December 2009

State Patrol Retirement Fund

Actuarial Valuation Report as of July 1, 2009

MERCER

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Contents

Highlights

This report has been prepared by Mercer for the Minnesota State Retirement System to:

- Present the results of a valuation of State Patrol Retirement Fund as of July 1, 2009.
- Review experience under the Plan for the year ended June 30, 2009.
- Provide reporting and disclosure information for governmental agencies and other interested parties.

Contributions

The following table summarizes important contribution information as described in the "Development of Costs" section.

	Actuarial Valuation as of	
Contributions	**July 1, 2009**	**July 1, 2008**
Statutory Contributions – Chapter 352B (% of Payroll)	26.00%	24.40%
Required Contributions – Chapter 356 (% of Payroll)	38.16%	34.49%
Sufficiency / (Deficiency)	(12.16%)	(10.09%)

Despite the 1.60% of pay increase in statutory contribution rates, the contribution deficiency increased from (10.09%) of payroll to (12.16%) of payroll. On a market value of assets basis, the plan moved from a deficiency of (10.62%) of payroll to a deficiency of (24.21%) of payroll. The primary reasons for the increased deficiency are the less than expected return on assets and the impact of insufficient contributions.

Without a change in contribution rates, or favorable actuarial experience, the funded status will continue to deteriorate.

The "Plan Assets" section provides detail on the plan assets used for the valuation including a development of the actuarial value of assets. The market value of assets earned (19.2%) for the plan year ending June 30, 2009. **Only 20% of the asset loss will be recognized in the actuarial value of assets. The reminder will be recognized over the next four years.** The actuarial value of assets earned 3.2% for the plan year ending June 30, 2009 as compared to the assumed rate of 8.50%.

Participant reconciliation and statistics are detailed in the "Participant Data" section. The "Actuarial Basis" section includes a summary of plan provisions and actuarial methods and assumptions used for the calculations in this report. The "Plan Accounting" sections detail the required accounting information for the Plan under GASB Statement No. 25 (as amended by GASB 50).

There were no changes in actuarial assumptions since the July 1, 2008 valuation. Changes in plan provisions and valuation methods are reflected in this report and summarized in the Actuarial Basis section.

Principal Valuation Results

A summary of principal valuation results from the current valuation and the prior valuation follows. Any changes in plan provisions, actuarial assumptions or valuation methods and procedures between the two valuations are described after the summary.

	Actuarial Valuation as of	
	July 1, 2009	**July 1, 2008**
Contributions *(% of Payroll)*		
Statutory – Chapter 352B	26.00%	24.40%
Required – Chapter 356	38.16%	34.49%
Sufficiency / (Deficiency)	(12.16%)	(10.09%)
Funding Ratios *(dollars in thousands)*		
Accrued Benefit Funding Ratio		
– Current assets (AVA)	$ 584,501	$ 595,082
– Current benefit obligations	711,652	680,022
– Funding ratio	82.13%	87.51%
Accrued Liability Funding Ratio		
– Current assets (AVA)	$ 584,501	$ 595,082
– Current assets (MVA)	450,060	589,379
– Actuarial accrued liability	725,334	693,686
– Funding ratio (AVA)	80.58%	85.79%
– Funding ratio (MVA)	62.05%	84.96%
Projected Benefit Funding Ratio		
– Current and expected future assets	$ 753,476	$ 749,086
– Current and expected future benefit obligations	889,030	847,690
– Funding ratio	84.75%	88.37%
Participant Data		
Active members		
– Number	876	840
– Projected annual earnings *(000s)*	$ 67,421	$ 63,771
– Average annual earnings *(projected)*	$ 76,965	$ 75,918
– Average age	41.1	41.5
– Average service	12.0	12.4
Service retirements	673	660
Survivors	191	194
Disability retirements	44	42
Deferred retirements	41	35
Terminated other non-vested	11	7
Total	**1,836**	**1,778**

Effects of Changes

The following changes in plan provisions and methods were recognized as of July 1, 2009:

Dissolution of Minnesota Post Retirement Investment Fund (MPRIF)

Since the MPRIF composite funding ratio was less than 80 percent as of June 30, 2008, the MPRIF was dissolved, and assets were transferred back to MSRS and merged with the respective active member fund. The transfer of assets and liabilities occurred on June 30, 2009.

In conjunction with the dissolution, benefit recipients will receive future annual 2.5% cost-of-living adjustments (COLA).

The waiting period and proration schedule for the COLA paid in the first year of retirement were also revised.

Other than the Asset Method change described below, the MPRIF dissolution and COLA changes did not have an impact on the valuation results.

Asset Method

For the purpose of determining the actuarial value of assets, the MPRIF asset loss for the fiscal year ending June 30, 2009 is recognized incrementally over five years at 20% per year, similar to the smoothing of active fund assets. Prior to June 30, 2009, MPRIF asset gains and losses were not smoothed.

The change in the actuarial asset method for MPRIF assets reduced the required contribution by 2.10% of pay.

Disability Definitions

The definitions of duty and regular disability were modified. This change did not have an impact on the valuation results.

Certification

Mercer has prepared this report exclusively for the Board of Directors of the Minnesota State Retirement System and the Legislative Commission on Pensions and Retirement (LCPR) for the following purposes:

- Present the results of a valuation of the State Patrol Retirement Fund as of July 1, 2009 as required by Minnesota Statutes, Section 356.215 and the Standards of Actuarial Work established by the State of Minnesota Legislative Commission on Pensions and Retirement
- Review plan experience for the year ended June 30, 2009
- Provide the annual required contribution for the period beginning July 1, 2009
- Provide reporting and disclosure information for financial statements for governmental agencies pursuant to GASB Statements Number 25 (as amended by GASB Number 50) and 27.

This valuation report may not be relied upon for any other purpose or by any party other than the Board of Directors, the LCPR, or the Plan's auditors solely for the purpose of completing an audit related to the matters herein. Mercer is not responsible for the consequences of any unauthorized use.

A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it does not predict a plan's future financial condition or its ability to pay benefits in the future.

Over time, a plan's total cost will depend on a number of factors, including the amount of benefits the plan pays, the number of people paid benefits, plan expenses and the amount earned on any assets invested to pay the benefits. These amounts and other variables are uncertain and unknowable at the valuation date, but are predicted to fall within a reasonable range of possibilities.

To prepare this report, *Actuarial Assumptions*, as described in the Actuarial Basis section, are used to select a single scenario from a range of possibilities. The results of that single scenario are included in this report. However, the future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material. In addition, different assumptions or scenarios may also be within the reasonable range and results based on those assumptions would be different. Actuarial assumptions may also be changed from one valuation to the next because of changes in mandated requirements, plan experience, changes in expectations about the future and other factors. Due to the limited scope of our assignment, we did not perform, nor do we present, an analysis of the potential range of future possibilities and scenarios.

Because actual plan experience will differ from the assumptions, decisions about benefit changes, investment policy, funding amounts, benefit security and/or benefit-related issues should be made only after careful consideration of alternative future financial conditions and scenarios, and not solely on the basis of a valuation report or reports.

Data and plan provisions

To prepare this report, Mercer has used and relied on financial data submitted by the Minnesota State Retirement System as of June 30, 2009, as well as participant data supplied by the Minnesota State Retirement System as of June 30, 2009. We have reviewed the financial and participant data for internal consistency and general reasonableness, but we have not verified or audited any of the data or information provided. We have also used and relied on the Statutes and summary of plan provisions supplied by the Minnesota State Retirement System. A summary of the plan provisions valued is presented in our report. The Board of Directors are solely responsible for the accuracy, validity and comprehensiveness of this information. If the data or plan provisions supplied are not accurate and complete, the valuation results may differ significantly from the results that would be obtained with accurate and complete information; this may require a later revision of this report.

Certification

Actuarial Calculations, Methods and Assumptions

To the best of our knowledge and belief, this report is complete and accurate and all costs, liabilities and other factors under the plan were determined in accordance with generally accepted actuarial principles and procedures, in accordance with the requirements of Minnesota Statutes Section 356.215 and the requirements of the Standards of Actuarial Work established by the LCPR. The economic assumptions, including discount rates, are set in Minnesota Statutes, and the remaining assumptions are adopted by the Board of Directors and the LCPR. This valuation is based on assumptions, plan provisions, methods and other parameters as summarized in this report. If this information is inaccurate or incomplete or does not reflect current statutes, regulations or Board directives, the reader of this report should not rely on the valuation results and should notify Mercer promptly. In our opinion, this report fully and fairly discloses the actuarial position of the plan on an ongoing basis.

Professional qualifications

We are available to answer any questions on the material in this report or to provide explanations or further details as appropriate. The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. In addition, Mr. Dickson meets the requirements of "approved actuary" under Minnesota Statutes, Section 356.215, Subdivision 1, Paragraph (c). We are not aware of any direct or material indirect financial interest or relationship, including investments or other services that could create a conflict of interest, that would impair the objectivity of our work.

The information contained in this document (including any attachments) is not intended by Mercer to be used, and it cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code that may be imposed on the taxpayer.

Gary D Dickson

Gary Dickson, FSA, EA, MAAA
Principal

12/09/09
Date

Bonita J. Wurst

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Supplemental Information

The remainder of the report includes information supporting the results presented in the previous sections.

- **Plan assets** presents information about the plan's assets as reported by the Minnesota State Retirement System and the Minnesota State Board of Investments. The assets represent the portion of total fund liabilities that has been funded.
- **Membership data** presents and describes the membership data used in the valuation.
- **Development of costs** shows the liabilities for plan benefits and the derivation of the contribution amount.
- **Actuarial basis** describes the plan provisions, as well as the methods and assumptions used to value the plan. The valuation is based on the premise that the plan is ongoing.
- **Plan accounting under GASB 25 (as amended by GASB 50)** shows the disclosures required by GASB Statement No. 25 as amended by GASB Statement No. 50.
- **Glossary** defines the terms used in this report.

Plan Assets

Statement of Plan Net Assets for Year Ended June 30, 2009 *(Dollars in Thousands)*

		Market Value		Cost Value
Assets in Trust				
▪ Cash, equivalents, short term securities	$	10,321	$	10,321
▪ Fixed income		102,979		104,183
▪ Equity		410,463		457,768
▪ Other		0		0
Total assets in trust	**$**	**523,763**	**$**	**572,572**
Assets Receivable		914		914
Total Assets	**$**	**524,677**	**$**	**573,186**
Amounts Payable		(74,617)		(74,617)
Net Assets held in trust for pension benefits	**$**	**450,060**	**$**	**498,569**

Plan Assets

Reconciliation of Plan Assets

The following exhibit shows the revenue, expenses and resulting assets of the Fund as reported by the Minnesota State Retirement System and the Minnesota State Board of Investment, for the Plan's Fiscal Year July 1, 2008 to June 30, 2009.

Change in Assets *(dollars in thousands)*	**Non-MPRIF Assets**	**MPRIF Reserve**	**Market Value**
1. Fund balance at market value at July 1, 2008	$ 231,785	$ 357,594	$ 589,379
2. Contributions			
a. Member	$ 6,216	$ 0	$ 6,216
b. Employer	9,178	0	9,178
c. Other sources	0	0	0
d. Total contributions	$ 15,394	$ 0	$ 15,394
3. Investment income*			
a. Investment income/(loss)	$ (109,427)	$ 0	$ (109,427)
b. Investment expenses	(646)	0	(646)
c. Net investment income/(loss)	$ (110,073)	$ 0	$ (110,073)
4. Other	13		13
5. Total income *(2.d. + 3.c. + 4.)*	**$ (94,666)**	**$ 0**	**$ (94,666)**
6. Benefits Paid			
a. Annuity benefits	$ (45)	$ (44,435)	$ (44,480)
b. Refunds	0	0	0
c. Total benefits paid	$ (45)	$ (44,435)	$ (44,480)
7. Expenses			
a. Other	$ (69)	$ 0	$ (69)
b. Administrative	(104)	0	(104)
c. Total Expenses	(173)	0	(173)
8. Total disbursements *(6.c. + 7.c.)*	**$ (218)**	**$ (44,435)**	**$ (44,653)**
9. Other changes in reserves			
a. Annuities awarded	$ (12,648)	$ 12,648	$ 0
b. Transfer between reserves	330,043	(330,043)	0
c. Mortality gain/(loss) not transferred	(4,236)	4,236	0
d. Change in assumptions	0	0	0
e. Total other changes	$ 313,159	$ (313,159)	$ 0
10. Fund balance at market value at June 30, 2009 *(1. + 5. + 8 + 9.e.)*	**$ 450,060**	**$ 0**	**$ 450,060**

* *MPRIF investment income allocated to non-MPRIF assets by the Minnesota State Retirement System.*

Plan Assets

Actuarial Asset Value *(Dollars in Thousands)*

	Original Amount	% Not Recognized	June 30, 2009
1. Market value of assets available for benefits			$ 450,060
2. Determination of average balance			
a. Total assets available at July 1, 2008			589,379
b. Total assets available at June 30, 2009			450,060
c. Net investment income for fiscal year ending June 30, 2009			(110,060)
d. Average balance *[a. + b. – c.] / 2*			574,749
3. Expected return *[8.5% * 2.d.]*			48,854
4. Actual return			(110,060)
5. Current year asset gain/(loss) *[4. – 3.]*			(158,914)
6. Unrecognized asset returns*			
a. Year ended June 30, 2009	$ (158,914)	80%	$ (127,131)
b. Year ended June 30, 2008	(32,301)	60%	(19,380)
c. Year ended June 30, 2007	24,934	40%	9,974
d. Year ended June 30, 2006	10,480	20%	2,096
e. Total unrecognized return			$ (134,441)
7. Actuarial value at June 30, 2009 *(1. – 6.e.)*			**$ 584,501**

* *Prior to the year ending June 30, 2009, unrecognized asset returns do not include MPRIF gains or losses.*

Membership Data

Distribution of Active Participants

	Years of Service as of June 30, 2009										
Age	**<3**	**3 - 4**	**5 - 9**	**10 - 14**	**15 -19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40+**	**Total**
< 25	28										**28**
Avg. Earnings	17,917										**17,917**
25 – 29	35	14	19								**68**
Avg. Earnings	27,405	64,458	65,973								**45,810**
30 – 34	21	33	63	17							**134**
Avg. Earnings	39,315	64,528	71,381	78,908							**65,623**
35 – 39	26	26	44	71	7						**174**
Avg. Earnings	41,065	68,628	71,452	75,960	76,115						**68,517**
40 – 44	11	6	26	57	33	17					**150**
Avg. Earnings	34,815	66,255	73,792	75,665	77,092	82,139					**73,047**
45 – 49	3	7	17	35	28	51	20				**161**
Avg. Earnings	72,806	70,496	77,697	77,506	79,346	81,151	83,460				**79,348**
50 – 54	8	3	6	14	18	24	66	7			**146**
Avg. Earnings	64,954	72,555	88,609	79,882	80,389	85,311	85,476	93,586			**83,413**
55 – 59	1	2	1		2	2	4	2	1		**15**
Avg. Earnings	70,393	59,315	82,045		91,998	86,259	93,593	84,411	97,594		**84,558**
60 – 64											**0**
Avg. Earnings											**N/A**
65 – 69											**0**
Avg. Earnings											**N/A**
70+											**0**
Avg. Earnings											**N/A**
Total	**133**	**91**	**176**	**194**	**88**	**94**	**90**	**9**	**1**	**0**	**876**
Avg. Earnings	**34,177**	**66,412**	**72,456**	**76,694**	**78,745**	**82,501**	**85,389**	**91,547**	**97,594**	**N/A**	**70,218**

In each cell, the top number is the count of active participants for the age/service combination and the bottom number is average annual earnings.

Membership Data

Distribution of Service Retirements

	Years Retired as of June 30, 2009							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<50								**0**
Avg. Benefit								**N/A**
50 – 54	5	24						**29**
Avg. Benefit	50,861	43,371						**44,662**
55 – 59	17	77	27					**121**
Avg. Benefit	58,845	50,080	45,020					**50,182**
60 – 64	4	16	120	16				**156**
Avg. Benefit	32,214	44,993	52,778	53,665				**51,544**
65 – 69		3	17	104	3			**127**
Avg. Benefit		49,680	51,184	60,379	51,303			**58,681**
70 – 74			3	22	57			**82**
Avg. Benefit			50,714	67,691	62,310			**63,329**
75 – 79				2	18	40		**60**
Avg. Benefit				70,714	66,200	59,587		**61,942**
80 – 84				1	2	33	20	**56**
Avg. Benefit				71,818	84,665	65,625	58,290	**63,796**
85 – 90						3	28	**31**
Avg. Benefit						75,188	56,294	**58,122**
90+							11	**11**
Avg. Benefit							43,359	**43,359**
Total	**26**	**120**	**167**	**145**	**80**	**76**	**59**	**673**
Avg. Benefit	**53,212**	**48,050**	**51,325**	**60,969**	**63,331**	**62,825**	**54,559**	**55,901**

In each cell, the top number is the count of retired participants for the age/service combination and the bottom number is the average annual benefit amount.

Membership Data

Distribution of Survivors

	Years Since Death as of June 30, 2009							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45		3	9	3				**15**
Avg. Benefit		15,329	11,611	8,121				**11,656**
45 – 49			3	1				**4**
Avg. Benefit			19,015	56,462				**28,377**
50 – 54			2	2				**4**
Avg. Benefit			23,761	26,142				**24,952**
55 – 59		9	2	1			1	**13**
Avg. Benefit		24,552	30,826	44,984			11,580	**26,091**
60 – 64	1	9	6	4		1		**21**
Avg. Benefit	19,030	23,093	33,786	31,213		29,667		**27,815**
65 – 69		6	5	4				**15**
Avg. Benefit		43,582	38,321	39,776				**40,814**
70 – 74		1	3	3	4	1		**12**
Avg. Benefit		29,328	22,495	36,782	13,264	37,584		**24,817**
75 – 79	1	9	5	3	4		8	**30**
Avg. Benefit	26,765	38,177	34,674	38,658	28,822		29,463	**33,690**
80 – 84	1	8	7	4	7	1	7	**35**
Avg. Benefit	50,707	40,830	34,270	39,334	26,972	53,357	48,846	**38,819**
85 – 90	1	7	4	2	4	2	4	**24**
Avg. Benefit	16,298	29,654	23,846	29,128	23,267	43,678	19,550	**26,506**
90+		3	2	3	2	1	7	**18**
Avg. Benefit		15,726	26,442	20,546	46,250	43,547	25,315	**26,386**
Total	**4**	**55**	**48**	**30**	**21**	**6**	**27**	**191**
Avg. Benefit	**28,200**	**30,738**	**26,960**	**32,187**	**25,843**	**41,918**	**31,282**	**29,853**

In each cell, the top number is the count of survivors for the age/years since death combination and the bottom number is the average annual benefit amount.

Membership Data

Distribution of Disability Retirements

	Years Disabled as of June 30, 2009							
Age	**<1**	**1 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25+**	**Total**
<45	1	4						**5**
Avg. Benefit	34,252	38,873						**37,949**
45 – 49	1	1	1					**3**
Avg. Benefit	48,705	39,711	28,041					**38,819**
50 – 54		1	2	3				**6**
Avg. Benefit		54,639	32,426	28,372				**34,101**
55 – 59		3	4	1	2			**10**
Avg. Benefit		47,290	31,179	44,160	41,397			**39,354**
60 – 64		1	6	1	1			**9**
Avg. Benefit		44,347	42,391	56,525	53,311			**45,392**
65 – 69					2	2	1	**5**
Avg. Benefit					54,996	32,359	39,981	**42,938**
70 – 74					2			**2**
Avg. Benefit					57,843			**57,843**
75 – 79							2	**2**
Avg. Benefit							41,859	**41,859**
80 – 84							1	**1**
Avg. Benefit							47,208	**47,208**
85 – 90							1	**1**
Avg. Benefit							26,523	**26,523**
Total	**2**	**10**	**13**	**5**	**7**	**2**	**5**	**44**
Avg. Benefit	**41,478**	**43,606**	**36,304**	**37,160**	**51,683**	**32,359**	**39,486**	**40,925**

In each cell, the top number is the count of disabled participants for the age/years since disability combination and the bottom number is the average annual benefit amount.

Membership Data

Reconciliation of Members*

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-vested	Service Retirements	Disability Retirements	Survivors	Total
Members on 7/1/2008	**840**	**35**	**7**	**660**	**42**	**194****	**1,778****
Additions	74	1	4	26	2	5**	**112****
Return to active	1	(1)	0	0	0	0	**0**
Terminated non-vested	(4)	0	0	0	0	0	**(4)**
Service retirements	(25)	(1)	0	0	0	0	**(26)**
Terminated deferred	(7)	0	0	0	0	0	**(7)**
Terminated refund	0	0	0	0	0	0	**0**
Deaths	0	0	0	(13)	0	(7)	**(20)**
New beneficiary	0	0	0	0	0	0	**0**
Disabled	(2)	0	0	0	0	0	**(2)**
Data correction	(1)	7	0	0	0	(1)	**5**
Members on 6/30/2009	**876**	**41**	**11**	**673**	**44**	**191**	**1,836**

* *Provided by Minnesota State Retirement System and checked for reasonableness.*

** *Adjusted by Mercer to match 2008 counts.*

Terminated deferred retirement statistics

- Average age 44.1 years
- Average service 8.3 years
- Average monthly benefit, with augmentation $1,895
  (includes estimated benefits for 6 participants who were reported with $0 benefit)

Development of Costs

Actuarial Valuation Balance Sheet *(Dollars in Thousands)*

The actuarial balance sheet is based on the fundamental equation that at any given time the present value of benefits to be paid in the future must be equal to the assets on hand plus the present value of future contributions to be received. The total rate of contribution is determined as that amount which will make the total present and potential assets balance with the total present value of future benefits. The members' rate of contribution is fixed at the current schedule of compensation. The employer's rate of contribution is the balance required to cover the total rate of contribution.

The contributions made in excess of amounts required for current benefit payments are accumulated as a reserve to help meet benefit payments in later years. It is this reserve system which permits the establishment of a level rate of contribution each year.

			June 30, 2009
A. Actuarial Value of Assets			$ 584,501
B. Expected future assets			
1. Present value of fund's future statutory supplemental contributions			$ 5,279
2. Present value of fund's future normal cost contributions			163,696
3. Total expected future assets *(1. + 2.)*			$ 168,975
C. Total current and expected future assets			$ 753,476
	Non-Vested	Vested	Total
D. Current benefit obligations			
1. Benefit recipients			
a. Service retirements	$ 0	$ 399,509	$ 399,509
b. Disability	0	18,239	18,239
c. Survivors	0	49,069	49,069
2. Deferred retirements with augmentation	0	7,259	7,259
3. Former members without vested rights*	37	0	37
4. Active members	1,993	235,546	237,539
5. Total Current Benefit Obligations	$ 2,030	$ 709,622	$ 711,652
E. Expected Future Benefit Obligations			$ 177,378
F. Total Current and Expected Future Benefit Obligations			$ 889,030
G. Unfunded Current Benefit Obligations *(D.5. − A.)*			$ 127,151
H. Unfunded Current and Future Benefit Obligations *(F. − C.)*			$ 135,554

** Former members with less than three years of service that have not collected a refund of member contributions as of the valuation date.*

Development of Costs

Determination of Unfunded Actuarial Accrued Liability and Supplemental Contribution Rate *(Dollars in Thousands)*

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability (AAL)			
1. Active members			
a. Retirement annuities	$ 376,175	$ 139,361	$ 236,814
b. Disability benefits	23,802	13,749	10,053
c. Survivor's benefits	10,383	6,736	3,647
d. Deferred retirements	4,438	3,164	1,274
e. Refunds	119	686	(567)
f. Total	$ 414,917	$ 163,696	$ 251,221
2. Deferred retirements with future augmentation	7,259	0	7,259
3. Former members without vested rights	37	0	37
4. Benefit recipients	466,817	0	466,817
5. Total	$ 889,030	$ 163,696	$ 725,334
B. Determination of Unfunded Actuarial Accrued Liability (UAAL)			
1. Actuarial accrued liability			$ 725,334
2. Current assets (AVA)			584,501
3. Unfunded actuarial accrued liability			$ 140,833
C. Determination of Supplemental Contribution Rate			
1. Present value of future payrolls through the amortization date of July 1, 2036			$ 1,115,397
2. Supplemental contribution rate *(B.3. / C.1.)*			12.63%

Development of Costs

Changes in Unfunded Actuarial Accrued Liability (UAAL) *(Dollars in Thousands)*

		Year Ending June 30, 2009
A. Unfunded actuarial accrued liability at beginning of year	$	98,604
B. Changes due to interest requirements and current rate of funding		
1. Normal cost and administrative expenses	$	16,145
2. Contributions		(15,394)
3. Interest on A., B.1. and B.2.		8,413
4. Total *(B.1. + B.2. + B.3.)*	$	9,164
C. Expected unfunded actuarial accrued liability at end of year *(A. + B.4.)*	$	107,768
D. Increase (decrease) due to actuarial losses (gains) because of experience deviations from expected		
1. Salary increases	$	(4,023)
2. Investment return		54,220
3. Benefit recipient mortality		2,575
4. Other items		3,673
5. Total	$	56,445
E. Unfunded actuarial accrued liability at end of year before plan amendments and changes in actuarial assumptions *(C. + D.5.)*	$	164,213
F. Change in unfunded actuarial accrued liability due to changes in plan provisions	$	0
G. Change in unfunded actuarial accrued liability due to changes in actuarial assumptions	$	0
H. Change in unfunded actuarial accrued liability due to changes in actuarial asset method	$	(23,380)
I. Unfunded actuarial accrued liability at end of year *(E. + F. + G + H.)*	$	140,833

Development of Costs

Determination of Contribution Sufficiency/(Deficiency) *(Dollars in Thousands)*

	July 1, 2009		
	Percent of Payroll		**Dollar Amount**
A. Statutory contributions – Chapter 352B			
1. Employee contributions	10.40%	$	7,012
2. Employer contributions	15.60%		10,518
3. Total	26.00%	$	17,530
B. Required contributions – Chapter 356			
1. Normal cost			
a. Retirement benefits	21.54%	$	14,519
b. Disability benefits	2.19%		1,478
c. Survivors	1.08%		728
d. Deferred retirement benefits	0.46%		312
e. Refunds	0.10%		66
f. Total	25.37%	$	17,103
2. Supplemental contribution amortization by July 1, 2036 of Unfunded Actuarial Accrued Liability	12.63%		8,515
3. Allowance for expenses	0.16%	$	108
4. Total	38.16%	$	25,726
C. Contribution Sufficiency/(Deficiency) *(A.3. – B.4.)*	(12.16%)	$	(8,196)

Note: Projected annual payroll for fiscal year beginning on the valuation date: $67,421.

Actuarial Basis

Actuarial Cost Method

Liabilities and contributions in this report are computed using the Individual Entry Age Normal Cost Method. This method is prescribed by Minnesota Statutes.

The objective under this method is to fund each member's benefits under the Plan as payments which are level as a percentage of salary, starting at original participation date (or employment date), and continuing until the assumed date of retirement termination, disability or death.

At any given date, a liability is calculated equal to the contributions which would have been accumulated if this method of funding had always been used, the current plan provisions had always been in place, and all assumptions had been precisely accurate. The difference between this liability and the assets (if any) which are held in the fund is the unfunded liability. The unfunded liability is typically funded over a chosen period in accordance with the amortization schedule.

A detailed description of the calculation follows:

The normal cost for each active member under the assumed retirement age is determined by applying to earnings the level percentage of salary which, if contributed each year from date of entry into the Plan until the assumed retirement (termination, disability or death) date, is sufficient to provide the full value of the benefits expected to be payable.

- The present value of present value of future normal costs is the total of the discounted values of all active members' normal cost, assuming these to be paid in each case from the valuation date until retirement (termination, disability or death) date.

- The present value of projected benefits is calculated as the value of all benefit payments expected to be paid to the Plan's current members, including active and retired members, beneficiaries, and terminated members with vested rights.

- The accrued liability is the excess of the present value of projected benefits over the present value of future normal costs.

- The unfunded liability is the excess of the accrued liability over the assets of the fund, and represents that part of the accrued liability which has not been funded by accumulated past contributions.

Actuarial Basis

Asset Valuation Method

The assets are valued based on a five-year moving average of expected and market values (five-year average actuarial value) determined as follows:

- At the end of each plan year, an average asset value is calculated as the average of the market asset value at the beginning and end of the fiscal year net of investment income for the fiscal year;
- The investment gain or (loss) is taken as the excess of actual investment income over the expected investment income based on the average asset value as calculated above;
- The investment gain or (loss) so determined is recognized over five years at 20% per year;
- The asset value is the sum of the market asset value plus the scheduled recognition of investment gains or (losses) during the current and the preceding four fiscal years.

For the purpose of determining the actuarial value of assets, the MPRIF asset loss for the fiscal year ending June 30, 2009 is recognized incrementally over five years at 20% per year, similar to the smoothing of active fund assets. Prior to June 30, 2009, MPRIF asset gains and losses were not smoothed.

Payment on the Unfunded Actuarial Accrued Liability

A level percentage of payroll each year to the statutory amortization date of July 1, 2036 assuming payroll increases of 4.50% per annum. If there is a negative Unfunded Actuarial Accrued Liability, the surplus amount shall be amortized over 30 years as a level percentage of payroll.

Funding Objective

The fundamental financing objective of the fund is to establish contribution rates which, when expressed as a percentage of active member payroll, will remain approximately level from generation to generation and meet the required deadline for full funding.

Benefits included or excluded

To the best of our knowledge, all material benefits have been included in the liability.

IRC Section 415(b): The limitations of Internal Revenue Code Section 415(b) have been incorporated into our calculations. Annual benefits may not exceed the limits in IRC Section 415. This limit is indexed annually. For 2009, the limit is $195,000.

IRC Section 401(a)17: The limitations of Internal Revenue Code Section 401(a)(17) have been incorporated into our calculations. Compensation for any 12-month period used to determine accrued benefits may not exceed the limits in IRC Section 401(a)(17) for the calendar year in which the 12-month period begins. This limit is indexed annually. For 2009, the limit is $245,000.

Actuarial Basis

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan.

Investment return:	6.0% compounded annually post-retirement. 8.5% compounded annually pre-retirement.
Benefit increases after retirement	Payment of 2.5% annual cost-of-living adjustments after retirement accounted for by using a 6.0% post-retirement assumption, as required by statute.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for new members.
Mortality rates	
Healthy Pre-retirement	1983 Group Annuity Mortality for males set back five years 1983 Group Annuity Mortality for females set back two years
Healthy Post-retirement	1983 Group Annuity Mortality for males set back two years 1983 Group Annuity Mortality for females set back one year
Disabled	Combined Annuity Mortality
Retirement	The percentages of retirement eligible members assumed to retire at each age are: Ages: 50-54 7.0% 55 60.0% 56 40.0% 57-59 20.0% 60 & over 100.0%
Withdrawal	Select and ultimate rates are based on plan experience. Ultimate rates after the third year are shown in the rate table. Select rates are 2.5% for the first three years of employment.
Disability	Rates adopted by MSRS as shown in rate table.
Allowance for Combined Service Annuity	Liabilities for former members are increased by 30.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	Prior year expenses expressed as percentage of prior year payroll.
Return of contributions	All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Percentage married	100% of members are assumed to be married.
Age of spouse	Female members are assumed to be three years younger than males.
Eligible children	Each member is assumed to have two children whose ages are dependent upon the member's age. First child is assumed to be born at member's age 28 and second child is born at member's age 31.

Actuarial Basis

Summary of Actuarial Assumptions *(continued)*

Form of payment	Married members are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 25.0% elect 50% J&S option 00.0% elect 75% J&S option 25.0% elect 100% J&S option Females: 5.0% elect 50% J&S option 0.0% elect 75% J&S option 5.0% elect 100% J&S option
Changes in actuarial assumptions	No assumption changes were recognized as of July 1, 2009.

Actuarial Basis

Summary of Actuarial Assumptions *(continued)*

Summary of Rates

	Rate (%)				
	Pre-Retirement Mortality		Ultimate Withdrawal	Disability	Salary Increase
Age	Male	Female			
20	0.03%	0.02%	1.47%	0.04%	7.75%
25	0.04	0.02	1.13	0.06	7.00
30	0.05	0.03	0.80	0.08	7.00
35	0.06	0.04	0.47	0.11	7.00
40	0.09	0.06	0.40	0.18	6.50
45	0.12	0.08	0.40	0.29	5.75
50	0.22	0.14	0.00	0.50	5.50
55	0.39	0.21	0.00	0.88	5.25
60	0.61	0.34	0.00	1.41	5.25
65	0.92	0.58	0.00	0.00	5.25
70	1.56	0.97	0.00	0.00	5.25

Actuarial Basis

Summary of Plan Provisions

This summary of provisions reflects the interpretation of applicable Statutes for purposes of preparing this valuation. This interpretation is not intended to create or rescind any benefit rights in conflict with any Minnesota Statutes.

Plan year	July 1 through June 30
Eligibility	State troopers, conservation officers and certain crime bureau officers.
Contributions	Shown as a percent of salary: **Date of Increase** / **Employee** / **Employer** July 1, 2009 / 10.40% / 15.60% Employee contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service during which member contributions were deducted. Includes period receiving temporary Worker's Compensation.
Salary	Salaries excluding lump sum payments at separation.
Average salary	Average of the five highest years of Salary. Average Salary is based on all Allowable Service if less than five years.
Retirement	
Normal retirement benefit	
Age/service requirements	Age 55 and three years of Allowable Service.
Amount	3.00% of Average Salary for each year of Allowable Service.
Early retirement benefit	
Age/service requirements	Age 50 and three years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement reduced by 1/10% for each month that the member is under age 55.
Form of Payment	Life annuity. Actuarially equivalent options are: 50%, 75%, 100% Joint and Survivor with bounce back feature without additional reduction, or 15-year certain.
Benefit increases	Benefit recipients will receive future annual 2.5% cost-of-living adjustments. A benefit recipient who has been receiving a benefit for at least 12 full months as of December 31 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a pro rata increase. Members who retired under laws in effect before June 1, 1973 received an additional lump sum payment each year until 2002. Effective January 1, 2002 annual lump sum payment was divided by 12 and paid as a monthly life annuity in the annuity form elected.

Actuarial Basis

Summary of Plan Provisions *(continued)*

Disability	
Occupational disability benefit	
Age/service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty.
Amount	60% of Average Salary plus 3.00% of Average Salary for each year in excess of 20 years of Allowable Service (pro rata for completed months). Payments cease at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Non-duty disability benefit	
Age/service requirement	At least one year of Allowable Service and disability not related to covered employment.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 15 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Retirement after disability	
Age/service requirement	Age 65 with continued disability.
Amount	Optional annuity continues. Otherwise, normal retirement benefit equal to the disability benefit paid, or an actuarially equivalent option.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Actuarial Basis

Summary of Plan Provisions *(continued)*

Death	
<u>*Surviving spouse benefit*</u>	
Age/service requirement	Member who is active or receiving a disability benefit.
Amount	50% of Annual Salary if member was active or occupational disability and either had less than three years of Allowable Service or was under age 55. Annuity if paid for life. Surviving spouse receives the 100% joint and survivor benefit commencing on the member's 55th birthday if member was active or a disability with three years of Allowable Service. A spouse who had been receiving the 50% benefit shall be entitled to the greater benefit.
Benefit increases	Same as for retirement.
<u>*Surviving dependent children's benefit*</u>	
Age/service requirement	Member who is active or receiving a disability benefit. Child must be unmarried, under age 18 (or 23 if full-time student) and dependent upon the member.
Amount	10% of Average Salary for each child and $20 per month prorated among all dependent children. Benefit must not be less than 50% nor exceed 70% of Average Salary.
Benefit increases	Same as for retirement.
<u>*Refund of contributions*</u>	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The member's contributions with 5.00% interest if death occurred before May 16, 1989 and 6.00% interest if death occurred on or after May 16, 1989.

Actuarial Basis

Summary of Plan Provisions *(continued)*

Termination	
<u>*Refund of contributions*</u>	
Age/service requirement	Termination of state service.
Amount	Member's contributions with 5.00% interest compounded annually if termination occurred before May 16, 1989 and 6.00% interest if termination occurred on or after May 16, 1989.
<u>*Deferred benefit*</u>	
Age/service requirement	Three years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual percentage: (1.) 0.00% before July 1, 1971; (2.) 5.00% from July 1, 1971 to January 1, 1981; and (3.) 3.00% thereafter until the annuity begins (2.5% if hired after June 30, 2006). Amount is payable as a normal or early retirement. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Changes in Plan Provisions	<u>Dissolution of Minnesota Post Retirement Investment Fund (MPRIF)</u> Since the MPRIF composite funding ratio was less than 80 percent as of June 30, 2008, the MPRIF was dissolved, and assets were transferred back to MSRS and merged with the respective active member fund. The transfer of assets and liabilities occurred on June 30, 2009. In conjunction with the dissolution, benefit recipients will receive future annual 2.5% cost-of-living adjustments (COLA). The waiting period and proration schedule for the COLA paid in the first year of retirement were also revised. The definitions of duty and regular disability were modified.

Plan Accounting Under GASB 25 (as amended by GASB 50)

Provided below is information required under GASB Statement No. 25 as amended by GASB Statement No. 50 – Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans as amended by GASB Statement No. 50.

Schedule of Funding Progress[1] *(Dollars in Thousands)*

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded (Overfunded) AAL (UAAL) (b) – (a)	Funded Ratio (a)/(b)	Actual Covered Payroll (Previous FY) (c)	UAAL as a Percentage of Covered Payroll (b) – (a) / (c)
07/01/1991	$ 200,068	$ 224,033	$ 23,965	89.30%	$ 32,365	74.05%
07/01/1992	222,314	233,656	11,342	95.15%	32,882	34.49%
07/01/1993	244,352	258,202	13,850	94.64%	35,765	38.73%
07/01/1994	262,570	275,377	12,807	95.35%	35,341	36.24%
07/01/1995	284,918	283,078	(1,840)	100.65%	37,518	(4.90%)
07/01/1996	323,868	303,941	(19,927)	106.56%	41,476	(48.04%)
07/01/1997	375,650	332,427	(43,223)	113.00%	41,996	(102.92%)
07/01/1998	430,011	371,369	(58,642)	115.79%	43,456	(134.95%)
07/01/1999	472,687	406,215	(66,472)	116.36%	45,333	(146.63%)
07/01/2000	528,573	458,384	(70,189)	115.31%	48,167	(145.72%)
07/01/2001	572,815	489,483	(83,332)	117.02%	48,935	(170.29%)
07/01/2002	591,383	510,344	(81,039)	115.88%	49,278	(164.45%)
07/01/2003	591,521	538,980	(52,541)	109.75%	54,175	(96.98%)
07/01/2004	594,785	545,244	(49,542)	109.09%	51,619	(95.98%)
07/01/2005	601,220	566,764	(34,456)	106.08%	55,142	(62.49%)
07/01/2006	618,990	641,479	22,489	96.49%	57,765	38.93%
07/01/2007	617,901	673,444	55,543	91.75%	61,498	90.32%
07/01/2008	595,082	693,686	98,604	85.79%	60,029	164.26%
07/01/2009	584,501	725,334	140,833	80.58%	61,511	228.96%

[1] *Information prior to 2008 provided by The Segal Company.*

Plan Accounting Under GASB 25 (as amended by GASB 50)

Schedule of Contributions from the Employer and Other Contributing Entities[1] *(Dollars in Thousands)*

The GASB Statement No. 25 (as amended by GASB 50) required and actual contributions are as follows:

Plan Year Ended June 30	Actuarially Required Contribution Rate (a)	Actual Covered Payroll (b)	Actual Member Contributions (c)	Annual Required Contributions [(a)x(b)] – (c)	Actual Employer Contributions (e)[2]	Percentage Contributed (e)/(d)
1991	22.15%	$ 32,365	$ 2,751	$ 4,418	$ 4,825	109.21%
1992	22.58%	32,882	2,795	4,630	4,893	105.68%
1993	22.27%	35,765	3,040	4,925	5,288	107.37%
1994	21.94%	35,341	3,004	4,750	5,159	108.61%
1995	21.79%	37,518	3,189	4,986	5,583	111.97%
1996	21.34%	41,476	3,484	5,367	5,742	106.99%
1997	21.33%	41,996	3,746	5,212	6,151	118.02%
1998	15.67%	43,456	3,634	3,176	5,475	172.39%
1999	14.14%	45,333	3,850	2,560	5,712	223.13%
2000[3]	15.17%	48,167	4,044	3,263	6,069	185.99%
2001[4]	15.48%	48,935	4,145	3,430	6,166	179.77%
2002	14.00%	49,278	4,215	2,684	6,209	231.33%
2003[5]	14.34%	54,175	4,555	3,214	6,826	212.38%
2004	17.81%	51,619	4,493	4,700	6,504	138.39%
2005	18.15%	55,142	4,517	5,491	6,670	121.47%
2006	19.84%	57,765	4,719	6,741	7,055	104.66%
2007[6]	26.69%	61,498	4,987	11,427	7,461	65.30%
2008[7]	29.90%[8]	60,029	5,594	12,355	8,279	67.01%
2009[9]	34.49%	61,511	6,216	14,999	9,178	61.19%
2010[10]	38.16%					

[1] *Information prior to 2008 provided by The Segal Company.*
[2] *Includes contributions from other sources (if applicable)*
[3] *Actuarially Required Contributions calculated according to parameters of GASB 25 using a 30-year amortization of the negative unfunded actuarial accrued liability.*
[4] *Actuarially Required Contributions Rate prior to change in Asset Valuation Method is 15.15%.*
[5] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 14.20%.*
[6] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 21.76%.*
[7] *Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 27.02%.*
[8] *Actuarially Required Contribution Rate provided by The Segal Company.*
[9] *Actuarially Required Contribution Rate prior to change in Actuarial Assumptions is 34.97%.*
[10] *Actuarially Required Contribution Rate prior to change in Asset Valuation Method is 40.26%.*

Glossary

Actuarial Asset Value. The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method. The goal of an asset valuation method is to produce a relatively stable asset value thereby reducing year-to-year volatility in contribution requirements.

Actuarial Cost Method. Sometimes called "funding method," a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Annual Pension Cost. A measure of the periodic cost of an employer's participation in a defined benefit pension plan.

Annual Required Contributions (ARC). The employer's periodic required contributions to a defined benefit pension plan, calculated in accordance with the parameters of GASB 25 (as amended by GASB 50) or GASB 27.

ASA. Associate of the Society of Actuaries.

Current Benefit Obligations. The present value of benefits earned to the valuation date, based on current service and including future salary increases to retirement.

EA. Enrolled Actuary.

FSA. Fellow of the Society of Actuaries.

MAAA. Member of the American Academy of Actuaries.

Normal Cost. The annual cost assigned to the current year, under the actuarial cost method in use.

Present Value. Sometimes called "actuarial present value," the current worth (on the valuation date) of an amount or series of amounts payable or receivable in the future. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Statement No. 25 of the Governmental Accounting Standards Board (GASB 25). The accounting standard governing the financial reporting for defined benefit pension plans and note disclosures for defined contribution plans.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27). The accounting standard governing a state or local governmental employer's accounting for pensions.

Statement No. 50 of the Governmental Accounting Standards Board (GASB 50). The accounting standard amending both GASB 25 and GASB 27 to require a schedule of funding progress under the Entry Age Normal method for plans that use the aggregate funding method to determine the Annual Required Contribution.

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