years. The annual payments are determined as a level percent of payroll, with payroll expected to increase 4.5% per year for the Main System, National Guard and Law Enforcement, and for Judges payroll is expected to increase 4.0% per year. This method provides payment in constant, or real, dollars.

**APPENDIX A**

October 11, 2006

**NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM**

**ACTUARIAL VALUATION CERTIFICATE**

This is to certify that we have prepared an Actuarial Valuation of the System as of July 1, 2006 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Actuarial Assumptions and Cost Methods
- III. Changes in Actuarial Assumptions and Cost Methods
- IV. Changes in Plan Provisions
- V. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the System and to reasonable expectations and (b) represents our best estimate of anticipated experience under the System.

The undersigned are available to provide further information or to answer any questions regarding the report.



Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary



Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary



Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

**EXHIBIT I-A**

**ACTUARIAL VALUATION RESULTS**

**MAIN SYSTEM**

1.	Actuarial accrued liability on July 1, 2006:	
	a. Active members .....	\$914,673,198
	b. Special prior service pensions .....	72,138
	c. Retired members and beneficiaries .....	487,798,686
	d. Inactive non-retired members .....	<u>47,569,390</u>
	e. Total .....	\$1,450,113,412
2.	Assets at actuarial value (\$1,553,353,995 at market value) .....	1,286,478,642
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....	163,634,770
4.	Member and employer normal cost for ensuing year* .....	46,374,326
5.	Estimated annual salaries of covered members .....	536,574,504
6.	Member normal cost - equals 4% of (5) .....	21,462,980
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....	24,911,346
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....	11,420,115
9.	Administrative expenses .....	710,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....	37,041,461
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....	6.90%

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\* Adjusted for interest to recognize payments through the year.



**EXHIBIT I-B**

**ACTUARIAL VALUATION RESULTS**

**JUDGES**

1.	Actuarial accrued liability on July 1, 2006:		
	a. Active members .....	\$12,284,894	
	b. Retired members and beneficiaries .....	9,154,217	
	c. Inactive non-retired members .....	<u>218,650</u>	
	d. Total .....		\$21,657,761
2.	Assets at actuarial value (\$28,113,536 at market value) .....		23,283,465
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		(1,625,704)
4.	Member and employer normal cost for ensuing year* .....		924,800
5.	Estimated annual salaries of covered members .....		4,676,506
6.	Member normal cost - equals 5% of (5) .....		233,825
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		690,975
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		(118,086)
9.	Administrative expenses .....		5,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		577,889
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		12.36%

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\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-C**

**ACTUARIAL VALUATION RESULTS**

**NATIONAL GUARD**

1.	Actuarial accrued liability on July 1, 2006:		
	a. Active members .....	\$796,701	
	b. Retired members and beneficiaries .....	673,487	
	c. Inactive non-retired members .....	<u>91,141</u>	
	d. Total .....		\$1,561,329
2.	Assets at actuarial value (\$1,912,469 at market value) .....		1,583,896
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		(22,567)
4.	Member and employer normal cost for ensuing year* .....		110,088
5.	Estimated annual salaries of covered members .....		1,371,485
6.	Member normal cost - equals 4% of (5) .....		54,859
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		55,229
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		(1,575)
9.	Administrative expenses .....		1,417
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		55,071
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		4.02%

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\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-D**

**ACTUARIAL VALUATION RESULTS**

**LAW ENFORCEMENT WITH PRIOR MAIN SERVICE**

1.	Actuarial accrued liability on July 1, 2006:		
	a. Active members .....	\$6,918,760	
	b. Retired members and beneficiaries .....	0	
	c. Inactive non-retired members .....	<u>82,405</u>	
	d. Total .....		\$7,001,165
2.	Assets at actuarial value (\$3,771,742 at market value) .....		3,123,735
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		3,877,430
4.	Member and employer normal cost for ensuing year* .....		364,788
5.	Estimated annual salaries of covered members .....		3,973,958
6.	Member normal cost - equals 4% of (5) .....		158,958
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		205,830
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		270,607
9.	Administrative expenses .....		3,209
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		479,646
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		12.07%

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\* Adjusted for interest to recognize payments through the year.

## EXHIBIT I-E

### ACTUARIAL VALUATION RESULTS

#### LAW ENFORCEMENT WITHOUT PRIOR MAIN SERVICE

1.	Actuarial accrued liability on July 1, 2006:		
	a. Active members .....	\$123,034	
	b. Retired members and beneficiaries.....	0	
	c. Inactive non-retired members .....	<u>0</u>	
	d. Total .....		\$123,034
2.	Assets at actuarial value (\$88,345 at market value) .....		73,167
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....		49,867
4.	Member and employer normal cost for ensuing year* .....		42,977
5.	Estimated annual salaries of covered members .....		409,698
6.	Member normal cost - equals 4% of (5) .....		16,388
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		26,589
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		3,480
9.	Administrative expenses .....		374
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		30,443
11.	Total employer cost as percentage of payroll - equals (10) divided by (5).....		7.43%

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\* Adjusted for interest to recognize payments through the year.

**EXHIBIT I-F**

**ACTUARIAL VALUATION RESULTS**

**MAIN SYSTEM, JUDGES, NATIONAL GUARD AND  
LAW ENFORCEMENT PLAN COMBINED**

1.	Actuarial accrued liability on July 1, 2006:	
	a. Active members .....	\$934,796,587
	b. Special prior service pensions .....	72,138
	c. Retired members and beneficiaries .....	497,626,390
	d. Inactive non-retired members .....	<u>47,961,586</u>
	e. Total .....	\$1,480,456,701
2.	Assets at actuarial value (\$1,587,240,087 at market value) .....	1,314,542,905
3.	Unfunded/(Surplus) actuarial accrued liability - equals (1) minus (2) .....	165,913,796
4.	Member and employer normal cost for ensuing year* .....	47,816,979
5.	Estimated annual salaries of covered members .....	547,006,151
6.	Member normal cost .....	21,927,010
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....	25,889,969
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....	11,574,541
9.	Administrative expenses .....	720,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....	38,184,510
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....	6.98%

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\* Adjusted for interest to recognize payments through the year.

## EXHIBIT II

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table, set back one year for males (not set back for females).

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Disability Incidence Rates:

Before age 65:      Males      42% of OASDI disability incidence rates.  
                                  Females      30% of OASDI disability incidence rates.

Age 65 and later:      Males      0.25% per year.  
                                  Females      0.35% per year.

Sample rates are as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

#### 3. Annual Withdrawal Rates:

*Main System:*

First five years of service:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	18%	15%	12%	10%	15%
30 - 39	12	12	11	10	11
40 & Over	10	10	8	7	6

**EXHIBIT II (continued)**

Ultimate withdrawal rates after five years service:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12.0%	12.0%
25 - 29	8.0	10.0
30 - 34	5.0	8.0
35 - 39	3.5	5.0
40 - 44	3.0	4.0
45 - 49	2.5	3.5
50 & Over	2.0	3.0

*National Guard and Law Enforcement:*

First five years of service:

<u>Age</u>	<u>Years of Service</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
29 & Under	23%	20%	17%	16%	15%
30 - 39	17	15	13	12	11
40 & Over	15	12	10	8	6

Ultimate withdrawal rates after five years service:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	12%	12%
25 - 29	8	10
30 - 34	5	8
35 - 39	4	6
40 - 44	3	5
45 - 49	3	4
50 & Over	2	3

*Judges:*

<u>Age</u>	<u>Male</u>	<u>Female</u>
20 - 24	6.0%	6.0%
25 - 29	4.0	5.0
30 - 34	2.5	4.0
35 - 39	2.0	3.0
40 - 44	1.5	2.5
45 - 49	1.5	2.0
50 & Over	1.0	1.5

Withdrawal rates end upon eligibility for early retirement. Early retirement eligibility is as follows:

*Main System:*

Earlier of (i) age 55 and 3 years of service, and (ii) eligibility for Rule of 85.

*Judges:*

Earlier of (i) age 55 and 5 years of service, and (ii) eligibility for Rule of 85.

*National Guard and Law Enforcement:*

Age 50 and 3 years of service.



**EXHIBIT II (continued)**

**4. Retirement Rates for Active Members:**

*Main System:*

<u>Age</u>	<u>Rule of 85 Eligible Rate</u>	<u>All Other Retirements</u>
55	4%	4%
56	6	4
57	6	4
58	6	4
59	6	4
60	8	6
61	15	12
62	35	25
63	25	20
64	25	20
65	40	30
66	20	20
67	20	20
68	20	20
69	20	20
70	100	100

*Judges:*

<u>Age</u>	<u>Rate</u>
62	35%
63	35
64	35
65	50
66	50
67	50
68	50
69	50
70	100

*National Guard and Law Enforcement:*

<u>Age</u>	<u>Rate</u>
60	100%

**EXHIBIT II (continued)**

**5. Retirement Age for Inactive Vested Members:**

*Main System and Judges:*

The earlier of:

- Age 65.
- Unreduced retirement date for each individual.

*National Guard:*

Age 55.

*Law Enforcement:*

The earlier of:

- Age 55.
- Unreduced retirement date for each individual.

**6. Interest Rate:**

8.00% per annum, net of investment expenses.

**7. Annual Administrative Expenses:**

*Main System:* \$ 710,000.

*Judges:* \$ 5,000.

*National Guard and Law Enforcement combined:* \$ 5,000.

**8. Salary Scale:**

*Main System, National Guard and Law Enforcement:*

Less than five years of service: 7.00% per annum.

Five or more years of service (sample rates are as follows):

<u>Age</u>	<u>Percentage Increase</u>	<u>Age</u>	<u>Percentage Increase</u>
25	5.90%	45	4.90%
30	5.60	50	4.80
35	5.30	55	4.70
40	5.10	60	4.70

*Judges:*

5.50% per annum for all years of service.

**EXHIBIT II (continued)**

**9. Payroll Growth:**

*Main System, National Guard and Law Enforcement:* 4.50% per annum.  
*Judges:* 4.00% per annum.

**10. Marital Status:**

At death, 75% of active male members and 60% of active female members are assumed to have spouses. For the Main system, males are assumed to be four years older than their female spouses. For all other systems, males are assumed to be five years older than their female spouses.

**11. Part-Time Employees:**

One full year of service is credited for each future year of service.

**12. Split Service:**

Liabilities are held in both plans based on service in each plan and are based on the actuarial assumptions of the plan in which they are currently active.

**13. Actuarial Cost Method:**

Entry Age Normal Actuarial Cost Method. The unfunded actuarial accrued liability is amortized in installments increasing by the payroll growth assumption each year over an open 20-year period.

**14. Actuarial Value of Assets:**

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.

**15. Social Security Disability (for Judges' disability benefit offset):**

Eligibility: 50%

Consumer Price Index Increases: 3.5% per annum

Wage Base Increases: 5.0% per annum

**16. Workers' Compensation (for Judges' disability benefit offset):**

None assumed.

**EXHIBIT II (continued)**

**17. Account Balance Due to Vested Employer Contribution (PEP):**

Participation

Under Chapter 54-52.2:    *If not elected:* 50% of active members of the Main System,  
National Guard and Law Enforcement.  
*If elected:*            100% of active members of the Main System,  
National Guard and Law Enforcement.

Contribution:                Maximum allowed based on service at the beginning of the Plan year.

## **EXHIBIT III**

### **CHANGES IN ACTUARIAL ASSUMPTIONS AND COST METHODS**

There following actuarial assumptions were changed since the preceding valuation as a result of the actuarial experience study conducted in 2005:

The inflation assumption was changed from 4.5% to 3.5%.

The mortality assumption for males was changed from 1983 GAM to 1983 GAM with a one year set back.

The withdrawal assumptions for Main were lowered during the five-year select period and the ultimate period for males and females at most ages.

The retirement rates for Main were split by eligibility for Rule of 85 and other retirements.

The assumption for spouse ages for the Main system was changed from males being five years older than females to males being four years older than females.

**EXHIBIT IV**  
**CHANGES IN PLAN PROVISIONS**

There were no changes in plan provisions since the preceding valuation.

## EXHIBIT V

### SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major benefit provisions of the North Dakota Public Employees Retirement System as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Service Retirement:

Eligibility:

*Main System and Judges:*

Attainment of age 65, or age plus service equal to at least 85 (Rule of 85).

*National Guard:*

Attainment of age 55 and three consecutive years of service.

*Law Enforcement:*

Attainment of age 55 and three consecutive years of service, or age plus service equal to at least 85 (Rule of 85).

Benefit:

*Main System, National Guard and Law Enforcement:*

2.00% of final average salary multiplied by service.

*Judges:*

3.50% of final average salary for each of the first ten years of service, 2.80% for each of the next ten years of service, and 1.25% for service in excess of twenty years.

#### 2. Early Service Retirement:

Eligibility:

*Main System:*

Attainment of age 55 with three years of service.

*Judges:*

Attainment of age 55 with five years of service.

## **EXHIBIT V (continued)**

### *National Guard and Law Enforcement:*

Attainment of age 50 with three years of service.

#### **Benefit:**

##### *Main System:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before the earlier of age 65 or the age at which the Rule of 85 is met.

##### *Judges:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 65 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 65.

##### *National Guard:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 is reduced by one-half of one percent for each month before age 55.

##### *Law Enforcement:*

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 (or Rule of 85, if earlier) is reduced by one-half of one percent for each month before age 55.

### **3. Disability Benefit:**

#### **Eligibility:**

Six months of service and inability to engage in any substantial gainful activity.

#### **Benefit:**

##### *Main System, National Guard and Law Enforcement:*

25% of the member's final average salary at disability, with a minimum of \$100 per month.

##### *Judges:*

70% of the member's final average salary at disability minus Social Security and Workers' Compensation benefits paid.



**EXHIBIT V (continued)**

**4. Deferred Vested Retirement:**

Eligibility:

*Main System, National Guard and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.

Benefit:

*Main System and Judges:*

The Normal Service Retirement Benefit payable at age 65 or the Rule of 85, if earlier. Reduced early retirement benefits can be elected upon attainment of age 55.

*National Guard:*

The Normal Service Retirement Benefit payable at age 55. Reduced early retirement benefits can be elected upon attainment of age 50.

*Law Enforcement:*

The Normal Service Retirement Benefit payable at age 55 or the Rule of 85, if earlier. Reduced early retirement benefit can be selected upon attainment of age 50.

**5. Pre-Retirement Death Benefits:**

Eligibility:

*Main System, National Guard and Law Enforcement:*

Three years of service.

*Judges:*

Five years of service.

## EXHIBIT V (continued)

### Benefit:

#### *Main System, National Guard and Law Enforcement:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- The member's accrued benefit payable for 240 months to the surviving spouse.
- 50% of the member's accrued benefit (not reduced on account of age) payable for the surviving spouse's lifetime.
- Continuation portion of 100% joint and survivor annuity (only if participant was eligible for normal retirement).
- A partial lump sum payment in addition to the one of the annuity options above.

#### *Judges:*

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- 100% of the member's accrued benefit (not reduced on account of age) payable for the spouse's lifetime.

### Eligibility:

#### *Main System, Judges, National Guard and Law Enforcement:*

Not vested nor a surviving spouse.

### Benefit:

#### *Main System, Judges, National Guard and Law Enforcement:*

Lump sum payment of member's accumulated contributions with interest.

## **6. Refund of Member Contributions:**

Paid to terminated non-vested members and terminated vested members who chose refund in lieu of a monthly retirement benefit.

**EXHIBIT V (continued)**

**7. Accumulated Member Contributions:**

Member contributions accumulate with interest at the following rates:

<u>Time Period</u>	<u>Per Annum Interest Rate</u>
Through June 30, 1981	5.0%
July 1, 1981 to June 30, 1986	6.0%
After June 30, 1986	0.5% less than the actuarial interest rate assumption

**8. Standard and Optional Forms of Payment:**

Standard form of payment:

*Main System, National Guard and Law Enforcement:*

Monthly benefit for life with a refund to beneficiary at death of the remaining balance (if any) of accumulated member contributions.

*Judges:*

Monthly benefit for life, with 50% payable to an eligible survivor.

Optional forms of payment:

Life annuity (for Judges), 50% joint and survivor annuity (for Main System, National Guard and Law Enforcement), 100% joint and survivor annuity (with pop-up feature), five-year certain and life annuity, ten-year certain and life annuity, or a level Social Security income annuity.

**9. Final Average Salary:**

Average of the highest salary received by the member for any 36 consecutive months employed during the last 120 months of employment.

## EXHIBIT V (continued)

### 10. Contributions:

Contribution rates specified in the Century Code (except employer rate for National Guard and Law Enforcement); differ between permanent full-time employees and part-time temporary employees. Rates are as follows:

	<u>Full-Time Employees</u>	<u>Employer</u>
Main System	4.00%	4.12%
Judges	5.00%	14.52%
National Guard	4.00%	8.33%
Law Enforcement with prior Main service	4.00%	8.31%
Law Enforcement without prior Main service	4.00%	6.43%

Part-time employees in the Main System contribute 8.12%, with no employer contributions.

Effective January 1, 2000:

A member's account balance includes vested employer contributions equal to the member's contributions to the deferred compensation Plan under chapter 54-52.2. The vested employer contribution may not exceed:

1. For months one through 12 of service credit, \$25 or 1% of the member's monthly salary, whichever is greater.
2. For months 13 through 24 of service credit, \$25 or 2% of the member's monthly salary, whichever is greater.
3. For months 25 through 36 of service credit, \$25 or 3% of the member's monthly salary, whichever is greater.
4. For service exceeding 36 months, \$25 or 4% of the member's monthly salary, whichever is greater.
5. The vested employer contribution may not exceed 4% of the member's monthly salary.

Vested employer contributions are credited monthly to the member's account balance.

### 11. Rollovers:

The fund may accept rollovers from other qualified plans under rules adopted by the Board for the purchase of additional service credit.

## APPENDIX B: CENSUS TABLES

		Table <u>Designation</u>
I.	Active Members	
	(A) Number of active members grouped by nearest age and years of employment:	
	Males	8-A
	Females	8-B
	All	8-C
	(B) Number of active members grouped by nearest age and salary:	
	Males	9-A
	Females	9-B
	All	9-C
II.	Current Plan Pensions	
	(A) Distribution of pensions awarded during the year by amount of benefit and type of pension:	
	Males	10-A
	Females	10-B
	All	10-C
	(B) Distribution of pensions awarded during the year by nearest age and type of pension:	
	Males	11-A
	Females	11-B
	All	11-C
	(C) Distribution of pensions in force by amount of benefit and type of pension:	
	Males	12-A
	Females	12-B
	All	12-C
	(D) Distribution of pensions in force by nearest age and type of pension:	
	Males	13-A
	Females	13-B
	All	13-C
III.	Special Prior Service Pensions	
	(A) Distribution of pensions in force by amount of benefit:	
	Males	14-A
	Females	14-B
	All	14-C
	(B) Distribution of pensions in force by nearest age:	
	Males	15-A
	Females	15-B
	All	15-C

**TABLE 8-A**

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment in PERS*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Years of Employment							
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over
Total	7,081	2,387	1,487	894	843	632	519	214	105
Under 20	3	3	-	-	-	-	-	-	-
20-24	183	183	-	-	-	-	-	-	-
25-29	454	388	66	-	-	-	-	-	-
30-34	571	315	216	40	-	-	-	-	-
35-39	672	271	218	135	48	-	-	-	-
40-44	837	289	184	168	144	52	-	-	-
45-49	1,092	299	204	141	187	150	107	4	-
50-54	1,227	240	229	149	174	161	193	78	3
55-59	1,141	216	170	134	161	163	164	90	43
60-64	621	117	131	87	81	79	43	37	46
65-69	193	44	47	24	33	24	9	3	9
70-74	58	15	13	10	11	3	2	1	3
75 & Over	29	7	9	6	4	-	1	1	1

**TABLE 8-B**

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment in PERS*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Years of Employment							
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over
Total	11,021	4,050	2,520	1,427	1,227	909	598	217	73
Under 20	4	4	-	-	-	-	-	-	-
20-24	212	210	2	-	-	-	-	-	-
25-29	696	606	90	-	-	-	-	-	-
30-34	788	475	275	37	1	-	-	-	-
35-39	1,021	510	292	153	64	2	-	-	-
40-44	1,503	627	371	191	181	122	11	-	-
45-49	2,042	617	510	303	227	216	156	13	-
50-54	2,087	496	461	345	282	190	197	113	3
55-59	1,575	300	322	250	262	212	134	55	40
60-64	787	132	130	104	161	134	79	27	20
65-69	207	39	53	27	37	24	15	6	6
70-74	77	28	8	16	9	6	4	2	4
75 & Over	22	6	6	1	3	3	2	1	-

TABLE 8-C

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment in PERS*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Years of Employment							
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over
Total	18,102	6,437	4,007	2,321	2,070	1,541	1,117	431	178
Under 20	7	7	-	-	-	-	-	-	-
20-24	395	393	2	-	-	-	-	-	-
25-29	1,150	994	156	-	-	-	-	-	-
30-34	1,359	790	491	77	1	-	-	-	-
35-39	1,693	781	510	288	112	2	-	-	-
40-44	2,340	916	555	359	325	174	11	-	-
45-49	3,134	916	714	444	414	366	263	17	-
50-54	3,314	736	690	494	456	351	390	191	6
55-59	2,716	516	492	384	423	375	298	145	83
60-64	1,408	249	261	191	242	213	122	64	66
65-69	400	83	100	51	70	48	24	9	15
70-74	135	43	21	26	20	9	6	3	7
75 & Over	51	13	15	7	7	3	3	2	1



TABLE 9-A

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Salary*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Salary									
		Less than \$10,000	\$10,000- \$14,999	\$15,000- \$19,999	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$34,999	\$35,000- \$39,999	\$40,000- \$44,999	\$45,000- \$49,999	\$50,000 & Over
Total	7,081	177	252	510	1,023	1,370	1,210	824	544	414	757
Under 20	3	-	2	1	-	-	-	-	-	-	-
20-24	183	10	11	40	55	31	24	8	3	-	1
25-29	454	9	22	41	78	118	88	58	27	9	4
30-34	571	10	10	48	69	138	136	68	40	26	26
35-39	672	16	11	46	92	143	108	100	52	44	60
40-44	837	9	18	57	128	191	127	92	61	67	87
45-49	1,092	18	30	69	164	187	187	131	97	61	148
50-54	1,227	24	28	64	152	217	218	152	107	91	174
55-59	1,141	27	28	75	154	210	200	128	84	73	162
60-64	621	18	41	42	89	107	96	67	54	32	75
65-69	193	18	26	19	27	25	20	15	18	10	15
70-74	58	9	15	5	12	-	6	4	1	1	5
75 & Over	29	9	10	3	3	3	-	1	-	-	-

**TABLE 9-B**

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Salary*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Salary									
		Less than \$10,000	\$10,000- \$14,999	\$15,000- \$19,999	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$34,999	\$35,000- \$39,999	\$40,000- \$44,999	\$45,000- \$49,999	\$50,000 & Over
Total	11,021	452	1,345	1,929	2,159	1,939	1,328	781	463	272	353
Under 20	4	1	1	2	-	-	-	-	-	-	-
20-24	212	18	51	75	34	26	6	1	-	-	1
25-29	696	36	83	156	156	134	73	40	12	4	2
30-34	788	43	75	111	169	148	102	69	33	19	19
35-39	1,021	48	141	158	158	204	122	77	59	24	30
40-44	1,503	70	195	245	291	274	182	96	59	43	48
45-49	2,042	83	264	377	379	312	254	141	94	59	79
50-54	2,087	68	226	347	398	340	315	160	97	50	86
55-59	1,575	32	153	269	349	297	171	125	72	47	60
60-64	787	17	91	137	167	158	83	58	32	23	21
65-69	207	14	47	36	35	40	13	9	5	2	6
70-74	77	15	15	10	18	6	7	5	-	-	1
75 & Over	22	7	3	6	5	-	-	-	-	1	-

**TABLE 9-C**

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Salary*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Total	Salary									
		Less than \$10,000	\$10,000- \$14,999	\$15,000- \$19,999	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$34,999	\$35,000- \$39,999	\$40,000- \$44,999	\$45,000- \$49,999	\$50,000 & Over
Total	18,102	629	1,597	2,439	3,182	3,309	2,538	1,605	1,007	686	1,110
Under 20	7	1	3	3	-	-	-	-	-	-	-
20-24	395	28	62	115	89	57	30	9	3	-	2
25-29	1,150	45	105	197	234	252	161	98	39	13	6
30-34	1,359	53	85	159	238	286	238	137	73	45	45
35-39	1,693	64	152	204	250	347	230	177	111	68	90
40-44	2,340	79	213	302	419	465	309	188	120	110	135
45-49	3,134	101	294	446	543	499	441	272	191	120	227
50-54	3,314	92	254	411	550	557	533	312	204	141	260
55-59	2,716	59	181	344	503	507	371	253	156	120	222
60-64	1,408	35	132	179	256	265	179	125	86	55	96
65-69	400	32	73	55	62	65	33	24	23	12	21
70-74	135	24	30	15	30	6	13	9	1	1	6
75 & Over	51	16	13	9	8	3	-	1	-	1	-

**TABLE 10-A**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Monthly Amount*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	189	60	45	9	75
Under \$200	19	10	9	-	-
200-399	22	10	10	2	-
400-599	15	2	8	4	1
600-799	12	5	5	2	-
800-999	17	8	3	1	5
1,000-1,199	24	11	4	-	9
1,200-1,399	15	5	1	-	9
1,400-1,599	8	2	1	-	5
1,600-1,799	8	3	-	-	5
1,800-1,999	6	-	-	-	6
2,000-2,199	7	-	-	-	7
2,200-2,399	9	-	2	-	7
2,400-2,599	5	-	1	-	4
2,600-2,799	3	2	-	-	1
2,800-2,999	2	-	1	-	1
3,000-3,199	3	-	-	-	3
3,200-3,399	5	1	-	-	4
3,400-3,599	1	-	-	-	1
3,600-3,799	1	-	-	-	1
3,800-3,999	1	-	-	-	1
4,000-4,199	2	1	-	-	1
4,200-4,399	1	-	-	-	1
4,400-4,599	1	-	-	-	1
4,600-4,799	1	-	-	-	1
4,800-4,999	1	-	-	-	1
5,000 & Over	-	-	-	-	-

**TABLE 10-B**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Monthly Amount*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	240	61	76	12	91
Under \$200	31	10	21	-	-
200-399	48	20	23	3	2
400-599	39	11	23	4	1
600-799	16	6	3	4	3
800-999	20	5	5	1	9
1,000-1,199	25	6	1	-	18
1,200-1,399	18	2	-	-	16
1,400-1,599	11	-	-	-	11
1,600-1,799	8	-	-	-	8
1,800-1,999	6	-	-	-	6
2,000-2,199	4	1	-	-	3
2,200-2,399	4	-	-	-	4
2,400-2,599	4	-	-	-	4
2,600-2,799	3	-	-	-	3
2,800-2,999	1	-	-	-	1
3,000-3,199	-	-	-	-	-
3,200-3,399	1	-	-	-	1
3,400-3,599	-	-	-	-	-
3,600-3,799	-	-	-	-	-
3,800-3,999	-	-	-	-	-
4,000-4,199	-	-	-	-	-
4,200-4,399	1	-	-	-	1
4,400-4,599	-	-	-	-	-
4,600-4,799	-	-	-	-	-
4,800-4,999	-	-	-	-	-
5,000 & Over	-	-	-	-	-

**TABLE 10-C**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Monthly Amount*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	429	121	121	21	166
Under \$200	50	20	30	-	-
200-399	70	30	33	5	2
400-599	54	13	31	8	2
600-799	28	11	8	6	3
800-999	37	13	8	2	14
1,000-1,199	49	17	5	-	27
1,200-1,399	33	7	1	-	25
1,400-1,599	19	2	1	-	16
1,600-1,799	16	3	-	-	13
1,800-1,999	12	-	-	-	12
2,000-2,199	11	1	-	-	10
2,200-2,399	13	-	2	-	11
2,400-2,599	9	-	1	-	8
2,600-2,799	6	2	-	-	4
2,800-2,999	3	-	1	-	2
3,000-3,199	3	-	-	-	3
3,200-3,399	6	1	-	-	5
3,400-3,599	1	-	-	-	1
3,600-3,799	1	-	-	-	1
3,800-3,999	1	-	-	-	1
4,000-4,199	2	1	-	-	1
4,200-4,399	2	-	-	-	2
4,400-4,599	1	-	-	-	1
4,600-4,799	1	-	-	-	1
4,800-4,999	1	-	-	-	1
5,000 & Over	-	-	-	-	-

**TABLE 11-A**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Nearest Age*

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	189	60	45	9	75
Under 50	2	-	-	2	-
50-54	4	-	-	2	2
55-59	43	3	12	2	26
60-64	75	1	29	3	42
65-69	51	42	4	-	5
70-74	12	12	-	-	-
75 & Over	2	2	-	-	-

**TABLE 11-B**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Nearest Age*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	240	61	76	12	91
Under 50	5	-	-	5	-
50-54	13	-	-	3	10
55-59	37	-	11	2	24
60-64	116	-	61	2	53
65-69	53	45	4	-	4
70-74	9	9	-	-	-
75 & Over	7	7	-	-	-



**TABLE 11-C**

*Pensions Awarded During the Year Ended June 30, 2006  
by Type of Pension and Nearest Age*

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Rule of 85
Total	429	121	121	21	166
Under 50	7	-	-	7	-
50-54	17	-	-	5	12
55-59	80	3	23	4	50
60-64	191	1	90	5	95
65-69	104	87	8	-	9
70-74	21	21	-	-	-
75 & Over	9	9	-	-	-

**TABLE 12-A**

***Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Monthly Amount***

*(Males - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	2,491	850	598	149	894
Under \$200	263	152	92	11	8
200-399	417	176	174	59	8
400-599	342	128	153	49	12
600-799	222	102	84	16	20
800-999	187	67	38	9	73
1,000-1,199	214	65	24	3	122
1,200-1,399	179	39	10	-	130
1,400-1,599	114	24	6	1	83
1,600-1,799	106	23	2	-	81
1,800-1,999	77	13	3	-	61
2,000-2,199	72	8	1	1	62
2,200-2,399	76	11	6	-	59
2,400-2,599	52	4	1	-	47
2,600-2,799	46	10	1	-	35
2,800-2,999	26	8	1	-	17
3,000-3,199	22	1	-	-	21
3,200-3,399	23	2	1	-	20
3,400-3,599	8	-	1	-	7
3,600-3,799	5	2	-	-	3
3,800-3,999	9	2	-	-	7
4,000-4,199	6	2	-	-	4
4,200-4,399	10	4	-	-	6
4,400-4,599	3	1	-	-	2
4,600-4,799	5	3	-	-	2
4,800-4,999	3	1	-	-	2
5,000 & Over	4	2	-	-	2

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 12-B**

*Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Monthly Amount*

*(Females - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	3,080	998	1,201	184	697
Under \$200	547	202	327	14	4
200-399	857	304	474	75	4
400-599	557	211	266	61	19
600-799	317	125	84	28	80
800-999	251	62	31	5	153
1,000-1,199	179	40	14	1	124
1,200-1,399	120	25	3	-	92
1,400-1,599	77	11	1	-	65
1,600-1,799	64	8	1	-	55
1,800-1,999	33	1	-	-	32
2,000-2,199	31	4	-	-	27
2,200-2,399	15	1	-	-	14
2,400-2,599	8	-	-	-	8
2,600-2,799	9	-	-	-	9
2,800-2,999	5	-	-	-	5
3,000-3,199	1	1	-	-	-
3,200-3,399	4	1	-	-	3
3,400-3,599	1	-	-	-	1
3,600-3,799	1	1	-	-	-
3,800-3,999	2	1	-	-	1
4,000-4,199	-	-	-	-	-
4,200-4,399	1	-	-	-	1
4,400-4,599	-	-	-	-	-
4,600-4,799	-	-	-	-	-
4,800-4,999	-	-	-	-	-
5,000 & Over	-	-	-	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 12-C**

***Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Monthly Amount***

*(All Members - Main System, Judges, National Guard, and Law Enforcement)*

Monthly Amount	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	5,571	1,848	1,799	333	1,591
Under \$200	810	354	419	25	12
200-399	1,274	480	648	134	12
400-599	899	339	419	110	31
600-799	539	227	168	44	100
800-999	438	129	69	14	226
1,000-1,199	393	105	38	4	246
1,200-1,399	299	64	13	-	222
1,400-1,599	191	35	7	1	148
1,600-1,799	170	31	3	-	136
1,800-1,999	110	14	3	-	93
2,000-2,199	103	12	1	1	89
2,200-2,399	91	12	6	-	73
2,400-2,599	60	4	1	-	55
2,600-2,799	55	10	1	-	44
2,800-2,999	31	8	1	-	22
3,000-3,199	23	2	-	-	21
3,200-3,399	27	3	1	-	23
3,400-3,599	9	-	1	-	8
3,600-3,799	6	3	-	-	3
3,800-3,999	11	3	-	-	8
4,000-4,199	6	2	-	-	4
4,200-4,399	11	4	-	-	7
4,400-4,599	3	1	-	-	2
4,600-4,799	5	3	-	-	2
4,800-4,999	3	1	-	-	2
5,000 & Over	4	2	-	-	2

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-A*****Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Nearest Age******(Males - Main System, Judges, National Guard, and Law Enforcement)***

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	2,491	850	598	149	894
Under 50	17	-	-	17	-
50-54	23	-	-	14	9
55-59	157	3	24	35	95
60-64	306	2	85	26	193
65-69	529	134	135	16	244
70-74	528	182	121	24	201
75-79	416	197	109	9	101
80-84	292	168	69	7	48
85-89	163	111	48	1	3
90 & Over	60	53	7	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-B**

***Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Nearest Age***

***(Females - Main System, Judges, National Guard, and Law Enforcement)***

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	3,080	998	1,201	184	697
Under 50	27	-	-	26	1
50-54	47	-	-	25	22
55-59	137	-	36	30	71
60-64	393	-	172	36	185
65-69	691	157	285	32	217
70-74	626	201	276	19	130
75-79	504	222	226	8	48
80-84	362	199	133	7	23
85-89	204	146	57	1	-
90 & Over	89	73	16	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 13-C**

***Current Plan Pensions in Force on July 1, 2006  
by Type of Pension and Nearest Age***

***(All Members - Main System, Judges, National Guard, and Law Enforcement)***

Nearest Age	Type of Pension				
	Total	Normal	Early	Disability	Service*
Total	5,571	1,848	1,799	333	1,591
Under 50	44	-	-	43	1
50-54	70	-	-	39	31
55-59	294	3	60	65	166
60-64	699	2	257	62	378
65-69	1,220	291	420	48	461
70-74	1,154	383	397	43	331
75-79	920	419	335	17	149
80-84	654	367	202	14	71
85-89	367	257	105	2	3
90 & Over	149	126	23	-	-

\* Includes Rule of 85, Rule of 88, and Rule of 90.

**TABLE 14-A**

*Special Prior Service Pensions in Force on July 1, 2006  
by Monthly Amount*

*(Males)*

Monthly Amount	Total
Total	11
Under \$20	2
20-39	5
40-59	-
60-79	1
80-99	2
100-119	1
120-139	-
140-159	-
160 & Over	-



**TABLE 14-B**

*Special Prior Service Pensions in Force on July 1, 2006  
by Monthly Amount*

*(Females)*

<u>Monthly Amount</u>	<u>Total</u>
Total	37
Under \$20	9
20-39	13
40-59	5
60-79	6
80-99	2
100-119	-
120-139	1
140-159	-
160 & Over	1

**TABLE 14-C**

***Special Prior Service Pensions in Force on July 1, 2006  
by Monthly Amount***

*(All Members)*

<u>Monthly Amount</u>	<u>Total</u>
Total	48
Under \$20	11
20-39	18
40-59	5
60-79	7
80-99	4
100-119	1
120-139	1
140-159	-
160 & Over	1

**TABLE 15-A**

***Special Prior Service Pensions in Force on July 1, 2006  
by Nearest Age***

*(Males)*

---

<u>Nearest Age</u>	<u>Total</u>
Total	11
85-89	3
90-94	2
95-99	6
100 & Over	-

---

**TABLE 15-B**

***Special Prior Service Pensions in Force on July 1, 2006  
by Nearest Age***

***(Females)***

---

<u>Nearest Age</u>	<u>Total</u>
Total	37
85-89	2
90-94	18
95-99	15
100 & Over	2

---

**TABLE 15-C**

***Special Prior Service Pensions in Force on July 1, 2006  
by Nearest Age***

***(All Members)***

---

<u>Nearest Age</u>	<u>Total</u>
Total	48
85-89	5
90-94	20
95-99	21
100 & Over	2

---

**NORTH DAKOTA HIGHWAY PATROLMEN'S  
RETIREMENT SYSTEM**

*Actuarial Valuation Report as of July 1, 2006*

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October 11, 2006

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Highway Patrolmen's Retirement System as of July 1, 2006.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems; and
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary

Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary

Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

/dqm

cc: Sparb Collins

148463v1/01640.001

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## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2006. The employer contribution requirements presented in Section VI of the report are based on:

1. The present provisions of the North Dakota Highway Patrolmen's Retirement System;
2. The characteristics of covered active members, inactive non-retired members, pensioners and beneficiaries as of July 1, 2006;
3. The assets of the System as of June 30, 2006; and
4. Actuarial assumptions regarding investment earnings, salary increases, and rates of retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the North Dakota Highway Patrolmen's Retirement System in accordance with its benefit provisions.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the System will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the System experiences net actuarial losses and will decrease if the System experiences net actuarial gains.

## II. HIGHLIGHTS

- The present rate of contributions is not sufficient to meet the actuarially determined requirement for 2006-2007, based upon the actuarial assumptions and financing objectives approved by the Board. If unchanged, this difference will further increase the actuarial contribution requirement in future valuations.
- The PERS Board should continue to review these results and projected future performance to determine appropriate measures to mitigate the difference between the actuarial and statutory contribution rates.
- The employer actuarial contribution requirement for 2006-2007 is \$1,082,659, or 19.03% of payroll. The statutory rate of 16.70% of payroll is less than the actuarially determined rate by 2.33% of payroll. Last year, the actuarially determined rate of 17.61% exceeded the statutory rate of payroll by 0.91% of payroll.
- The return on the market value of assets for 2005-2006 was 12.12%, and was 14.25% for the previous year.
- The return on the actuarial value of assets for 2005-2006 was 8.10% compared to the investment return assumption of 8.00%. As a result, the System experienced a slight investment gain.
- The ratio of the actuarial value of assets to the market value of assets was 82.8%. Last year, this ratio was 86.3%.
- A comparison of this year's funded ratio to the prior year is as follows:

	July 1, 2006	July 1, 2005
Actuarial Value of Assets	\$42,758,360	\$40,696,900
Actuarial Accrued Liability	49,127,046	46,284,400
Funded Ratio	87.0%	87.9%

- There were no changes in plan provisions since the preceding valuation.
- The actuarial assumptions were changed since the preceding valuation to reflect the actuarial experience study in 2005. This resulted in an increase in the employer actuarial contribution requirement of 0.70% of payroll.

### III. MEMBER CHARACTERISTICS

Last year, as of July 1, 2005, there were 125 covered active members, two terminated members eligible for a deferred vested benefit, and two terminated members eligible for a refund of their accumulated contributions. During the year, three members terminated employment and eight members retired. There were 13 new members in fiscal year 2005-2006. Hence, there were 127 active Highway Patrolmen covered under the provisions of the System as of July 1, 2006. The significant age, service, salary and accumulated contribution information for these members is summarized below along with comparative figures from the preceding actuarial valuation.

	<u>As of July 1, 2006</u>	<u>As of July 1, 2005</u>
Number of active members		
Eligible for immediate retirement benefits	11	16
Vested (not eligible for immediate retirement)	52	56
Non-vested	<u>64</u>	<u>53</u>
Total*	127	125
Average age	37.7	38.4
Average years of service (excluding service before transfer)	11.2	12.3
Average annual salary	\$44,789	\$42,393
Average accumulated contributions	72,516	77,837

The average service decreased by 1.1 years since last year. For the 114 members continuing in active service from last year, average salaries increased by 5.6%. Distributions of active employees by age, service (excluding service before transfer), and salary are presented in Tables 1 and 2.

Four members from the Highway Patrol continue to be active in the Main System; 13 members from the Main System are active members in the Highway Patrol. Liabilities for these members are carried in both systems based on their service in that system.

Four terminated members are eligible for a deferred vested benefit and two terminated members are due a refund.

---

\* Excludes four members with split service in the Highway Patrolmen's System and the Main System, and currently in the Main System.

**TABLE 1**

*Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment*

Nearest Age	Total	Years of Employment									
		Under 5	5 - 9	10 - 14	15 - 19	20 - 24	25 & Over				
Total	127	41	23	19	22	10	12				
20 - 24	7	7	-	-	-	-	-				
25 - 29	21	17	4	-	-	-	-				
30 - 34	21	9	9	3	-	-	-				
35 - 39	24	4	8	7	5	-	-				
40 - 44	21	2	1	7	9	2	-				
45 - 49	20	1	-	1	7	7	4				
50 - 54	13	1	1	1	1	1	8				
55 & over	-	-	-	-	-	-	-				

**TABLE 2**

***Census of Members in Active Service on July 1, 2006  
by Nearest Age and Actual Salary***

Nearest Age	Total	Actual Salary										
		Less than \$30,000	\$30,000-\$32,999	\$33,000-\$35,999	\$36,000-\$38,999	\$39,000-\$41,999	\$42,000-\$44,999	\$45,000-\$47,999	\$48,000 & Over			
Total	127	12	1	20	11	11	37	12	23			
20 - 24	7	4	-	3	-	-	-	-	-			
25 - 29	21	4	-	10	4	2	1	-	-			
30 - 34	21	1	1	4	5	4	5	1	-			
35 - 39	24	1	-	1	2	3	11	2	4			
40 - 44	21	1	-	1	-	1	8	4	6			
45 - 49	20	1	-	-	-	-	7	4	8			
50 - 54	13	-	-	1	-	1	5	1	5			
55 & over	-	-	-	-	-	-	-	-	-			

#### IV. BENEFIT EXPERIENCE

There were 70 pensioners (including two disableds) and 22 surviving spouses receiving benefits as of July 1, 2005. During the year ended June 30, 2006, nine members were awarded retirement pensions and one retiree had a benefit suspended. Therefore, there were 78 pensioners (including three disableds) and 22 surviving spouses receiving benefits as of July 1, 2006. Key statistics on pensioners and beneficiaries are shown below.

	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Number of pensioners and beneficiaries	100	92
Annualized benefits in force	\$2,799,646	\$2,451,578
Average monthly benefit	\$2,201	\$2,221
Average age	65.6	64.3

Tables 3 and 4 summarize the census data for pensioners and beneficiaries. In the year ended June 30, 2006, benefit payments totaled \$2,662,076. In the year ended June 30, 2005, benefit payments were \$2,447,165, including refund payments of \$95,601.

**TABLE 3**

*Pensions in Force on July 1, 2006  
by Type of Recipient and Monthly Amount*

Monthly Amount	Total	Pensioner	Beneficiary	Disabled
Total	100	75	22	3
Under \$ 200	3	-	3	-
200 - 399	7	1	6	-
400 - 599	2	2	-	-
600 - 799	2	-	2	-
800 - 999	6	-	6	-
1,000 - 1,199	4	1	3	-
1,200 - 1,399	2	1	1	-
1,400 - 1,599	2	-	1	1
1,600 - 1,799	2	2	-	-
1,800 - 1,999	1	1	-	-
2,000 - 2,199	6	5	-	1
2,200 - 2,399	7	6	-	1
2,400 - 2,599	10	10	-	-
2,600 - 2,799	10	10	-	-
2,800 - 2,999	5	5	-	-
3,000 - 3,199	9	9	-	-
3,200 - 3,399	4	4	-	-
3,400 - 3,599	7	7	-	-
3,600 - 3,799	2	2	-	-
3,800 & over	9	9	-	-

**TABLE 4**

*Pensions in Force on July 1, 2006  
by Type of Recipient and Nearest Age*

Nearest Age	Total	Pensioner	Beneficiary	Disabled
Total	100	75	22	3
Under 55	15	11	1	3
55 - 59	20	18	2	-
60 - 64	16	14	2	-
65 - 69	12	9	3	-
70 - 74	15	12	3	-
75 - 79	15	8	7	-
80 - 84	4	2	2	-
85 - 89	3	1	2	-
90 & over	-	-	-	-



## V. ASSETS

### *Market Value of Assets*

The combined market value of net assets of the North Dakota Public Employees Retirement System (PERS) and the Highway Patrolmen's Retirement System (HPRS) was \$1,638,868,514 as of June 30, 2006, compared to \$1,480,185,590 last year. This year's combined market value represents an increase of 10.72% over the market value one year earlier.

The market value of net assets attributable to the Highway Patrolmen's Retirement System as of July 1, 2006 was \$51,628,427 compared to \$47,179,197 as of July 1, 2005. The rate of return on the market value basis for the HPRS Fund was 9.43% for the year ended June 30, 2006.

### *Actuarial Value of Assets*

The actuarial value of assets are determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over a five-year period.

The above procedure is applied to the combined assets of PERS and HPRS Retirement Income Funds to determine the combined actuarial value of assets. The combined actuarial value was \$1,357,301,265 as of June 30, 2006. The determination of the combined actuarial asset value is shown in Table 5. This table shows that there is approximately \$282 million of appreciation that will be recognized in future years.

Table 6 summarizes the combined investment results over the previous ten-year period. Over this period, the earnings of \$795,296,000 on an actuarial value basis represented an average annual return of 8.53%. For the 2005-2006 year, the actuarial rate of return on the combined assets was 7.79%.

The total actuarial value of assets is allocated to PERS and HPRS in proportion to the reported market value of assets. This allocation is illustrated in Table 7 and results in an actuarial value of assets for HPRS as of July 1, 2006 of \$42,758,360. Last year's actuarial value of assets was \$40,696,868. On an actuarial basis, the rate of return on the HPRS Fund was 8.10% for the year ended June 30, 2006.

Chart 1 on page 12 is a graph showing the historical asset values for the HPRS Fund on both an actuarial and market value basis. A summary of income and disbursements for 2006 and 2005 on the actuarial value basis are given in Table 8 for HPRS. The progress of the HPRS Fund for the last ten years is provided in Table 9. It shows that assets have increased from year to year, although the amount of the increase has varied with fluctuations in investment income. Contributions and benefit payments have increased consistently over the period.

A picture of the financial development of the HPRS Fund over the last ten years is provided in Chart 2 on page 17. It shows that benefit payments and expenses continue to grow at a faster pace than contributions. However, over the long term, the excess of contributions over benefit payments and expenses, along with net investment income, served to increase the assets of the System.

Investment results on the actuarial basis are used to determine whether investment experience is meeting the System's actuarially assumed return. They do not, however, necessarily indicate the relative success of the System's investment program. Comparisons of performance with other funds, investment institutions, and market indices are generally based on rates of return that reflect market changes in full.

***Investment Return***

The investment returns for the last ten years for the combined fund are as follows:

<b>Year Ending June 30</b>	<b>Market Value</b>	<b>Actuarial Value</b>
1997	19.90	13.14
1998	15.65	14.02
1999	10.88	14.73
2000	9.43	13.71
2001	(4.47)	9.36
2002	(6.94)	3.91
2003	5.19	2.18
2004	16.65	3.16
2005	14.17	4.36
2006	12.04	7.79

The above values demonstrate the fact that the volatility of market value returns is reduced by using an actuarial value of assets. Chart 3 on page 18 illustrates this smoothing effect. By using an actuarial value that reduces the year-to-year fluctuations in investment return, year-to-year fluctuations in contribution requirements are minimized.

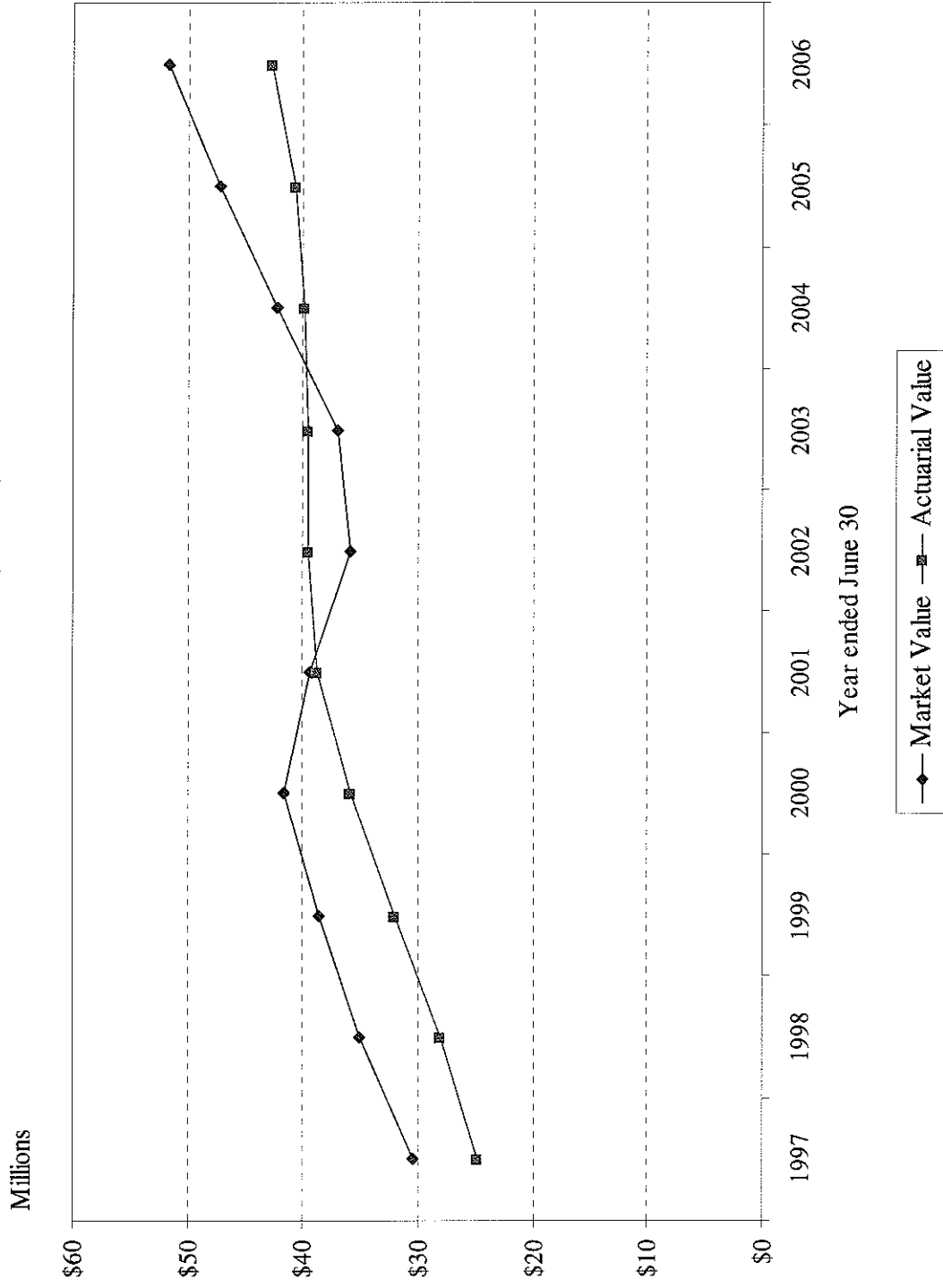
Investment return rates on the market value basis included all capital appreciation and depreciation. The returns on the actuarial value reflect only a portion of the capital appreciation and depreciation based on the adopted asset valuation method.

**TABLE 5**

*Determination of Actuarial Value of Assets  
(for PERS and HPRS) as of June 30, 2006 and 2005*

<u>Year Ending</u>	<u>Total Appreciation (Depreciation)</u>	<u>Of Total Appreciation</u>			
		<u>Percent Deferred</u>	<u>Amount Deferred</u>	<u>Percent Deferred</u>	<u>Amount Deferred</u>
June 30, 2002	\$(115,940,982)	0%	\$0	20%	\$(23,188,196)
June 30, 2003	22,232,141	20%	4,446,428	40%	8,892,856
June 30, 2004	156,289,529	40%	62,515,812	60%	93,773,717
June 30, 2005	154,870,262	60%	92,922,157	80%	123,896,210
June 30, 2006	152,103,565	80%	<u>121,682,852</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$281,567,249		\$203,374,587
(b) Total Appreciation (Depreciation) for last five Plan Years			369,554,515		121,384,031
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			73,910,903		24,276,806
			<u>July 1, 2006</u>		<u>July 1, 2005</u>
Market Value of Assets			\$1,638,868,514		\$1,480,185,590
Less: Deferred Appreciation (Depreciation)			<u>281,567,249</u>		<u>203,374,587</u>
Actuarial Value of Assets			\$1,357,301,265		\$1,276,811,003
Actuarial Value as a Percent of Market Value			82.82%		86.26%

Chart 1  
Value of Assets (HPRS)



**TABLE 6***Summary of Combined Investment Results for PERS and HPRS on Actuarial Value of Assets*

Year Ended June 30	Net Interest and Dividend Income*		Other Income**		Total Net Investment Income	
	Amount	Yield	Amount	Yield	Amount	Yield
1997	23,919,600	3.73	60,428,700	9.41	84,348,300	13.14
1998	29,988,300	4.13	71,787,700	9.89	101,776,000	14.02
1999	31,722,100	3.84	89,864,100	10.89	121,586,200	14.73
2000	36,367,600	3.88	92,244,700	9.83	128,612,300	13.71
2001	41,086,800	3.89	57,734,900	5.47	98,821,700	9.36
2002	35,077,400	3.06	9,694,500	0.85	44,771,900	3.91
2003	33,595,900	2.84	(7,793,200)	(0.66)	25,802,700	2.18
2004	30,464,800	2.54	7,398,200	0.62	37,863,000	3.16
2005	29,115,600	2.38	24,276,800	1.98	53,392,400	4.36
2006	24,410,600	1.93	73,910,900	5.85	98,321,500	7.79
Total for Last Ten Years	\$315,748,700		\$479,547,300		\$795,296,000	
Average Yield for last Ten Years***				8.53%		

\* Net of investment expenses.

\*\* Includes write-up (down).

\*\*\* Each year's yield weighted by average fund value in that year.

**TABLE 7**

*Allocation of Combined (PERS and HPRS) Actuarial Value of Assets*

	July 1, 2006		July 1, 2005	
	<u>Market Value</u>	<u>Actuarial Value</u>	<u>Market Value</u>	<u>Actuarial Value</u>
PERS Main System	\$1,553,353,995	\$1,286,478,642	\$1,403,066,411	\$1,210,287,848
PERS Judges	28,113,536	23,283,465	25,165,175	21,707,529
PERS National Guard	1,912,469	1,583,896	1,693,912	1,461,172
PERS Law Enforcement with prior Main service	3,771,742	3,123,735	3,032,184	2,615,568
PERS Law Enforcement without prior Main service	<u>88,345</u>	<u>73,167</u>	<u>48,711</u>	<u>42,018</u>
PERS Combined	\$1,587,240,087	\$1,314,542,905	\$1,433,006,393	\$1,236,114,135
Highway Patrol	<u>51,628,427</u>	<u>42,758,360</u>	<u>47,179,197</u>	<u>40,696,868</u>
Total	\$1,638,868,514	\$1,357,301,265	\$1,480,185,590	\$1,276,811,003

*Note:* Allocation of the actuarial value of assets is in proportion to the market value of assets.

**TABLE 8**

*Summary Statement of Income and Disbursements (HPRS Fund)  
for the Years Ended June 30, 2006 and 2005  
(Actuarial Value Basis)*

	<u>June 30, 2006</u>	<u>June 30, 2005</u>
Contribution Income:		
Employer Contributions	\$ 931,206	\$ 867,803
Member Contributions	<u>574,341</u>	<u>535,233</u>
Total Contribution Income	\$ 1,505,547	\$ 1,403,036
Less: Administrative Expenses	<u>(17,470)</u>	<u>(16,058)</u>
Net Contribution Income	<u>\$ 1,488,077</u>	<u>\$ 1,386,978</u>
Investment Income:		
Interest and Dividends	\$ 1,345,383	\$ 1,174,622
Less: Investment Expenses	<u>(569,444)</u>	<u>(236,599)</u>
Net Interest and Dividends	\$ 775,939	\$ 938,023
Write-up of Assets	<u>2,459,552</u>	<u>861,711</u>
Net Investment Income	<u>\$ 3,235,491</u>	<u>\$ 1,799,734</u>
Total Income Available for Benefit Payments and Reserves	<u>\$ 4,723,568</u>	<u>\$ 3,186,712</u>
Benefit Payments:		
Pension Benefits	\$ (2,662,076)	\$ (2,351,564)
Refunds	<u>0</u>	<u>(95,601)</u>
Total Benefit Payments	<u>\$ (2,662,076)</u>	<u>\$ (2,447,165)</u>
Addition to Reserve for Future Benefit Payments	\$ 2,061,492	\$ 739,547
Actuarial Value of Assets, Start of Year	<u>40,696,868</u>	<u>39,957,321</u>
Actuarial Value of Assets, End of Year	<u>\$ 42,758,360</u>	<u>\$ 40,696,868</u>

**TABLE 9**

***Progress of the HPRS Fund through June 30, 2006***  
*(Actuarial Value Basis)*

Year Ended June 30	Employer Contributions	Member Contributions	Administrative Expenses	Net Investment Income	Benefit Payments	Fund at End of Year
1996	-	-	-	-	-	\$22,156,332
1997	\$641,179	\$395,459	\$15,710	\$2,939,053	\$1,257,853	24,858,460
1998	698,132	430,585	12,989	3,502,484	1,329,615	28,147,057
1999	717,357	442,441	12,966	4,161,006	1,458,424	31,996,471
2000	741,089	457,079	13,821	4,331,244	1,635,596	35,876,466
2001	788,125	486,332	14,482	3,321,908	1,671,297	38,787,052
2002	814,035	501,850	15,919	1,467,287	2,050,607	39,503,698
2003	833,074	513,812	16,469	792,875	2,063,483	39,563,507
2004	844,241	520,700	16,562	1,268,080	2,222,645	39,957,321
2005	867,803	535,233	16,058	1,799,734	2,447,165	40,696,868
2006	931,206	574,341	17,470	3,235,491	2,662,076	42,758,360
Total for last ten years	\$7,876,241	\$4,857,832	\$152,446	\$26,819,162	\$18,798,761	



Chart 2  
Income and Disbursements for HPRS

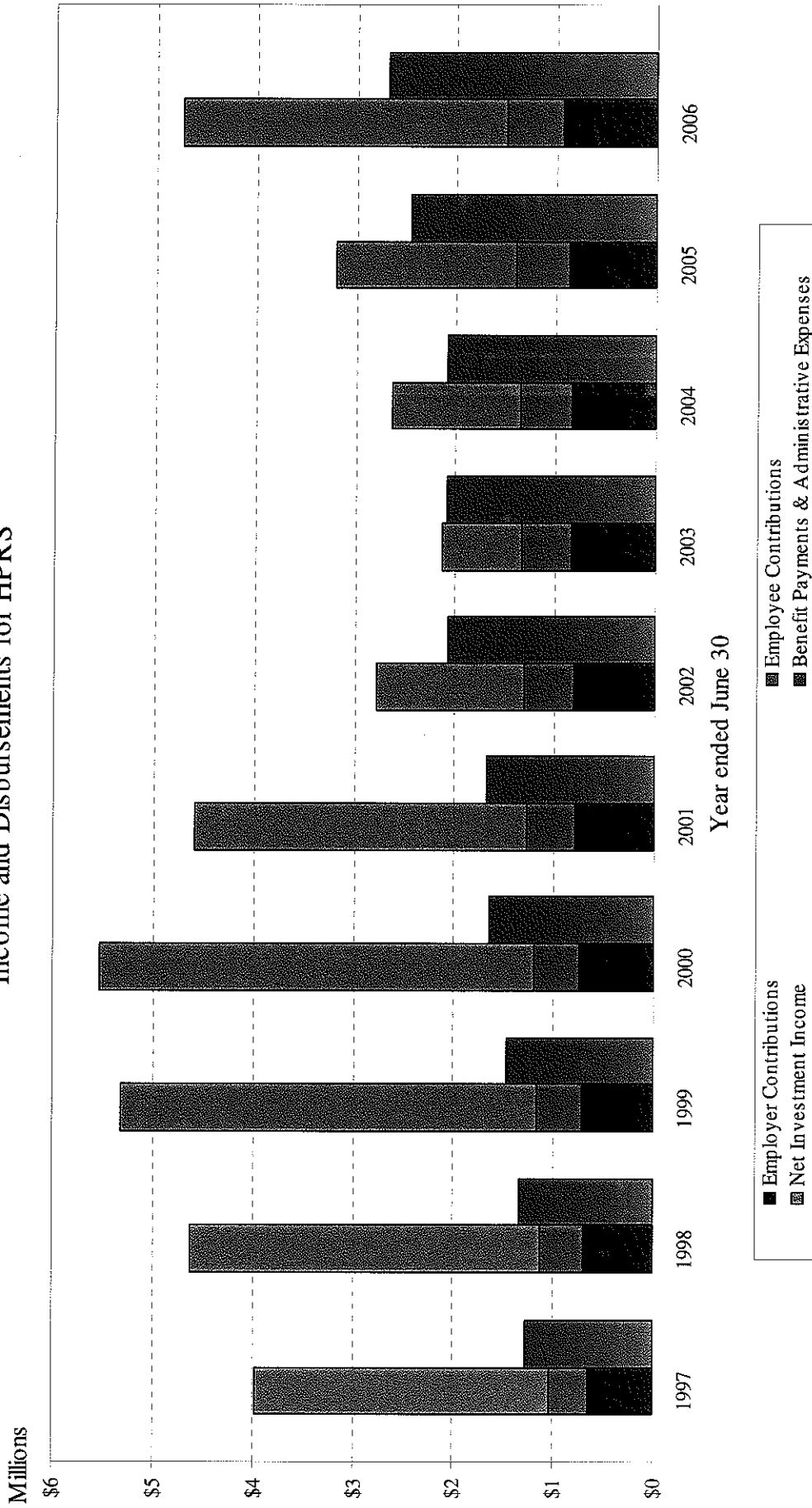
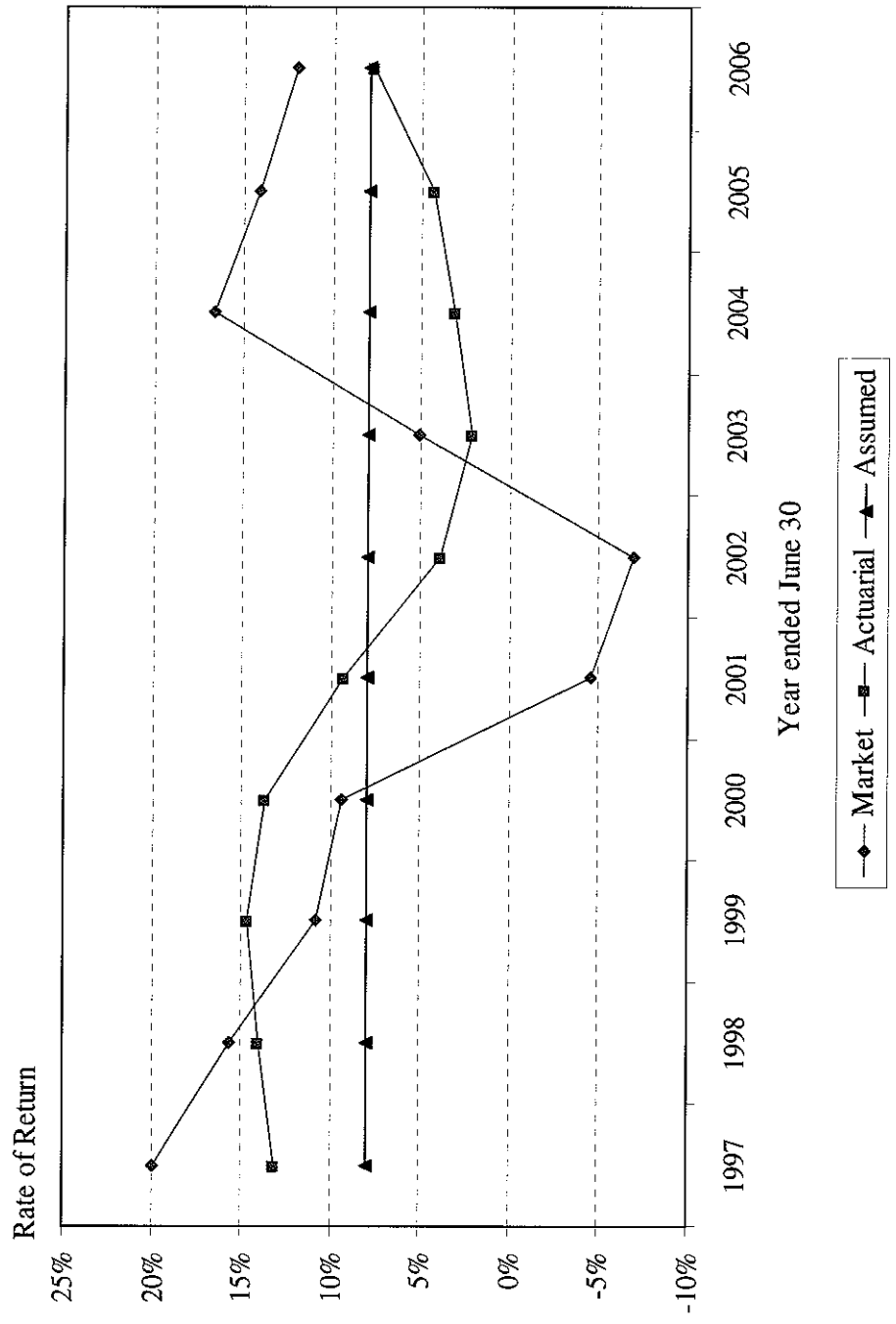


Chart 3  
 Investment Returns  
 (PERS and HPRS Combined)



## VI. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an open amortization period of 20 years with increasing payments. The calculated employer contribution requirements on this basis for fiscal year 2006-2007 are shown below as a dollar amount and as a percentage of the covered payroll of contributing participants.

The components of the actuarial contribution requirement are as follows:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>	<u>Cost per Participant</u>
Total normal cost	\$ 1,208,072	21.24%	\$ 9,512
Less: member contributions	<u>(585,885)</u>	<u>(10.30)</u>	<u>(4,613)</u>
Net employer normal cost	\$ 622,187	10.94%	\$ 4,899
Administrative expense allowance	16,000	0.28	126
Amortization payment	<u>444,472</u>	<u>7.81</u>	<u>3,500</u>
Total employer contribution	\$ 1,082,659	19.03%	\$ 8,525

Covered payroll is \$5,688,205 for 127 active members.

The statutory contribution rate is 16.70% of payroll. Hence actual contributions for 2006-2007 are less than the actuarial contribution requirement shown above by 2.33% of payroll.

A reconciliation of the change in cost rate since the previous valuation follows:

	<u>As a Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	17.61%
Plan experience during the year	0.84
Contribution shortfall	0.15
Change in actuarial assumptions	0.70
Effect of maintaining 20-year amortization schedule	<u>(0.27)</u>
Employer cost rate as of July 1, 2006	19.03%

The development of the unfunded/(surplus) actuarial accrued liability for the year ended June 30, 2006, is as follows:

1. Unfunded/(Surplus) actuarial accrued liability as of July 1, 2005.....	\$5,587,563
2. Normal cost at beginning of year.....	1,032,687
3. Contributions.....	(1,505,547)
4. Administrative expenses.....	16,000
5. Interest.....	<u>470,038</u>
6. Expected unfunded/(surplus) actuarial accrued liability - equals sum of (1) through (5).....	\$5,600,741
7. Changes due to:	
(a) Change in actuarial assumptions.....	\$426,847
(b) (Gain)/Loss on investments.....	(8,533)
(c) (Gain)/Loss on demographics.....	348,161
(d) (Gain)/Loss on administrative expenses.....	<u>1,470</u>
(e) Total changes – equals (7a + 7b + 7c + 7d).....	<u>767,945</u>
8. Unfunded/(Surplus) actuarial accrued liability as of July 1, 2006 - equals (6) plus (7c).....	\$6,368,686

## VII. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a retirement plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded is the retirement plan. This ratio can be calculated using different measures of the retirement plan's liabilities.

### *Funding Basis – Actuarial Accrued Liability*

This measure of liabilities is used in calculating pension costs. It uses the Entry Age Normal Actuarial Cost method that spreads costs as a level percentage of payroll over a member's working career.

For determining plan costs a smoothed value of assets (called actuarial value) was used. Hence, the actuarial value of assets was used to calculate the funded ratios.

### *Disclosure Basis*

The accounting standard for disclosure of liabilities and funding status of the System is based on Governmental Accounting Standards Board (GASB) Statement No. 25, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans. GASB Statement Number 25 allows the System to disclose its liabilities and funding status on the same basis used for funding the System. The actuarial value of assets is used for comparing assets and liabilities.

### *Historical Results*

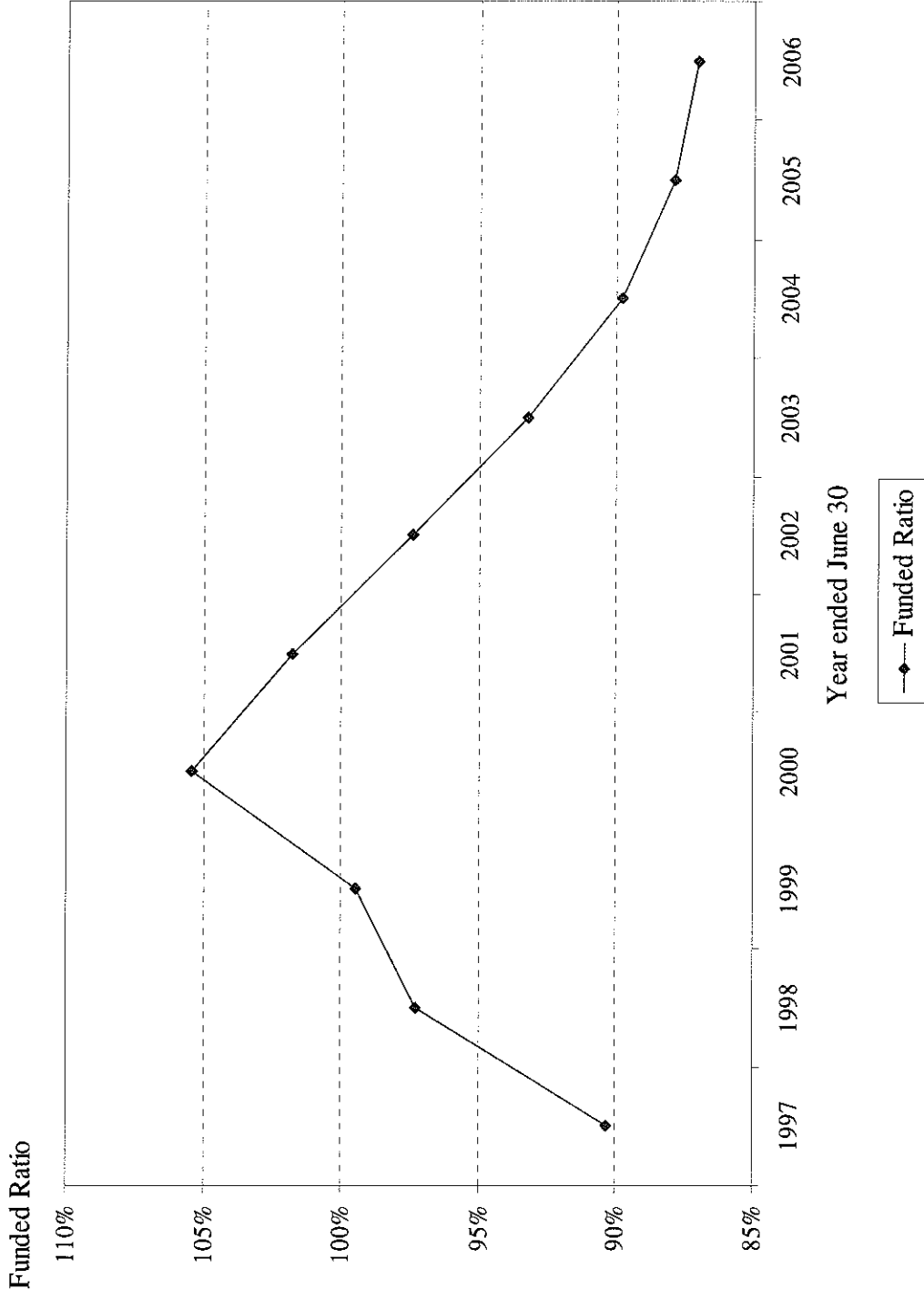
The funded ratios under the GASB Statement No. 25 standard for the last ten years are developed in Table 10. These ratios are graphed in Chart 4 on page 23. They show that, on a funding basis, the funded ratio has generally improved during the beginning of this period, but deteriorated in recent years.

Funded ratios change over time due to several factors. These factors include the level of contributions, actual experience (including investment returns), plan amendments, and changes in actuarial assumptions. In particular, we observe that in years when benefit improvements were effective, 1997 and 2001, the funded ratio was lower than what it would have been otherwise.

**TABLE 10***Funded Ratio*

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
1997	\$27,518,300	\$24,858,500	90.3%
1998	28,925,500	28,147,100	97.3
1999	32,153,000	31,996,500	99.5
2000	34,034,200	35,876,500	105.4
2001	38,112,100	38,787,100	101.8
2002	40,542,300	39,503,700	97.4
2003	42,417,300	39,563,500	93.3
2004	44,468,700	39,957,300	89.9
2005	46,284,400	40,696,900	87.9
2006	49,127,000	42,758,400	87.0

Chart 4  
Funded Ratio (HPRS)



## VIII. ACTUARIAL ASSUMPTIONS AND COST METHODS

The actuarial assumptions and cost methods used in the actuarial valuation as of July 1, 2006 are summarized below.

### *Investment Yield*

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets of the System will be 8.00% per year, net of investment expenses.

### *Salary Increases*

Because the retirement benefits provided by the System are based on a member's final average salary, increases in salaries affect the employer's contribution requirements. A salary scale is used in an actuarial valuation to project each member's future salary increases.

During each of the first five years of service, the assumed salary increase is 7.00% per year. After five years of service, salary increases are age-related. Sample age-related salary increases are as follows:

<u>Age</u>	<u>Percentage Increase In Year</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70

Actuarial assumptions should be reasonable over the long term and should not be unduly influenced by transitory deviations. Actual salary increases that are greater than assumed produce actuarial losses which, if not offset by actuarial gains from other sources (such as investment gains), result in increasing future employer costs. On the other hand, salary increases that are less than projected produce actuarial gains that can result in lowering future employer costs.

### *Inflation*

The assumed inflation rate is 3.50% per annum.

### *Payroll Growth*

The assumed payroll growth rate is 4.50% per annum.



### ***Age at Retirement***

Retirement rates reflect the expected percentage of members who will retire at each age. From ages 50 to 54, 50% of the members who are not eligible for early retirement under the Rule of 80 are assumed to retire each year while 100% of the members who are eligible for the Rule of 80 are assumed to retire each year. One hundred percent of members aged 55 and over are assumed to retire.

Inactive vested members eligible for deferred benefits are assumed to retire at age 55.

### ***Withdrawal Rates Before Retirement***

Withdrawal rates used in this actuarial valuation are intended to reflect the percentage of employees who will leave service at each age prior to retirement for reasons other than death or disability.

The assumed withdrawal percentages are 5% per year for the first five years of a member's service. Thereafter, rates vary according to the age of the member. Two percent of members are assumed to terminate at each age under 35. One percent are assumed to terminate at each age 35 and over.

### ***Disability Incidence Rates Before Retirement***

Disability rates used in this actuarial valuation are intended to reflect the percentage of employees who will leave service at each age prior to retirement due to disability. The assumed disability incidence rates increase from 0.05% at age 25 to 0.55% at age 55.

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation uses the 1983 Group Annuity Mortality Table for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The table below shows sample mortality rates and life expectancies underlying the healthy mortality tables.

<u>Age</u>	<u>Retired Members</u>			
	<u>Males</u>		<u>Females</u>	
	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	5.7	25.2	2.5	30.3
60	8.4	21.0	4.2	25.7
65	13.9	17.0	7.1	21.3
70	24.8	13.3	12.4	17.2
75	40.4	10.2	24.0	13.4
80	67.1	7.6	42.9	10.2
85	106.0	5.6	69.9	7.6

### ***Administrative Expenses***

Annual administrative expenses are assumed to be \$16,000.

### ***Marital Status for Non-Retired Members***

At death, 90% of non-retired members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### ***Valuation of Assets***

Investments are carried at an adjusted market value. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, beginning with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Actuarial Cost Method***

The System is funded using the Entry Age Normal Actuarial Cost Method. This method produces costs that will remain relatively level as a percentage of covered payroll.

Under the Entry Age Normal Method, the total contribution requirement has three components - an annual normal cost, an allowance for administrative expenses and a payment with respect to the unfunded actuarial accrued liability. The annual normal cost is calculated for each member as the level percentage of pay required over the member's period of covered employment to pay the total expected benefits, with the normal cost determined as if the current benefit accrual rate had always been in effect. If the actuarial assumptions are met, the total normal cost rate will remain level as a percentage of payroll.

The normal cost payments are sufficient to finance the benefit program only if there are no changes in plan design and all actuarial assumptions are realized. To the extent that actual experience is less favorable than assumed, additional liabilities not funded through normal cost payments arise. Also, benefit liberalizations that improve earned benefits or benefit eligibility produce additional liabilities. The Board has adopted a schedule of amortizing this unfunded actuarial accrued liability over an open period of 20 years. The annual payments are determined as a level percent of payroll, with payroll expected to increase 4.50% per year.

October 11, 2006

**NORTH DAKOTA HIGHWAY PATROLMEN'S RETIREMENT SYSTEM**

*Actuarial Valuation Certificate*

This is to certify that we have prepared an Actuarial Valuation of the System as of July 1, 2006 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Actuarial Assumptions and Cost Methods
- III. Changes in Actuarial Assumptions and Cost Methods
- IV. Changes in Plan Provisions
- V. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the System and to reasonable expectations and (b) represents our best estimate of anticipated experience under the System.

The undersigned are available to provide further information or to answer any questions regarding the report.



Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary



Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary



Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

## EXHIBIT I

### ACTUARIAL VALUATION RESULTS

1.	Actuarial accrued liability on July 1, 2006:		
	a. Active members .....	\$20,340,396	
	b. Retired members and beneficiaries .....	28,380,767	
	c. Inactive non-retired members .....	<u>405,883</u>	
	d. Total .....		\$49,127,046
2.	Assets at actuarial value (\$51,628,427 at market value) .....		42,758,360
3.	Unfunded (Surplus) actuarial accrued liability - equals (1) minus (2) .....		6,368,686
4.	Member and employer normal cost for ensuing year* .....		1,208,072
5.	Estimated annual salaries of covered members .....		5,688,205
6.	Member normal cost equals - 10.3% of (5) .....		585,885
7.	Employer normal cost for ensuing year - equals (4) minus (6) .....		622,187
8.	Amortization payment - equals 20-year amortization of item (3) as a level percent of aggregate salary* .....		444,472
9.	Administrative expenses .....		16,000
10.	Total employer cost for ensuing year - equals (7) plus (8) plus (9) .....		1,082,659
11.	Total employer cost as percentage of payroll - equals (10) divided by (5) .....		19.03%

---

\* Adjusted for interest to recognize payments through the year.

## EXHIBIT II

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table, set back one year for males (not set back for females).

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Annual Withdrawal Rates:

First five years of service: 5% per year.

After five years of service:

Under age 35: 2% at each age.

Age 35 and older: 1% at each age.

Withdrawal rates end upon eligibility for early retirement (age 50 and 5 years of service).

#### 3. Disability Incidence Rates:

Age based rates. Sample rates:

<u>Age</u>	<u>Rate</u>
25	0.05%
30	0.12
35	0.20
40	0.30
45	0.37
50	0.38
55	0.55

#### 4. Retirement Rates:

The following annual rates apply for active members:

<u>Age</u>	<u>Eligible for Rule of 80</u>	<u>Not Eligible for Rule of 80</u>
50 - 54	100%	50%
55+	100	100

Inactive vested members eligible for deferred benefits are assumed to retire at age 55.

**EXHIBIT II (continued)**

**5. Interest Rate:**

8.00% per annum, net of investment expenses.

**6. Annual Administrative Expenses:**

\$16,000.

**7. Salary Scale:**

Less than five years of service: 7.00% per annum.

Five or more years of service (for selected ages):

<u>Age</u>	<u>Annual Increase</u>
25	5.90%
30	5.60
35	5.30
40	5.10
45	4.90
50	4.80
55	4.70

**8. Inflation:**

3.50% per annum.

**9. Payroll Growth:**

4.50% per annum.

**10. Marital Status:**

At death, 90% of all members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

**11. Workers' Compensation:**

None assumed for disability benefit offset.

**12. Indexing for Benefits of Inactive Vested Members:**

5.00% per annum.

## **EXHIBIT II (continued)**

### **13. Split Service:**

Liabilities held in both plans based on service in each plan; based on actuarial assumptions of the plan in which currently active.

### **14. Transfers to Main System:**

Annual withdrawal, disability incidence and retirement rate assumptions for members who have transferred to the Main System follow those specified in the Main System, and are applied to the benefits held in the HPRS.

### **15. Actuarial Cost Method:**

Entry Age Normal Actuarial Cost Method. The unfunded actuarial accrued liability is amortized in installments assuming a 4.50% payroll growth assumption and an open 20-year period.

### **16. Actuarial Value of Assets:**

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each Plan Year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.

## **EXHIBIT III**

### **CHANGES IN ACTUARIAL ASSUMPTIONS AND COST METHODS**

The following actuarial assumptions were changed as a result of the actuarial experience study conducted in 2005:

- The inflation assumption was changed from 4.50% to 3.50%.
- The mortality assumption for males was changed from 1983 GAM to 1983 GAM with a one year setback.



## **EXHIBIT IV**

### **CHANGES IN PLAN PROVISIONS**

There were no changes to plan provisions since the preceding valuation.

## EXHIBIT V

### SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major benefit provisions of the North Dakota Highway Patrolmen's Retirement System as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Service Retirement:

Eligibility:

Attainment of age 55 with at least 10 years of eligible employment or with age plus service equal to at least 80 (Rule of 80).

Benefit:

3.60% of final average salary for each of the first 25 years of service plus 1.75% of final average salary for service in excess of 25 years.

#### 2. Early Service Retirement:

Eligibility:

Attainment of age 50 with 10 years of eligible employment.

Benefit:

The Normal Service Retirement Benefit as determined above. A benefit that begins before age 55 (or Rule of 80, if earlier) is reduced by one-half of one percent for each month before age 55.

#### 3. Disability Benefit:

Eligibility:

Accumulation of six months of service and inability to engage in substantial gainful activity.

Benefit:

70% of the member's final average salary at disability minus workers' compensation, with a minimum of \$100 per month.

**EXHIBIT V (continued)**

**4. Deferred Retirement:**

Eligibility:

Ten years of eligible employment.

Benefit:

The Normal Service Retirement Benefit payable at age 55 or the Rule of 80, if earlier. Vested benefits are indexed at a rate set by the Retirement Board based on the increase in final average salary from date of termination to benefit commencement date, as follows

<u>Year Beginning</u>	<u>Average Monthly Increase</u>	<u>Three-Year Average Increase</u>	<u>Cumulative Salary Increase</u>
7/1/1994	3.00%	3.01%	3.01%
7/1/1995	2.00	2.86	5.95
7/1/1996	2.00	2.33	8.42
7/1/1997	3.00	2.33	10.95
7/1/1998	1.80	2.27	13.47
7/1/1999	1.26	2.02	15.76
7/1/2000	2.00	1.69	17.71
7/1/2001	1.81	1.69	19.70
7/1/2002	1.73	1.85	21.91
7/1/2003	0.00	1.18	23.35
7/1/2004	0.00	0.58	24.06

Reduced early retirement benefits can be elected upon attainment of age 50.

**5. Pre-Retirement Death Benefits:**

Eligibility:

Ten years of eligible employment.

Benefit:

One of the following options:

- Lump sum payment of member's accumulated contributions with interest.
- Monthly payment of the member's accrued benefit for 60 months to the surviving spouse.
- 50% of the member's accrued benefit (not reduced on account of age) for the surviving spouse's lifetime.

## EXHIBIT V (continued)

### Eligibility:

Less than 10 years of service nor a surviving spouse.

### Benefit:

Lump sum payment of member's accumulated contributions with interest.

## 6. Normal and Optional Forms of Payment:

### Normal form of payment:

Monthly benefit for life with 50% of the benefit continuing for the life of the surviving spouse (if any).

### Optional forms of payment:

- 100% joint and survivor annuity, ten-year certain and life annuity, and twenty-year certain and life annuity.
- A partial lump sum payment in addition to the one of the annuity options above.

## 7. Final Average Salary:

Average of the highest salary received by the member for any 36 non-consecutive months employed during the last 120 months of employment.

## 8. Contributions:

### Members:

10.30% of monthly salary.

### State of North Dakota:

16.70% of the monthly salary for each participating member.

Member's contributions earn interest at an annual rate of 7.50% compounded monthly.

**NORTH DAKOTA PUBLIC EMPLOYEES  
RETIREMENT SYSTEM**

**Retiree Health Insurance Credit Fund**

*Actuarial Valuation Report as of July 1, 2006*

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October 11, 2006

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

It is a pleasure to submit this report that presents the results of our actuarial valuation of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund as of July 1, 2006.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems; and
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the actuarial valuation.

We look forward to meeting with you to review this report and to answering any questions you may have.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary

Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary

Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

/dqm

cc: Sparb Collins

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## I. INTRODUCTION

This report summarizes the results of our actuarial valuation as of July 1, 2006. The employer contribution requirements presented in Section V of the report are based on:

1. The present provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund;
2. The characteristics of covered active members, and pensioners and beneficiaries as of July 1, 2006;
3. The assets of the Fund as of June 30, 2006; and
4. Actuarial assumptions regarding investment earnings and rates of participation, retirement, disability, death, etc.

The purpose of the actuarial valuation is to determine the contribution sufficient to meet the long-term obligations to the members covered by the Fund in accordance with the benefit provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund.

If each of the actuarial assumptions is exactly fulfilled, the true actuarial cost of the Fund will equal the cost projected by the actuarial calculations. However, this result is never achieved because of the length of time over which projections are made and because of the great number of variables that can affect the emerging costs. The cost, expressed as a percentage of payroll, will increase if the Fund experiences net actuarial losses and will decrease if the Fund experiences net actuarial gains.



## II. HIGHLIGHTS

- The present rate of contributions is sufficient to meet the actuarially determined requirement for 2006-2007, based upon the actuarial assumptions and financing objectives approved by the Board.
- The actuarial contribution requirement for 2006-2007 is \$5,687,050, or 1.00% of payroll. Since the statutory contribution rate is 1.00% of payroll, actual contributions almost exactly equal the actuarial requirement.
- As indicated on page 11 of this report, the total deferred appreciation as of June 30, 2006 is approximately \$3.9 million. This appreciation will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of losses derived from future experience.
- The return on the market value of assets for 2005-2006 was 8.31%, and was 8.90% for the preceding year.
- The return on the actuarial value of assets for 2005-2006 was 6.34% compared to the investment return assumption of 8.0%. As a result, the Fund experienced an investment loss on an actuarial basis of approximately \$500,000.
- The ratio of actuarial value of assets to the market value of assets is 89.8%. Last year, this ratio was 91.1%. This change is an expected result of the actuarial smoothing technique.
- Members of the optional defined contribution plan are also eligible to participate in the Retiree Health Insurance Credit Fund. We included 249 active members, 51 inactive vested members, seven retired members and one beneficiary of the optional defined contribution plan in this actuarial valuation.
- There were changes in the actuarial assumptions since the preceding valuation based upon the experience study conducted in 2005. The changes resulted in an increase of 0.02% of payroll contribution.
- There were no changes in plan provisions since the preceding valuation.

### III. MEMBER CHARACTERISTICS

#### *Nonretired Members*

Detailed information for 18,465 active members as of July 1, 2006 was provided by the Retirement Office. The data included name, sex, date of birth, date of hire, months of service, and annual earnings.

Age, service, and compensation data is summarized below:

	<u>Males</u>	<u>Females</u>	<u>Total</u>
Number of active members	7,305	11,160	18,465
Average age	46.8	46.6	46.7
Average years of service	11.4	10.2	10.7
Total annual compensation	\$264,060,818	\$303,942,261	\$568,003,079
Average annual compensation	\$36,148	\$27,235	\$30,761

Distributions of the active members by sex, age, and service as of July 1, 2006 are presented in Tables 1, 2 and 3.

#### *Retired Members*

Information regarding the Fund's pensioners and beneficiaries shows that benefits were being paid to 3,838 individuals on July 1, 2006. The average benefit paid to these retired members is \$97 per month. Their average age is 72.3 years. Distributions of the retired members are presented in Tables 4, 5 and 6 by sex, monthly amount, and current age.

**TABLE 1**

***Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment***

*(Males)*

Nearest Age	Total	Years of Employment									
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Total	7,305	2,452	1,548	926	874	646	537	217	105		
Under 20	3	3	-	-	-	-	-	-	-	-	-
20-24	188	188	-	-	-	-	-	-	-	-	-
25-29	480	410	70	-	-	-	-	-	-	-	-
30-34	596	327	227	42	-	-	-	-	-	-	-
35-39	715	279	235	147	54	-	-	-	-	-	-
40-44	876	296	191	177	157	55	-	-	-	-	-
45-49	1,134	305	212	146	197	158	111	5	-	-	-
50-54	1,257	243	237	151	176	162	207	78	3	3	
55-59	1,152	218	174	135	161	165	164	92	43		
60-64	624	117	133	88	81	79	43	37	46		
65-69	193	44	47	24	33	24	9	3	9		
70-74	58	15	13	10	11	3	2	1	3		
75 & Over	29	7	9	6	4	-	1	1	1		

**TABLE 2**

***Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment***

**(Females)**

Nearest Age	Total	Years of Employment									
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Total	11,160	4,082	2,581	1,460	1,235	912	599	218	73		
Under 20	4	4	-	-	-	-	-	-	-	-	
20-24	214	212	2	-	-	-	-	-	-	-	
25-29	700	608	92	-	-	-	-	-	-	-	
30-34	811	483	287	40	1	-	-	-	-	-	
35-39	1,059	521	305	166	65	2	-	-	-	-	
40-44	1,530	634	381	196	184	124	11	-	-	-	
45-49	2,065	617	523	309	230	217	156	13	-	-	
50-54	2,100	497	470	347	283	190	197	113	3	3	
55-59	1,580	300	324	253	262	212	134	55	40	40	
60-64	789	132	130	105	161	134	80	27	20	20	
65-69	209	40	53	27	37	24	15	7	6	6	
70-74	77	28	8	16	9	6	4	2	4	4	
75 & Over	22	6	6	1	3	3	2	1	-	-	

**TABLE 3**

***Census of Members in Active Service on July 1, 2006  
by Nearest Age and Years of Employment***

*(All Members)*

Nearest Age	Total	Years of Employment									
		Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Total	18,465	6,534	4,129	2,386	2,109	1,558	1,136	435	178		
Under 20	7	7	-	-	-	-	-	-	-	-	-
20-24	402	400	2	-	-	-	-	-	-	-	-
25-29	1,180	1,018	162	-	-	-	-	-	-	-	-
30-34	1,407	810	514	82	1	-	-	-	-	-	-
35-39	1,774	800	540	313	119	2	-	-	-	-	-
40-44	2,406	930	572	373	341	179	11	-	-	-	-
45-49	3,199	922	735	455	427	375	267	18	-	-	-
50-54	3,357	740	707	498	459	352	404	191	6	-	-
55-59	2,732	518	498	388	423	377	298	147	83	-	-
60-64	1,413	249	263	193	242	213	123	64	66	-	-
65-69	402	84	100	51	70	48	24	10	15	-	-
70-74	135	43	21	26	20	9	6	3	7	-	-
75 & Over	51	13	15	7	7	3	3	2	1	-	-

**TABLE 4**

***Distribution of Retired Members Receiving Benefits on July 1, 2006  
by Nearest Age and Monthly Amount***

*(Males)*

Nearest Age	Total	Monthly Amount										
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over				
Total	2,184	135	499	559	469	331	144	47				
Under 50	17	7	5	3	2	-	-	-				
50 - 54	34	4	4	7	4	7	8	-				
55 - 59	109	7	28	11	8	33	21	1				
60 - 64	294	17	60	40	80	71	19	7				
65 - 69	471	34	106	106	125	72	23	5				
70 - 74	444	34	108	124	89	57	22	10				
75 - 79	370	15	93	115	77	40	19	11				
80 - 84	252	6	64	80	49	29	16	8				
85 & Over	193	11	31	73	35	22	16	5				

**TABLE 5**

***Distribution of Retired Members Receiving Benefits on July 1, 2006  
by Nearest Age and Monthly Amount***

***(Females)***

Nearest Age	Total	Monthly Amount									
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over			
Total	1,654	73	209	298	320	427	260	67			
Under 50	5	-	4	1	-	-	-	-			
50 - 54	19	2	2	2	1	9	3	-			
55 - 59	95	4	10	4	8	53	16	-			
60 - 64	204	12	16	17	37	79	34	9			
65 - 69	355	9	35	42	89	90	67	23			
70 - 74	365	13	50	77	65	82	62	16			
75 - 79	289	24	50	67	45	55	39	9			
80 - 84	190	2	26	51	44	38	26	3			
85 & Over	132	7	16	37	31	21	13	7			

**TABLE 6**

***Distribution of Retired Members Receiving Benefits on July 1, 2006  
by Nearest Age and Monthly Amount***

***(All Retired Members)***

Nearest Age	Total	Monthly Amount										
		Under \$30	\$30 - \$59	\$60 - \$89	\$90 - \$119	\$120 - \$149	\$150 - \$179	\$180 & Over				
Total	3,838	208	708	857	789	758	404	114				
Under 50	22	7	9	4	2	-	-	-				
50 - 54	53	6	6	9	5	16	11	-				
55 - 59	204	11	38	15	16	86	37	1				
60 - 64	498	29	76	57	117	150	53	16				
65 - 69	826	43	141	148	214	162	90	28				
70 - 74	809	47	158	201	154	139	84	26				
75 - 79	659	39	143	182	122	95	58	20				
80 - 84	442	8	90	131	93	67	42	11				
85 & Over	325	18	47	110	66	43	29	12				



#### IV. ASSETS

##### *Market Value of Assets*

Financial information was provided by the North Dakota Public Employees Retirement System. Following is a comparison of the Retiree Health Insurance Credit Fund assets at market value:

	<u>June 30, 2006</u>	<u>June 30, 2005</u>
Investments	\$37,242,565	\$33,341,428
Cash	35,946	39,309
Contributions receivable	399,426	385,062
Interest receivable	338,916	291,578
Accounts payable	<u>(111,618)</u>	<u>(142,216)</u>
Net assets	\$37,905,235	\$33,915,161

The rate of return on the market value basis was 8.31% for the year ended June 30, 2006.

##### *Actuarial Value of Assets*

The actuarial value of assets are determined as follows:

Market appreciation and depreciation are spread over five years beginning with the year of occurrence. Interest and dividends are recognized immediately. This procedure results in recognition of all changes in market value over five years.

The actuarial value of assets as of June 30, 2006 was \$34,020,413 compared to \$30,891,785 as of June 30, 2005. On an actuarial basis, the rate of return was 6.34% for the year ended June 30, 2006.

Table 7 shows that there is approximately \$3.9 million of appreciation that will be recognized in future years. For the prior year, there was approximately \$3.0 million of appreciation to be recognized in future years.

Table 8 presents a statement of income and disbursements on an actuarial value basis for the past two years.

**TABLE 7**

*Determination of Actuarial Value of Assets  
as of June 30, 2006 and 2005*

<u>Year Ending</u>	<u>Total Appreciation (Depreciation)</u>	<u>Of Total Appreciation</u>			
		<u>Percent Deferred</u>	<u>Amount Deferred</u>	<u>Percent Deferred</u>	<u>Amount Deferred</u>
June 30, 2002	\$(2,467,469)	0%	\$0	20%	\$(493,494)
June 30, 2003	284,302	20%	56,860	40%	113,721
June 30, 2004	3,227,544	40%	1,291,018	60%	1,936,526
June 30, 2005	1,833,279	60%	1,099,967	80%	1,466,623
June 30, 2006	1,796,221	80%	<u>1,436,977</u>	N/A	<u>0</u>
(a) Total Deferred as of Valuation Date			\$3,884,822		\$3,023,376
(b) Total Appreciation (Depreciation) for last five Plan Years			4,673,877		117,919
(c) Write-Up/(Down) Amount for the year - equals 20% of (b)			934,775		23,584
			<u>July 1, 2006</u>		<u>July 1, 2005</u>
Market Value of Assets			\$37,905,235		\$33,915,161
Less: Deferred Appreciation (Depreciation)			<u>3,884,822</u>		<u>3,023,376</u>
Actuarial Value of Assets			\$34,020,413		\$30,891,785
Actuarial Value as a Percentage of Market Value			89.75%		91.09%

**TABLE 8**

*Summary Statement of Income and Disbursements  
for the Years Ended June 30, 2006 and 2005  
(Actuarial Value Basis)*

	<u>June 30, 2006</u>	<u>June 30, 2005</u>
Contribution Income:		
Employer Contributions	\$5,373,091	\$5,085,050
Member Contributions	7,210	7,061
Service Credit Repurchases	<u>211,601</u>	<u>246,500</u>
Total Contribution Income	\$5,591,902	\$5,338,611
Less: Administrative Expenses	<u>(88,569)</u>	<u>(85,262)</u>
Net Contribution Income	<u>\$5,503,333</u>	<u>\$5,253,349</u>
Investment Income:		
Interest and Dividends	\$1,102,168	\$922,864
Less: Investment Expenses	<u>(69,457)</u>	<u>(62,164)</u>
Net Interest and Dividends	\$1,032,711	\$860,700
Write-Up of Assets	<u>934,774</u>	<u>23,585</u>
Net Investment Income	<u>\$1,967,485</u>	<u>\$884,285</u>
Total Income Available for Benefit Payments and Reserves	<u>\$7,470,818</u>	<u>\$6,137,634</u>
Benefit Payments:		
Health Credit Benefits	\$(4,337,900)	\$(4,193,687)
Refunds	<u>(4,291)</u>	<u>(1,880)</u>
Total Benefit Payments	<u>\$(4,342,191)</u>	<u>\$(4,195,567)</u>
Addition to Reserve for Future Benefit Payments	\$3,128,627	\$1,942,067
Actuarial Value of Assets, Start of Year	<u>30,891,786</u>	<u>28,949,719</u>
Actuarial Value of Assets, End of Year	<u>\$34,020,413</u>	<u>\$30,891,786</u>

## V. RESULTS OF ACTUARIAL VALUATION

The contribution requirement consists of the normal cost, administrative expense allowance, plus the cost of amortizing the unfunded actuarial accrued liability over a scheduled period of years. The Board has adopted an amortization period of 40 years beginning July 1, 1990 (24 years remaining as of July 1, 2006). Amortization payments are based on a level percent of payroll. The calculated employer contribution requirements on this basis for fiscal year 2006-2007 are shown below as a dollar amount and as a percentage of the total compensation of contributing employees.

The components of the actuarial contribution requirement are as follows:

	<u>Amount for 2006 - 2007</u>	<u>Percentage of Payroll</u>	<u>Cost per Active Employee</u>
Normal cost	\$2,626,010	0.46%	\$142
Administrative expense allowance	65,000	0.01	4
Amortization payment	<u>2,996,040</u>	<u>0.53</u>	<u>162</u>
Total employer contributions	\$5,687,050	1.00%	\$308

Covered payroll is \$568,003,079 for 18,465 active employees.

The statutory contribution rate is 1.00% of payroll. Actual contributions for 2006-2007 closely match the actuarial contribution requirement.

A reconciliation of the change since the previous actuarial valuation is as follows:

	<u>As a Percentage of Payroll</u>
Employer cost rate as of July 1, 2005	1.00%
Assumption changes	0.02
Plan experience	<u>(0.02)</u>
Employer cost rate as of July 1, 2006	1.00%

## VI. FUNDING STATUS

The calculation of funded ratios provides one measure of the progress of funding a plan. The funded ratio is the percentage of plan liabilities covered by plan assets. The greater the ratio, the better funded the plan. This ratio can be calculated using different measures of the plan's liabilities.

The funded ratio shown below is based on assets and liabilities developed in the actuarial valuation. It uses the actuarial accrued liability developed by the projected unit credit actuarial cost method and the actuarial value of assets.

The funded ratio for the past five years is determined below. The progress of this ratio reveals overall improvement in the plan's funded condition.

As of July 1	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio
2002	68,988,084	26,402,058	38.3
2003	71,976,336	27,473,723	38.2
2004	74,589,006	28,949,719	38.8
2005	78,090,560	30,891,785	39.6
2006	82,632,628	34,020,413	41.2

## VII. ACTUARIAL ASSUMPTIONS AND COST METHODS

The assumptions and cost methods used in the actuarial valuation as of July 1, 2006 are the same as those used in the previous valuation. A summary of the actuarial assumptions and cost methods follows. Details can be found in Exhibit III of the attachment.

### ***Investment Return***

The actuarial calculations are based on the assumption that the investment return on the actuarial value of assets will be 8.00% per year, net of investment expenses.

### ***Retirement Rates***

The retirement rates used in the valuation differ for active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are described below. The retirement assumptions for members of the Highway Patrol, Judges, National Guard and Law Enforcement are detailed in the valuation reports for their retirement systems.

For members of the Main System, sample retirement rates are: 4% at age 55, 8% at age 60, 40% at age 65, and 100% at age 70.

### ***Withdrawal Rates before Retirement***

The withdrawal rates used in this actuarial valuation are intended to recognize the percentage of members who will leave service at each age prior to retirement for reasons other than death or disability. Withdrawal rates differ for active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are described below. The withdrawal assumptions for members of the Highway Patrol, Judges, National Guard and Law Enforcement are detailed in the valuation report for their retirement systems.

Select and ultimate rates are used for the Main System. During the select period (first five years of employment), rates vary by year of service and age. During the ultimate period (after five years of employment), Main System rates vary by age and sex. The Main System rates are detailed in Exhibit III.

### ***Disability Rates***

Disability rates differ for active members of the Public Employees Retirement System (PERS) and the Highway Patrol. Rates for PERS are summarized below for selected ages. The disability assumptions for the Highway Patrol are detailed in the valuation report for their retirement system.

<u>Age</u>	<u>Males</u>	<u>Females</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

### ***Mortality Rates***

The reserve required to pay a member's retirement benefits depends on the period over which payments will be received. The valuation is based on the 1983 Group Annuity Mortality Table for healthy members and the Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits for disabled members. The schedule below shows the annual mortality rates and life expectancies underlying the healthy mortality tables.

<u>Retired Members</u>				
	<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>	<u>Deaths per 1,000 Lives</u>	<u>Expected Number of Years of Life Remaining</u>
55	5.7	25.2	2.5	30.3
60	8.4	21.0	4.2	25.7
65	13.9	17.0	7.1	21.3
70	24.8	13.3	12.4	17.2
75	40.4	10.2	24.0	13.4
80	67.1	7.6	42.9	10.2
85	106.0	5.6	69.9	7.6

### ***Administrative Expenses***

Annual administrative expenses are assumed to be \$65,000.

### ***Marital Status***

At death, 75% of male members of PERS and 60% of female members of PERS are assumed to have spouses. Main males are assumed to be four years older than their female spouses. All other PERS males are assumed to be five years older than their female spouses.

For the Highway Patrol, 90% of all active members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### ***Valuation of Assets***

Investments are carried at an adjusted market value. The net market appreciation (depreciation) is spread over five years in equal dollar amounts, commencing with the year of occurrence. The actuarial value of assets is the market value less deferred appreciation (depreciation).

### ***Participation Rates***

Receipt of benefits from the Fund is contingent upon the member's election of participation in the North Dakota uniform group insurance program. The assumption concerning the percentage of active members participating in this program varies with the member's service at retirement. Assumed participation rates are as follows:

<u>Main System, National Guard and Law Enforcement</u>		<u>Judges and Highway Patrol</u>	
<u>Years of Service</u>	<u>Participation Rate</u>	<u>Years of Service</u>	<u>Participation Rate</u>
3 - 4	25%	5 - 9	50%
5 - 9	50%	10 - 14	70%
10 - 14	70%	15 - 19	80%
15 - 19	80%	20 - 24	95%
20 - 24	95%	25 and over	100%
25 and over	100%		

### ***Projected Unit Credit Actuarial Cost Method***

Under the Projected Unit Credit Actuarial Cost Method, benefits are projected to each assumed occurrence of decrement (death, disability, retirement) using service as of the valuation date. The normal cost is equal to the actuarial present value of the benefits allocated to the current year.

The actuarial accrued liability for active members is equal to the actuarial present value of the benefits allocated to all prior years. The actuarial assumptions used to determine the liabilities for members of the optional defined contribution plan are the same as those used for the Main System. The actuarial accrued liability for members currently receiving benefits and for participants entitled to deferred benefits is the actuarial present value of the benefits expected to be paid. The unfunded actuarial accrued liability is equal to the actuarial accrued liability minus the actuarial value of assets. This amount is amortized as a level percentage of payroll over a fixed period of years. Payroll is assumed to increase by an inflation assumption of 4.5% per year.



October 11, 2006

**NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM  
RETIREE HEALTH INSURANCE CREDIT FUND**

*Actuarial Valuation Certificate*

This is to certify that we have prepared an Actuarial Valuation of the Fund as of July 1, 2006 in accordance with generally accepted actuarial principles and practices.

The certificate contains the following attached exhibits:

- I. Actuarial Valuation Results
- II. Changes in Plan Provisions, Actuarial Assumptions, and Cost Methods
- III. Actuarial Assumptions and Cost Methods
- IV. Summary of Plan Provisions

The valuation was based on information supplied by the Retirement Office with respect to member and financial data. We have not verified, and customarily would not verify, such information, but we have no reason to doubt its substantial accuracy.

To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate and in our opinion each individual assumption used (a) is reasonably related to the experience of the Fund and to reasonable expectations and (b) represents our best estimate of anticipated experience under the Fund.

The undersigned are available to provide further information or to answer any questions regarding the report.



Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary



Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary



Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

**EXHIBIT I**

**ACTUARIAL VALUATION RESULTS**

1. Actuarial accrued liability on July 1, 2006:	
a. Active members .....	\$ 46,547,332
b. Retired members and beneficiaries.....	<u>36,085,296</u>
c. Total.....	\$82,632,628
2. Assets at actuarial value (\$37,905,235 at market value) .....	34,020,413
3. Unfunded actuarial accrued liability - equals (1) minus (2).....	48,612,215
4. Normal cost for ensuing year* .....	2,626,010
5. Amortization payment - equals 24-year amortization of item (3) as a level percent of total payroll* .....	2,996,040
6. Administrative expenses .....	65,000
7. Total cost for ensuing year - equals (4) plus (5) plus (6) .....	5,687,050
8. Total payroll of covered members .....	568,003,079
9. Total employer cost as percentage of payroll - equals (7) divided by (8).....	1.00%

---

\* Adjusted for interest to recognize payments throughout the year.

## **EXHIBIT II**

### **CHANGES IN PLAN PROVISIONS, ACTUARIAL ASSUMPTIONS, AND COST METHODS**

There were no changes in plan provisions or the actuarial cost methods since the preceding valuation.

The actuarial assumptions were changed since the preceding valuation as a result of the experience study conducted in 2005:

- The inflation assumption was changed from 4.5% to 3.5%.
- The mortality assumption for males was changed from 1983 GAM to 1983 GAM with one year set back.
- The withdrawal assumptions for Main were lowered during the five-year select period and the ultimate period for males and females at most ages.
- The retirements for Main were split by eligibility for Rule of 85 and other retirements.
- The assumption for spouse ages for the Main system was changed from males being five years older than females to males being four years older than females.

## EXHIBIT III

### ACTUARIAL ASSUMPTIONS AND COST METHODS

#### 1. Mortality Tables:

Healthy: 1983 Group Annuity Mortality Table, set back one year for males.

Disabled: Pension Benefit Guaranty Corporation Disabled Life Mortality Table for Individuals Receiving Social Security Disability Benefits.

#### 2. Annual Withdrawal Rates:

Different withdrawal rates are applied to the active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Rates for the Main System are detailed below. The withdrawal assumptions applied to the active members in the other groups are detailed in the valuation report for their retirement system.

Select and ultimate rates are used for active members of the Main System. During the select period (first five years of active employment) rates vary by entry age and year of employment. During the ultimate period (active employment after the first five years), rates vary by attained age and sex.

<i>Select Period</i>					
Age	Year of Employment				
	1	2	3	4	5
29 & Under	18%	15%	12%	10%	15%
30 - 39	12	12	11	10	11
40 & Over	10	10	8	7	6

<i>Ultimate Period</i>		
Age	Male	Female
20 - 24	12.0%	12.0%
25 - 29	8.0	10.0
30 - 34	5.0	8.0
35 - 39	3.5	5.0
40 - 44	3.0	4.0
45 - 49	2.5	3.5
50 & Over	2.0	3.0

**EXHIBIT III (continued)**

**3. Disability Incidence Rates:**

Different disability incidence rates are applied to the active members of PERS and the Highway Patrol. The disability rates applied to the Highway Patrol are described in the valuation report for their retirement system.

Sample rates for PERS are:

<u>Age</u>	<u>Males</u>	<u>Females</u>
20	0.03%	0.02%
30	0.05	0.03
40	0.09	0.07
50	0.25	0.18
60	0.68	0.49

**4. Retirement Rates for Active Members:**

Different retirement rates are applied to the active members of the Main System, Highway Patrol, Judges, National Guard and Law Enforcement. Retirement rates for the Main System are detailed below. The retirement rates applied to the active members of the other groups are detailed in the valuation report for their retirement system.

Annual rates for the Main System are as follows:

<u>Age</u>	<u>Rule of 85 Eligible Rate</u>	<u>All Other Retirements</u>	<u>Age</u>	<u>Rule of 85 Eligible Rate</u>	<u>All Other Retirements</u>
55	4%	4%	63	25%	20%
56	6	4	64	25	20
57	6	4	65	40	30
58	6	4	66	20	20
59	6	4	67	20	20
60	8	6	68	20	20
61	15	12	69	20	20
62	35	25	70	100	100

Age 64 and 20 years of service: 100%

**EXHIBIT III (continued)**

**5. Participation Rates:**

The percentage of eligible members electing coverage under the health insurance program and receiving the stipend varies with years of service. Rates are as follows:

<u>Main System, National Guard and Law Enforcement</u>		<u>Judges and Highway Patrol</u>	
<u>Years of Service</u>	<u>Participation Rate</u>	<u>Years of Service</u>	<u>Participation Rate</u>
3 - 4	25%	5 - 9	50%
5 - 9	50%	10 - 14	70%
10 - 14	70%	15 - 19	80%
15 - 19	80%	20 - 24	95%
20 - 24	95%	25 or more	100%
25 or more	100%		

**6. Joint and Survivor Option Election Rates:**

Main System, Judges, National Guard and Law Enforcement:

65% of male retirees and 20% of female retirees will elect a joint and survivor form of pension from the retirement system in which they participated.

Highway Patrol:

90% of retirees will elect a joint and survivor form of pension from the retirement system.

**7. Interest Rate:**

8.00% per annum, net of investment expenses.

**8. Annual Administrative Expenses:**

\$65,000.

**9. Inflation:**

3.50% per annum.

## EXHIBIT III (continued)

### 10. Marital Status:

Main System, Judges, National Guard and Law Enforcement:

At death, 75% of active male members and 60% of active female members are assumed to have spouses. Males are assumed to be five years older than their female spouses. For the Main system, males are assumed to be four years older than their female spouses.

Highway Patrol:

At death, 90% of all active members are assumed to have spouses. Males are assumed to be three years older than their female spouses.

### 11. Optional Defined Contribution Plan:

The actuarial assumptions used to determine the liabilities for members of the optional defined contribution plan are the same as those used for the Main System.

### 12. Actuarial Cost Method:

Projected Unit Credit Actuarial Cost Method. Unfunded actuarial accrued liability amortized in installments assuming 4.5% inflation assumption over a fixed period that ends on June 30, 2030.

### 13. Actuarial Value of Assets:

Adjusted market value that immediately recognizes interest and dividends. The procedure recognizes 20% of each year's total appreciation (depreciation) beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized.

## EXHIBIT IV

### SUMMARY OF PLAN PROVISIONS

This appendix summarizes the major benefit provisions of the North Dakota Public Employees Retirement System Retiree Health Insurance Credit Fund as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete statement of all plan provisions.

#### 1. Normal Retirement:

Age requirement:

Main System and Judges:	Age 65 or Rule of 85.
Highway Patrol:	Age 55 or Rule of 80.
National Guard:	Age 55.
Law Enforcement:	Age 55 or Rule of 85.

Service requirement:

Main System and Judges:	None.
Highway Patrol:	Ten years.
National Guard and Law Enforcement:	Three consecutive years.

Other requirements:

Participation in the North Dakota Uniform Group Insurance Program.

Benefit amount:

A monthly stipend equal to \$4.50 times service.

#### 2. Early Retirement:

Age requirement:

Main System and Judges:	Age 55.
Highway Patrol, National Guard and Law Enforcement:	Age 50.

Service requirement:

Highway Patrol, National Guard and Law Enforcement:	Three years.
Judges:	Five years.
Highway Patrol:	Ten years.



**EXHIBIT IV (continued)**

Benefit amount:

Main System and Judges:

The Normal Retirement Benefit reduced by 3% for retirements at age 64 and an additional 6% for each year by which retirement precedes age 64.

Benefits are unreduced upon the fulfillment of the Rule of 85.

Highway Patrol, National Guard and Law Enforcement:

The Normal Retirement Benefit reduced by 3% for retirements at age 54 and an additional 6% for each year by which retirement precedes age 54.

Benefits are unreduced upon the fulfillment of the Rule of 80.

**3. Disability Retirement:**

Age requirement:	None.
Service requirement:	Six months.
Other requirements:	As required by applicable pension plan.
Benefit amount:	Same as Normal Retirement Benefit.

**4. Pre-Retirement Death Benefit:**

Age requirement:	None.
Service requirement:	
Main System, National Guard and Law Enforcement:	Three years.
Judges:	Five years.
Highway Patrol:	Ten years.
Benefit amount:	Same as Normal Retirement Benefit accrued to the date of the member's death, payable for as long as benefits are payable to the spouse from the Retirement System under the standard option.

**EXHIBIT IV (continued)**

**5. Post-Retirement Death Benefit:**

Following a retired member's death, the Retiree Health Insurance Credit Fund will: (1) continue benefits to the member's spouse if the spouse continues to receive a monthly pension from member's Retirement System or (2) provide benefits to the member's spouse if the member selected a joint and survivor option from the Retiree Health Insurance Credit Fund.

**6. Alternative Options:**

If benefits from the member's Retirement System are paid under single life, level Social Security, or 10 or 20 year term certain options (without a continuation to the spouse after the certain period ends), actuarially reduced health credit benefits may be elected for the spouse. Alternative options in the Retiree Health Insurance Credit Fund include 50% and 100% joint and survivor annuities.

**7. Service:**

Members receive credit for each year and month of employment.

**8. Contributions:**

The employer contributes 1.00% of covered salaries and wages for participating employees.

**RETIREMENT PLAN FOR EMPLOYEES  
OF JOB SERVICE NORTH DAKOTA**

**Actuarial Valuation Report as of July 1, 2006**

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October 24, 2006

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

We are pleased to submit our report on the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2006. The report includes an analysis of last year's actuarial experience as well as the contribution requirements for the year beginning July 1, 2006.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems; and
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

We would be pleased to answer any questions you may have regarding the report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary

Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary

Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

/dqm

cc: Sparb Collins

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## I. INTRODUCTION AND SUMMARY

This report presents the results of the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2006.

The following table is a summary of significant results of this year's valuation compared with the results of the last valuation.

<u>Valuation Results</u>	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Scheduled contribution at end of year	\$0	\$0
Contribution as a percentage of payroll	0.00%	0.00%
Total payroll of employees included in cost calculations	\$1,922,664	\$2,226,912
Outstanding balance of frozen initial liability	\$0	\$0
Amortization of frozen initial liability (7 years remaining as of July 1, 2006)	\$0	\$0
Normal cost	\$0	\$0
Actuarial present value of projected benefits	\$69,967,001	\$63,324,714
Actuarial value of assets	\$70,628,705	\$69,294,225
Market value of assets	\$84,359,650	\$81,508,999

Effective July 1, 1999, the "scheduled contribution" will be zero as long as the plan's actuarial value of assets exceeds the actuarial present value of projected benefits. If, in the future, the liabilities of the plan exceed its assets, a "scheduled contribution" will be determined based on the funding policy adopted by the Employer.

The actuarial rate of return assumption was changed from 8.0% to 7.5% effective with the July 1, 2006 valuation. There were no changes to the plan provisions since the prior valuation.

## II. VALUATION RESULTS

The valuation was made with respect to the following data supplied to us by the Retirement Office staff.

1.	Employees active as of July 1, 2006, with total annual salaries of \$1,922,664.	
a.	Fully vested	44
b.	Not vested	<u>0</u>
c.	Total	44
2.	Employees inactive as of July 1, 2006 with vested rights	5
3.	Pensioners (including disableds) and beneficiaries as of July 1, 2006	115
4.	Pensioners and beneficiaries receiving annuities from The Travelers as of July 1, 2006	<u>106</u>
5.	Total Plan participants as of July 1, 2006	270

The actuarial liabilities as of the valuation date are as follows:

1.	Actuarial present value of benefits:	
a.	Active employees	\$17,687,989
b.	Inactive vested employees not in pay status	256,222
c.	Pensioners (including disableds) and beneficiaries*	<u>52,022,790</u>
d.	Total	\$69,967,001
2.	Actuarial value of assets (\$84,359,650 at market value)	70,628,705
3.	Outstanding balance as of July 1, 2006 of frozen initial liability	<u>0</u>
4.	Actuarial present value of future normal costs (item 1 – item 2 – item 3, not less than \$0)	\$0
5.	Actuarial present value of future salaries	\$7,893,768
6.	Normal cost percentage (item 4 divided by item 5)	0.00%
7.	Total salaries of employees below the assumed retirement age	\$1,922,664
8.	Normal cost (item 6 x item 7)	\$0

---

\* Including value of Cost-of-Living adjustments (COLAs) for pensioners with annuities from The Travelers.

The actuarial rate of return assumption was changed from 8.00% to 7.50% since the previous valuation. The benefit provisions are the same as those in the preceding valuation.

### **Actuarial Experience**

Since July 1, 2005, there was a net actuarial loss. The total actuarial loss for the plan was \$2.0 million, which is comprised of a demographic loss of \$0.9 million and an asset loss of \$1.1 million. An analysis of experience in key areas for the year ended June 30, 2006 follows.

### **Salary Increases**

The average salary increase for participants as of July 1, 2006 who were included in the last valuation was 4.6% compared to the 5.0% salary scale assumption. The result is an actuarial gain.

### **Post-Retirement Cost-of-Living Adjustment (COLA)**

The average COLA for participants and beneficiaries paid by the retirement plan as of July 1, 2006 who were included in the last valuation was 4.10% compared to the 5.00% COLA assumption. The result is an actuarial gain.

### **Rate of Return**

The investment rate of return on an actuarial basis was approximately 7.86% for the year ended June 30, 2006. This return is lower than the assumed rate of return of 8.0%, resulting in an actuarial loss. The rate of return on a market value basis was 7.18%. The assumed rate of return has been changed to 7.50% effective July 1, 2006.

Table 1 summarizes demographic characteristics for plan participants.

Table 2 presents a distribution of active participants by age and credited service.

Table 3 presents a reconciliation of participant data.

Table 4 summarizes the changes in plan net assets.

Table 5 is a summary of plan assets on a market basis.

Table 6 shows the determination of the actuarial value of assets.

Table 7 shows the development of the NPO and ARC pursuant to GASB 27.



**Table 1****Plan Coverage and Selected Data  
This Year and Preceding Year**

<b>Category</b>	<b>July 1, 2006</b>	<b>July 1, 2005</b>	<b>Percent Change</b>
Active participants:			
Number	44	52	(15.4)%
Average age	55.1	54.5	--
Average service	30.5	29.8	--
Payroll	\$1,922,664	\$2,226,912	(13.7)
Average pay	\$43,697	\$42,825	2.0
Inactive participants with rights to immediate or deferred pension	5	5	--
Pensioners (including disableds) and beneficiaries:			
Number paid by retirement plan	115	108	6.5
Total annual benefits	\$2,762,934	\$2,456,937	12.5
Average annual benefit	\$24,026	\$22,749	5.6
Number of Travelers annuitants	106	109	(2.8)
Total annual benefits from plan (COLAs)	\$509,631	\$451,169	13.0
Average annual benefit from plan (COLAs)	\$4,808	\$4,139	16.2

**Table 2**

**Active Employees Included in the  
July 1, 2006 Valuation by Age and Credited Service**

Age	Total	Years of Credited Service			
		0 - 24	25 - 29	30 - 34	35 and Over
Total	44	-	21	20	3
45 - 49	3	-	3	-	-
50 - 54	20	-	9	10	1
55 - 59	17	-	7	9	1
60 & over	4	-	2	1	1

**Table 3**

**Reconciliation of Participant Data**

	<b>Active Participants</b>	<b>Vested Former Participants</b>	<b>Pay Status Participants Paid From Plan Assets</b>	<b>Pay Status Participants Paid From The Travelers</b>	<b>Total</b>
Number as of July 1, 2005	52	5	108	109	274
Retirements	-8	0	8	0	0
Beneficiaries	0	0	1	0	1
Certain period expired	0	0	-2	0	-2
Died with beneficiary	0	0	0	0	0
Died without beneficiary	<u>0</u>	<u>0</u>	<u>0</u>	<u>-3</u>	<u>-3</u>
Number as of July 1, 2006	44	5	115	106	270

**Table 4**

**Statement of Changes in Plan Net Assets (Market Value)**

	<b>July 1, 2006</b>	<b>July 1, 2005</b>
<b>1. Additions</b>		
(a) Contributions	\$ 150,633	163,594
(b) Investment Income		
(i) Interest and Dividends	\$ 1,916,260	\$ 1,682,114
(ii) Net Appreciation/(Depreciation)	4,905,261	9,452,747
(iii) Net Securities Lending Income	17,719	17,556
(iv) Total Investment Income	\$ 6,839,240	\$ 11,152,417
(v) Less Investment Expenses	(1,073,229)	(268,358)
(vi) Net Investment Income	\$ 5,766,011	\$ 10,884,059
(c) Repurchase Service Credit	\$ 25,927	\$ 1,143
(d) Total Additions	\$ 5,942,571	\$ 11,048,796
<b>2. Deductions</b>		
(a) Benefit Payments	\$ (3,062,585)	\$ (2,817,963)
(b) Administrative Expenses	(29,335)	(24,019)
(c) Total Deductions	\$ (3,091,920)	\$ (2,841,982)
<b>3. Net Increase</b>	\$ 2,850,651	\$ 8,206,814
<b>4. Net Assets Held in Trust for Pension Benefits</b>		
(a) Beginning of Year	\$ 81,508,999	\$ 73,302,185
(b) End of Year	\$ 84,359,650	\$ 81,508,999

**Table 5**

**Statement of Plan Net Assets**

	<b>July 1, 2006</b>	<b>July 1, 2005</b>
<b>1. Assets</b>		
(a) Cash and Cash Equivalents	\$ 100,613	\$ 451,414
(b) Receivables		
(i) Contributions	\$ 12,133	\$ 12,740
(ii) Interest	241,253	170,656
(iii) Due from Fiduciary Funds	17,474	5,790
(iv) Total Receivables	<u>\$ 270,860</u>	<u>\$ 189,186</u>
(c) Investments, At Fair Value		
(i) Equities	\$ 33,697,071	\$ 32,471,364
(ii) Fixed Income	50,348,223	48,406,756
(iii) Other	12,162,923	10,604,707
(iv) Total Investments	<u>\$ 96,208,217</u>	<u>\$ 91,482,827</u>
(d) Total Assets	<u>\$ 96,579,690</u>	<u>\$ 92,123,427</u>
<b>2. Liabilities</b>		
(a) Accounts Payable	\$ (49,329)	\$ (47,795)
(b) Due to Fiduciary Funds	(3,750)	0
(c) Due to Proprietary Funds	(2,025)	0
(d) Due to Other State Agencies	(2,013)	(2,001)
(e) Securities Lending Collateral (SIB)	(12,162,923)	(10,564,632)
(f) Total Liabilities	<u>\$ (12,220,040)</u>	<u>\$ (10,614,428)</u>
<b>3. Net Assets for Pension Benefits</b>	<u><b>\$ 84,359,650</b></u>	<u><b>\$ 81,508,999</b></u>

**Table 6****Determination of the Actuarial Value of Assets as of July 1, 2006**

1.	Actuarial Value of Assets as of July 1, 2005	\$	69,294,225
2.	Increases During the Year		
	(a) Contributions	\$	150,633
3.	Decreases During the Year		
	(a) Benefit Payments	\$	(3,062,585)
	(b) Administrative Expenses		(29,335)
	(c) Investment Expenses		(1,073,229)
	(d) Total Decreases During the Year	\$	(4,165,149)
4.	Actual Return - Interest Dividends	\$	1,916,260
5.	Preliminary Actuarial Value at End of Year [(1) + (2) + (3) + (4)]	\$	67,195,969
6.	Market Value at End of Year	\$	84,359,650
7.	Adjustment Toward Market Value (20% of [(6) - (5)])	\$	3,432,736
8.	Adjustment to be Within 20% of Market Value	\$	0
9.	Actuarial Value of Assets as of July 1, 2006 [(5) + (7) + (8)]	\$	70,628,705
10.	Actuarial Value as a Percentage of Market Value [(9) / (6)]		83.7%

Table 7

Development of the Net Pension Obligation (NPO) and the Annual Required Contribution (ARC) Pursuant to GASB 27

Year Ended	Employer Annual Required Contribution (a)	Employer Amount Contributed (b)	Interest on NPO* (h) x 8% (c)	ARC Adjustment* (h) / (e) (d)	Amortization Factor** (e)	Pension Cost (a) + (c) - (d) (f)	Change in NPO (f) - (b) (g)	NPO Balance NPO + (g) (h)
06/30/1998	\$ -	\$ 577,936	\$ -	\$ -	12.1584	\$ -	\$ (577,936)	\$ (577,936)
06/30/1999	-	1,110,818	(46,235)	(47,534)	12.1584	1,299	(1,109,519)	(1,687,455)
06/30/2000	-	-	(134,996)	(138,789)	12.1584	3,793	3,793	(1,683,662)
06/30/2001	-	-	(134,693)	(138,477)	12.1584	3,784	3,784	(1,679,878)
06/30/2002	-	-	(134,390)	(138,166)	12.1584	3,776	3,776	(1,676,102)
06/30/2003	-	-	(134,088)	(137,855)	12.1584	3,767	3,767	(1,672,335)
06/30/2004	-	-	(133,787)	(137,546)	12.1584	3,759	3,759	(1,668,576)
06/30/2005	-	-	(133,486)	(137,236)	12.1584	3,750	3,750	(1,664,826)
06/30/2006	-	-	(133,186)	(136,928)	12.1584	3,742	3,742	(1,661,084)

\* Not applicable for the year ending June 30, 1998, since NPO as of July 1, 1997 is presumed to be \$0.

\*\* Amortization Factor for 30 year amortization, 8% interest.

The funding method used in this plan is the aggregate method, which in accordance with GASB 25 does not require a Schedule of Funding Progress disclosure.

### **III. ACTUARIAL METHODS AND ACTUARIAL ASSUMPTIONS**

#### **Actuarial Cost Method**

There is a wide range of funding methods that are considered acceptable by the actuarial profession, which are recognized by accountants, and that meet government standards. The Frozen Initial Liability Actuarial Cost Method is the method currently used for the Retirement Plan for Employees of Job Service North Dakota.

The “annual contribution” under this method is the normal cost plus the payment required to amortize the unfunded initial actuarial accrued liability over a selected period of years. The normal cost is determined by calculating the total value of all future benefits, subtracting the outstanding balance (if any) of the unfunded initial actuarial accrued liability, subtracting the actuarial value of assets, and determining payments (not less than zero) that are a level percent of pay over the future working lifetime of all participants. In the absence of an unfunded initial actuarial accrued liability, The Frozen Initial Liability Actuarial Cost Method is the same as the Aggregate Cost Method.

The “scheduled contribution” will be determined when the plan is not in surplus and will be based on a funding policy adopted by the Employer.

#### **Asset Valuation Method**

The asset value indicates the portion of the benefits already funded. The method used to determine this value is called the actuarial asset valuation method. The actuarial asset valuation method is as follows:

The asset value is adjusted toward market value by adding to the “preliminary asset value”, 20% of the difference between the market value and the preliminary asset value. The preliminary asset value is the actuarial asset value at the beginning of the year plus net new money. Net new money is the sum of contributions, dividends, and interest, less the sum of benefit payments, administrative expenses and investment fees. If necessary, the actuarial value is further adjusted to be within 20% of market value.



## Actuarial Assumptions

### **Mortality tables:**

Healthy: 1994 Group Annuity Mortality Table (sample rates below).

Disabled: 1983 Railroad Retirement Board Disabled Life Mortality Table.

**Disability incidence:** Sample rates shown below.

**Withdrawal rates:** Sample rates shown below.

<u>Age</u>	<u>Rates (%)</u>			
	<u>Mortality</u>		<u>Disability</u>	<u>Withdrawal</u>
	<u>Male</u>	<u>Female</u>	<u>Incidence</u>	
20	0.05	0.03	0.06	5.44
25	0.07	0.03	0.09	5.29
30	0.08	0.04	0.11	5.07
35	0.09	0.05	0.15	4.70
40	0.11	0.07	0.22	4.19
45	0.16	0.10	0.36	3.54
50	0.26	0.14	0.61	2.48
55	0.44	0.23	1.01	0.94
60	0.80	0.44	1.63	0.09

Withdrawal rates end when first eligible for the earlier of optional or normal retirement.

### **Retirement age:**

75% of active participants are assumed to retire when first eligible for optional retirement, and the remaining participants retire at normal retirement. If currently older than first eligible optional retirement age, retirement assumed to occur at normal retirement, or current age, if older.

100% of inactive vested participants are assumed to retire at first optional retirement age.

<b>Salary scale:</b>	5.0% per year.
<b>Post-retirement cost-of-living adjustment:</b>	5.0% per year.
<b>Percent married:</b>	85% of all active and inactive vested participants are assumed to be married.
<b>Age of spouse:</b>	Females are assumed to be four years younger than males.
<b>Rate of return:</b>	7.5% per year, compounded annually, net of investment and administrative expenses.
<b>Future benefit accruals:</b>	One year of credited service per year per active employee included in the valuation.

#### IV. SUMMARY OF PLAN PROVISIONS

This section summarizes the major provisions of the plan as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete description of all plan provisions.

##### Normal retirement

Age requirement:	65.
Service requirement:	None.
Benefit:	Average monthly earnings multiplied by the sum of: <ul style="list-style-type: none"><li>a. 1.50% times credited service up to five years, plus</li><li>b. 1.75% times credited service between six and ten years, plus</li><li>c. 2.00% times credited service in excess of ten years.</li></ul> Average monthly earnings - monthly average earnings during the highest three consecutive years of employment.

##### Optional retirement

Age and service requirements:	Age 62 with five years of credited service, or Age 60 with twenty years of credited service, or Age 55 with thirty years of credited service.
Benefit:	Accrued normal retirement benefit.

##### Early retirement

Age requirement:	Ten years before normal or optional retirement age.
Service requirement:	Same as optional retirement.
Benefit:	Accrued normal retirement benefit, reduced if payments begin before normal or optional retirement.

**Disability**

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Greater of accrued normal retirement benefit or 40% of average monthly earnings.

**Vesting**

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Accrued normal retirement benefit payable at normal or optional retirement. After attainment of early retirement age, reduced benefits may be paid.

Employees who meet the requirements for a vested benefit may elect to receive a return of their accumulated employee contributions (including interest at 4% per year) in lieu of all other benefits under the plan.

**Return of accumulated employee contributions**

Employees who do not meet the requirements for a vested benefit will receive a return of their accumulated employee contributions (including interest at 4% per year).

## **Pre-retirement death benefits**

### Married participants

Surviving spouse's benefit:

Age requirement:	None.
Service requirement:	None.
Benefit:	55% of the greater of (a) or (b).  (a) Accrued normal retirement benefit.  (b) The lesser of (1) or (2). (1) 40% of average monthly earnings. (2) Normal retirement benefit based on credited service to age 60.

Children's benefit:

Provided for children under age 18 (age 22 if a full-time student) - note: the actuarial valuation does not consider benefits for expected surviving children.

### Single participants with no eligible children

120 payment guarantee:

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Accrued normal retirement benefit payable for 120 months. Not payable if surviving spouse or children's benefit is payable.

Lump sum benefit:

Age requirement: None.

Service requirement: None.

Benefit: Accumulated employee contributions (including interest at 4% per year). Not payable if the surviving spouse, children's benefit or 120 payment guarantee is in effect.

**Post-retirement death benefits**

Based on form of payment elected by the pensioner.

**Post-retirement cost-of-living adjustment**

Based on the Consumer Price Index.

**Participation**

Plan participant before October 1, 1980.

**Credited service**

Monthly salaried employment in a probationary or permanent status including only: service for which contributions were made (including purchased service), eligible military service and unused sick leave.

**Contribution rate**

Employee: 7% of average monthly earnings (4% picked up by employer).  
Employer: remaining scheduled cost, if any.

*old version*

**RETIREMENT PLAN FOR EMPLOYEES  
OF JOB SERVICE NORTH DAKOTA**

**Actuarial Valuation Report as of July 1, 2006**

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October 11, 2006

Board Members  
North Dakota Public Employees Retirement System  
Bismarck, North Dakota

Members of the Board:

We are pleased to submit our report on the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2006. The report includes an analysis of last year's actuarial experience as well as the contribution requirements for the year beginning July 1, 2006.

The report's actuarial content was prepared in accordance with generally accepted actuarial principles under our direction. The valuation was:

- Prepared by qualified actuaries who are members of the American Academy of Actuaries and who have experience in performing valuations for public retirement systems; and
- Prepared in accordance with standards of practice prescribed by the Actuarial Standards Board.

We wish to thank the Retirement Office staff for their cooperation in providing us with the participant census data and financial information necessary to prepare the valuation.

We would be pleased to answer any questions you may have regarding the report.

Sincerely,

Thomas D. Levy, FSA, FCIA, MAAA, EA  
Senior Vice President and Chief Actuary

Michael Moehle, FSA, MAAA, EA  
Vice President and Actuary

Brad Ramirez, FSA, MAAA, EA  
Consulting Actuary

/dqm

cc: Sparb Collins

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## I. INTRODUCTION AND SUMMARY

This report presents the results of the actuarial valuation of the Retirement Plan for Employees of Job Service North Dakota as of July 1, 2006.

The following table is a summary of significant results of this year's valuation compared with the results of the last valuation.

<u>Valuation Results</u>	<u>July 1, 2006</u>	<u>July 1, 2005</u>
Scheduled contribution at end of year	\$763,071	\$0
Contribution as a percentage of payroll	37.09%	0.00%
Total payroll of employees included in cost calculations	\$1,922,664	\$2,226,912
Outstanding balance of frozen initial liability	\$2,376,168	\$0
Amortization of frozen initial liability (7 years remaining as of July 1, 2006)	\$412,061	\$0
Normal cost	\$301,089	\$0
Actuarial present value of projected benefits	\$74,240,992	\$63,324,714
Actuarial value of assets	\$70,628,705	\$69,294,225
Market value of assets	\$84,359,650	\$81,508,999

Effective July 1, 1999, the "scheduled contribution" will be zero as long as the plan's actuarial value of assets exceeds the actuarial present value of projected benefits. Since the liabilities of the plan exceed its assets as of July 1, 2006, a "scheduled contribution" will be determined based on the funding policy adopted by the Employer.

The actuarial rate of return assumption was changed from 8.0% to 7.0% effective with the July 1, 2006 valuation. There were no changes to the plan provisions since the prior valuation.

## II. VALUATION RESULTS

The valuation was made with respect to the following data supplied to us by the Retirement Office staff.

1. Employees active as of July 1, 2006, with total annual salaries of \$1,922,664.	
a. Fully vested	44
b. Not vested	0
c. Total	44
2. Employees inactive as of July 1, 2006 with vested rights	5
3. Pensioners (including disableds) and beneficiaries as of July 1, 2006	115
4. Pensioners and beneficiaries receiving annuities from The Travelers as of July 1, 2006	106
5. Total Plan participants as of July 1, 2006	270

The actuarial liabilities as of the valuation date are as follows:

1. Actuarial present value of benefits:	
a. Active employees	\$19,094,262
b. Inactive vested employees not in pay status	278,293
c. Pensioners (including disableds) and beneficiaries*	54,868,437
d. Total	\$74,240,992
2. Actuarial value of assets (\$84,359,650 at market value)	70,628,705
3. Outstanding balance as of July 1, 2006 of frozen initial liability**	2,376,168
4. Actuarial present value of future normal costs (item 1 – item 2 – item 3, not less than \$0)	\$1,236,119
5. Actuarial present value of future salaries	\$7,893,768
6. Normal cost percentage (item 4 divided by item 5)	15.66%
7. Total salaries of employees below the assumed retirement age	\$1,922,664
8. Normal cost (item 6 x item 7)	\$301,089

---

\* Including value of Cost-of-Living adjustments (COLAs) for pensioners with annuities from The Travelers.

\*\*Resulting from the change in actuarial rate of return assumption, not greater than the unfunded accrued liability.

The actuarial rate of return assumption was changed from 8.00% to 7.00% since the previous valuation. The benefit provisions are the same as those in the preceding valuation.

### **Actuarial Experience**

Since July 1, 2005, there was a net actuarial loss. The total actuarial loss for the plan was \$2.0 million, which is comprised of a demographic loss of \$0.9 million and an asset loss of \$1.1 million. An analysis of experience in key areas for the year ended June 30, 2006 follows.

### **Salary Increases**

The average salary increase for participants as of July 1, 2006 who were included in the last valuation was 4.6% compared to the 5.0% salary scale assumption. The result is an actuarial gain.

### **Post-Retirement Cost-of-Living Adjustment (COLA)**

The average COLA for participants and beneficiaries paid by the retirement plan as of July 1, 2006 who were included in the last valuation was 4.10% compared to the 5.0% COLA assumption. The result is an actuarial gain.

### **Rate of Return**

The investment rate of return on an actuarial basis was approximately 7.86% for the year ended June 30, 2006. This return is lower than the assumed rate of return of 8.0%, resulting in an actuarial loss. The rate of return on a market value basis was 7.18%. The assumed rate of return has been changed to 7.00% effective July 1, 2006.

- Table 1 summarizes demographic characteristics for plan participants.
- Table 2 presents a distribution of active participants by age and credited service.
- Table 3 presents a reconciliation of participant data.
- Table 4 summarizes the changes in plan net assets.
- Table 5 is a summary of plan assets on a market basis.
- Table 6 shows the determination of the actuarial value of assets.
- Table 7 shows the development of the NPO and ARC pursuant to GASB 27.

**Table 1**

**Plan Coverage and Selected Data  
This Year and Preceding Year**

<b>Category</b>	<b>July 1, 2006</b>	<b>July 1, 2005</b>	<b>Percent Change</b>
Active participants:			
Number	44	52	(15.4)%
Average age	55.1	54.5	--
Average service	30.5	29.8	--
Payroll	\$1,922,664	\$2,226,912	(13.7)
Average pay	\$43,697	\$42,825	2.0
Inactive participants with rights to immediate or deferred pension	5	5	--
Pensioners (including disableds) and beneficiaries:			
Number paid by retirement plan	115	108	6.5
Total annual benefits	\$2,762,934	\$2,456,937	12.5
Average annual benefit	\$24,026	\$22,749	5.6
Number of Travelers annuitants	106	109	(2.8)
Total annual benefits from plan (COLAs)	\$509,631	\$451,169	13.0
Average annual benefit from plan (COLAs)	\$4,808	\$4,139	16.2

**Table 2**

**Active Employees Included in the  
July 1, 2006 Valuation by Age and Credited Service**

Age	Total	Years of Credited Service			
		0 - 24	25 - 29	30 - 34	35 and Over
Total	44	-	21	20	3
45 - 49	3	-	3	-	-
50 - 54	20	-	9	10	1
55 - 59	17	-	7	9	1
60 & over	4	-	2	1	1

Table 3

Reconciliation of Participant Data

	Active Participants	Vested Former Participants	Pay Status Participants Paid From Plan Assets	Pay Status Participants Paid From The Travelers	Total
Number as of July 1, 2005	52	5	108	109	274
Retirements	-8	0	8	0	0
Beneficiaries	0	0	1	0	1
Certain period expired	0	0	-2	0	-2
Died with beneficiary	0	0	0	0	0
Died without beneficiary	<u>0</u>	<u>0</u>	<u>0</u>	<u>-3</u>	<u>-3</u>
Number as of July 1, 2006	44	5	115	106	270

**Table 4**

**Statement of Changes in Plan Net Assets (Market Value)**

	<b>July 1, 2006</b>	<b>July 1, 2005</b>
<b>1. Additions</b>		
(a) Contributions	\$ 150,633	163,594
(b) Investment Income		
(i) Interest and Dividends	\$ 1,916,260	\$ 1,682,114
(ii) Net Appreciation/(Depreciation)	4,905,261	9,452,747
(iii) Net Securities Lending Income	17,719	17,556
(iv) Total Investment Income	\$ 6,839,240	\$ 11,152,417
(v) Less Investment Expenses	(1,073,229)	(268,358)
(vi) Net Investment Income	\$ 5,766,011	\$ 10,884,059
(c) Repurchase Service Credit	\$ 25,927	\$ 1,143
(d) Total Additions	\$ 5,942,571	\$ 11,048,796
<b>2. Deductions</b>		
(a) Benefit Payments	\$ (3,062,585)	\$ (2,817,963)
(b) Administrative Expenses	(29,335)	(24,019)
(c) Total Deductions	\$ (3,091,920)	\$ (2,841,982)
<b>3. Net Increase</b>	\$ 2,850,651	\$ 8,206,814
<b>4. Net Assets Held in Trust for Pension Benefits</b>		
(a) Beginning of Year	\$ 81,508,999	\$ 73,302,185
(b) End of Year	\$ 84,359,650	\$ 81,508,999



**Table 5**

**Statement of Plan Net Assets**

	<b>July 1, 2006</b>	<b>July 1, 2005</b>
<b>1. Assets</b>		
(a)    Cash and Cash Equivalents	\$      100,613	\$      451,414
(b)    Receivables		
(i)    Contributions	\$      12,133	\$      12,740
(ii)   Interest	241,253	170,656
(iii)  Due from Fiduciary Funds	17,474	5,790
(iv)  Total Receivables	\$      270,860	\$      189,186
(c)    Investments, At Fair Value		
(i)    Equities	\$   33,697,071	\$   32,471,364
(ii)   Fixed Income	50,348,223	48,406,756
(iii)  Other	12,162,923	10,604,707
(iv)  Total Investments	\$   96,208,217	\$   91,482,827
(d)    Total Assets	\$   96,579,690	\$   92,123,427
<b>2. Liabilities</b>		
(a)    Accounts Payable	\$      (49,329)	\$      (47,795)
(b)    Due to Fiduciary Funds	(3,750)	0
(c)    Due to Proprietary Funds	(2,025)	0
(d)    Due to Other State Agencies	(2,013)	(2,001)
(e)    Securities Lending Collateral (SIB)	(12,162,923)	(10,564,632)
(f)    Total Liabilities	\$   (12,220,040)	\$   (10,614,428)
<b>3. Net Assets for Pension Benefits</b>	<b>\$   84,359,650</b>	<b>\$   81,508,999</b>

**Table 6****Determination of the Actuarial Value of Assets as of July 1, 2006**

1.	Actuarial Value of Assets as of July 1, 2005	\$	69,294,225
2.	Increases During the Year		
	(a) Contributions	\$	150,633
3.	Decreases During the Year		
	(a) Benefit Payments	\$	(3,062,585)
	(b) Administrative Expenses		(29,335)
	(c) Investment Expenses		(1,073,229)
	(d) Total Decreases During the Year	\$	(4,165,149)
4.	Actual Return - Interest Dividends	\$	1,916,260
5.	Preliminary Actuarial Value at End of Year [(1) + (2) + (3) + (4)]	\$	67,195,969
6.	Market Value at End of Year	\$	84,359,650
7.	Adjustment Toward Market Value (20% of [(6) - (5)])	\$	3,432,736
8.	Adjustment to be Within 20% of Market Value	\$	0
9.	Actuarial Value of Assets as of July 1, 2006 [(5) + (7) + (8)]	\$	70,628,705
10.	Actuarial Value as a Percentage of Market Value [(9) / (6)]		83.7%

Table 7

Development of the Net Pension Obligation (NPO) and the Annual Required Contribution (ARC) Pursuant to GASB 27

Year Ended	Employer Annual Required Contribution (a)	Employer Amount Contributed (b)	Interest on NPO* (h) x 8% (c)	ARC Adjustment* (h) / (e) (d)	Amortization Factor** (e)	Pension Cost (a) + (c) - (d) (f)	Change in NPO (f) - (b) (g)	NPO Balance NPO + (g) (h)
06/30/1998	\$ -	\$ 577,936	\$ -	\$ -	12.1584	\$ -	\$ (577,936)	\$ (577,936)
06/30/1999	-	1,110,818	(46,235)	(47,534)	12.1584	1,299	(1,109,519)	(1,687,455)
06/30/2000	-	-	(134,996)	(138,789)	12.1584	3,793	3,793	(1,683,662)
06/30/2001	-	-	(134,693)	(138,477)	12.1584	3,784	3,784	(1,679,878)
06/30/2002	-	-	(134,390)	(138,166)	12.1584	3,776	3,776	(1,676,102)
06/30/2003	-	-	(134,088)	(137,855)	12.1584	3,767	3,767	(1,672,335)
06/30/2004	-	-	(133,787)	(137,546)	12.1584	3,759	3,759	(1,668,576)
06/30/2005	-	-	(133,486)	(137,236)	12.1584	3,750	3,750	(1,664,826)
06/30/2006	-	-	(133,186)	(136,928)	12.1584	3,742	3,742	(1,661,084)

\* Not applicable for the year ending June 30, 1998, since NPO as of July 1, 1997 is presumed to be \$0.

\*\* Amortization Factor for 30 year amortization, 8% interest.

The funding method used in this plan is the aggregate method, which in accordance with GASB 25 does not require a Schedule of Funding Progress disclosure.

### III. ACTUARIAL METHODS AND ACTUARIAL ASSUMPTIONS

#### **Actuarial Cost Method**

There is a wide range of funding methods that are considered acceptable by the actuarial profession, which are recognized by accountants, and that meet government standards. The Frozen Initial Liability Actuarial Cost Method is the method currently used for the Retirement Plan for Employees of Job Service North Dakota.

The “annual contribution” under this method is the normal cost plus the payment required to amortize the unfunded initial actuarial accrued liability over a selected period of years. The normal cost is determined by calculating the total value of all future benefits, subtracting the outstanding balance (if any) of the unfunded initial actuarial accrued liability, subtracting the actuarial value of assets, and determining payments (not less than zero) that are a level percent of pay over the future working lifetime of all participants. In the absence of an unfunded initial actuarial accrued liability, The Frozen Initial Liability Actuarial Cost Method is the same as the Aggregate Cost Method.

The “scheduled contribution” will be determined when the plan is not in surplus and will be based on a funding policy adopted by the Employer.

#### **Asset Valuation Method**

The asset value indicates the portion of the benefits already funded. The method used to determine this value is called the actuarial asset valuation method. The actuarial asset valuation method is as follows:

The asset value is adjusted toward market value by adding to the “preliminary asset value”, 20% of the difference between the market value and the preliminary asset value. The preliminary asset value is the actuarial asset value at the beginning of the year plus net new money. Net new money is the sum of contributions, dividends, and interest, less the sum of benefit payments, administrative expenses and investment fees. If necessary, the actuarial value is further adjusted to be within 20% of market value.

## Actuarial Assumptions

### **Mortality tables:**

Healthy: 1994 Group Annuity Mortality Table (sample rates below).

Disabled: 1983 Railroad Retirement Board Disabled Life Mortality Table.

**Disability incidence:** Sample rates shown below.

**Withdrawal rates:** Sample rates shown below.

<u>Age</u>	<u>Rates (%)</u>			
	<u>Mortality</u>		<u>Disability</u>	<u>Withdrawal</u>
	<u>Male</u>	<u>Female</u>	<u>Incidence</u>	
20	0.05	0.03	0.06	5.44
25	0.07	0.03	0.09	5.29
30	0.08	0.04	0.11	5.07
35	0.09	0.05	0.15	4.70
40	0.11	0.07	0.22	4.19
45	0.16	0.10	0.36	3.54
50	0.26	0.14	0.61	2.48
55	0.44	0.23	1.01	0.94
60	0.80	0.44	1.63	0.09

Withdrawal rates end when first eligible for the earlier of optional or normal retirement.

### **Retirement age:**

75% of active participants are assumed to retire when first eligible for optional retirement, and the remaining participants retire at normal retirement. If currently older than first eligible optional retirement age, retirement assumed to occur at normal retirement, or current age, if older.

100% of inactive vested participants are assumed to retire at first optional retirement age.

<b>Salary scale:</b>	5.0% per year.
<b>Post-retirement cost-of-living adjustment:</b>	5.0% per year.
<b>Percent married:</b>	85% of all active and inactive vested participants are assumed to be married.
<b>Age of spouse:</b>	Females are assumed to be four years younger than males.
<b>Rate of return:</b>	7.0% per year, compounded annually, net of investment and administrative expenses.
<b>Future benefit accruals:</b>	One year of credited service per year per active employee included in the valuation.

#### IV. SUMMARY OF PLAN PROVISIONS

This section summarizes the major provisions of the plan as included in the valuation. It is not intended to be, nor should it be, interpreted as a complete description of all plan provisions.

##### Normal retirement

Age requirement:	65.
Service requirement:	None.
Benefit:	Average monthly earnings multiplied by the sum of: <ul style="list-style-type: none"><li>a. 1.50% times credited service up to five years, plus</li><li>b. 1.75% times credited service between six and ten years, plus</li><li>c. 2.00% times credited service in excess of ten years.</li></ul> Average monthly earnings - monthly average earnings during the highest three consecutive years of employment.

##### Optional retirement

Age and service requirements:	Age 62 with five years of credited service, or Age 60 with twenty years of credited service, or Age 55 with thirty years of credited service.
Benefit:	Accrued normal retirement benefit.

##### Early retirement

Age requirement:	Ten years before normal or optional retirement age.
Service requirement:	Same as optional retirement.
Benefit:	Accrued normal retirement benefit, reduced if payments begin before normal or optional retirement.

**Disability**

Age requirement: None.

Service requirement: Five years of credited service.

Benefit: Greater of accrued normal retirement benefit or 40% of average monthly earnings.

**Vesting**

Age requirement: None.

Service requirement: Five years of credited service.

Benefit: Accrued normal retirement benefit payable at normal or optional retirement. After attainment of early retirement age, reduced benefits may be paid.

Employees who meet the requirements for a vested benefit may elect to receive a return of their accumulated employee contributions (including interest at 4% per year) in lieu of all other benefits under the plan.

**Return of accumulated employee contributions**

Employees who do not meet the requirements for a vested benefit will receive a return of their accumulated employee contributions (including interest at 4% per year).



## **Pre-retirement death benefits**

### Married participants

Surviving spouse's benefit:

Age requirement:	None.
Service requirement:	None.
Benefit:	55% of the greater of (a) or (b).  (a) Accrued normal retirement benefit.  (b) The lesser of (1) or (2). (1) 40% of average monthly earnings. (2) Normal retirement benefit based on credited service to age 60.

Children's benefit: Provided for children under age 18 (age 22 if a full-time student) - note: the actuarial valuation does not consider benefits for expected surviving children.

### Single participants with no eligible children

120 payment guarantee:

Age requirement:	None.
Service requirement:	Five years of credited service.
Benefit:	Accrued normal retirement benefit payable for 120 months. Not payable if surviving spouse or children's benefit is payable.

Lump sum benefit:

Age requirement: None.

Service requirement: None.

Benefit: Accumulated employee contributions (including interest at 4% per year). Not payable if the surviving spouse, children's benefit or 120 payment guarantee is in effect.

**Post-retirement death benefits**

Based on form of payment elected by the pensioner.

**Post-retirement cost-of-living adjustment**

Based on the Consumer Price Index.

**Participation**

Plan participant before October 1, 1980.

**Credited service**

Monthly salaried employment in a probationary or permanent status including only: service for which contributions were made (including purchased service), eligible military service and unused sick leave.

**Contribution rate**

Employee: 7% of average monthly earnings  
(4% picked up by employer).  
Employer: remaining scheduled cost, if any.

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