1988 ACTUARIAL VALUATION REPORTS

SECTION I - PUBLIC EMPLOYEES RETIREMENT FUND

SECTION 2 - PUBLIC EMPLOYEES POLICE AND FIRE FUND

SECTION 3 - RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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PUBLIC EMPLOYEES RETIREMENT FUND

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ACTUARIAL VALUATION REPORT

JULY 1, 1988

- THE Wyatt COMPANY -



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AN INDEPENDENT WORLDWIDE BENEFITS AND COMPENSATION CONSULTING FIRM

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EMPLOYEE BENEFITS EMPLOYEE COMMUNICATIONS RISK MANAGEMENT INSURANCE CONSULTING HEALTH CARE CONSULTING

November 3, 1988

Legislative Commission on Pensions and Retirement 55 State Office Building St. Paul, Minnesota 55155

RE: PUBLIC EMPLOYEES RETIREMENT FUND

Commission Members:

ACTUARIAL SERVICES

COMPENSATION PROGRAMS

ADMINISTRATIVE SYSTEMS

INTERNATIONAL SERVICES

ORGANIZATION SURVEYS

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We have prepared an actuarial valuation of the Fund as of July 1, 1988 based on membership and financial data supplied by the Fund.

We certify that to the best of our knowledge and belief this actuarial valuation was performed in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on August 22, 1988.

Respectfully submitted,

THE WYATT COMPANY

Robert & Perlin

Robert E. Perkins, FSA Consulting Actuary

Michael C. Tunialson

Michael C. Gunvalson, ASA Associate Actuary

PUBLIC EMPLOYEES RETIREMENT FUND

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PUBLIC EMPLOYEES RETIREMENT FUND

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REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

		07/01/87 <u>VALUATION</u>	07/01/88 <u>VALUATION</u>
Α.	CONTRIBUTIONS (TABLE 11)		
	<pre>1. Statutory Contributions - Chapter 353 % of Payroll</pre>	9.05%	8.94%
	2. Required Contributions - Chapter 356 % of Payroll	8.21%	9.42%
	3. Sufficiency (Deficiency) (A1-A2)	0.84%	-0.48%
Β.	FUNDING RATIOS		
	 Accrued Benefit Funding Ratio a. Current Assets (Table 1) b. Current Benefit Obligations (Table 8) c. Funding Ratio (a/b) 	\$2,457,899 \$2,839,048 86.57%	\$2,657,038 \$3,334,423 79.69%
	 Accrued Liability Funding Ratio a. Current Assets (Table 1) b. Actuarial Accrued Liability (Table 9) c. Funding Ratio (a/b) 	\$2,457,899 \$3,188,962 77.08%	\$2,657,038 \$3,755,608 70.75%
	 3. Projected Benefit Funding Ratio (Table 8) a. Current and Expected Future Assets b. Current and Expected Future Benefit Obligations c. Funding Ratio (a/b) 	\$4,090,664 \$3,837,047 106.61%	\$4,363,206 \$4,517,759 96.58%
C.	PLAN PARTICIPANTS		
	 Active Members a. Number (Table 3) b. Projected Annual Earnings c. Average Annual Earnings (Actual \$) d. Average Age e. Average Service 	92,497 \$1,645,876 \$17,794 42.2 8.0	95,224 \$1,767,041 \$18,557 42.3 8.1
	 Others a. Service Retirements (Table 4) b. Disability Retirements (Table 5) c. Survivors (Table 6) d. Deferred Retirements (Table 7) e. Terminated Other Non-vested (Table 7) f. Total 	20,341 645 4,029 2,152 40,185 67,352	21,882 650 4,168 2,094 6,621 35,415

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PUBLIC EMPLOYEES RETIREMENT FUND

COMMENTARY

<u>Purpose</u>

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The purpose of this valuation is to determine the financial status of the Fund. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The statutory contributions for the Public Employees Retirement Fund are not sufficient by an amount of 0.48% of payroll following the adoption of a new mortality table that reflects longer life expectancy (see page 10 for more information regarding the mortality table). According to this valuation a contribution rate of 9.42% is required to comply with Minnesota Law.

The financial status of the Fund can be measured by three different funding ratios:

- o The Accrued Benefit Funding Ratio is a measure of current funding status, and when viewed over a period of years, presents a view of the funding progress. This ratio is based on Statement No. 5 of the Governmental Accounting Standards Board. This year's ratio is 79.69%. The corresponding ratio for the prior year was 86.57%.
- The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that

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has historically been used. For 1988 the ratio is 70.75%, which is a decrease from the 1987 value of 77.08%.

 The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio, which is less than 100%, verifies that the current statutory contributions are inadequate.

Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gains and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Fund participates in the MPRIF (i.e. Minnesota Post Retirement Investment Fund). The asset value shown for MPRIF on line A3 is set equal to the MPRIF Reserves reported on line D3 for both market and cost value purposes. This

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reserve is based on a 5% interest assumption.

Investment performance by SBI (i.e. State Board of Investment) above the 5% level is not shown in the assets but will be added in on January 1, 1989 when benefits will be increased for those annuitants who have been receiving payments for 18 months. Next year's valuation will include the 1989 benefit increase in determining the MPRIF value.

After the MPRIF liability has been calculated for each participating Fund, SBI will determine each Fund's portion of the excess earnings for the January benefit increase as well as the Fund's allocated market share of MPRIF. An approximation of those values on June 30, 1988 is provided below:

MPRIF Reserves		\$1,476,424,000
Reserves Plus Excess	Earnings	1,569,000,000
MPRIF Market Value	•	1,583,000,000

Membership Data (Tables 3, 4, 5, 6 and 7)

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Tables 3 through 6 summarize statistical information about members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year except in the case of new hires whose earnings have been annualized.

The service retirements in Table 4 include not only those retiring from active status but also disabled members who have attained retirement age. Disabled members under retirement age are shown in Table 5. The survivors category (Table 6) includes spouses and children of deceased members.

A reconciliation of members in Table 7 provides a method for tracking what happened to members during the past year.

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Actuarial Balance Sheet (Table 8)

An actuarial balance sheet is required by Section 356.215, Subdivision 4f of Minnesota Law. This balance sheet (Table 8) establishes a method for evaluating both current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to Current Benefit Obligations on line D5. The difference between the obligations and the assets is shown as Current Unfunded Actuarial Liability on line G.

The first step in the calculation of the Current Benefit Obligation involves projecting salary and service of active members to determine future benefits payable under the plan and then discounting those projected benefits to the date of the valuation. The second step is to determine the discounted value of benefits for the non-active members. For those non-active members whose benefits have not commenced, the liability includes augmentation of benefits to date of commencement. The result of the first two steps is shown on line F, Total Current and Expected Future Benefit Obligations.

The third step is to determine the portion of line F that represents the Current Benefit Obligations. In the case of active members the Current Benefit Obligation is computed by attributing an equal benefit amount to each year of credited and expected future employee service. For all others, their entire liability is considered a Current Benefit Obligation.

Current and future funding levels are evaluated by comparing Current and Future Expected Assets on line C to Current and Expected Future Benefit Obligations on

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THE Whatt COMPANY

line F. The difference between the obligations and the assets is shown as the Current and Future Unfunded Actuarial Liability on line H.

Since line F has already been calculated, the remaining step is to determine the Expected Future Assets. First, the excess of the statutory contribution rate over the combined normal cost rate and expense rate is calculated. Then, the excess rate is applied to the present value of future payrolls up to the amortization date (the date for paying off all unfunded liabilities) on the assumption that the total payroll will increase 6.5% annually.

The Current Unfunded Actuarial Liability, line G, is a measurement of the status of the funding to the date of the valuation. The Current and Future Unfunded Actuarial Liability is a measurement of the adequacy of the current statutory contribution level.

GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1988 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table. The liabilities using the old mortality table are provided for comparison. See page 10 for an explanation of the change in actuarial assumptions.

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THE Wyatt COMPANY

	UIG ASSUMPTIONS	New Assumptions	ż
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$1,554,153,000	\$1,633,391,000	
Current Employees - Accumulated employee contributions including allocated investment income Employer-financed vested Employer-financed nonvested	\$637,855,000 * 754,015,000 \$208,730,000	637,855,000 867,278,000 195,899,000	*
Total Pension Benefit Obligation	\$3,154,753,000	\$3,334,423,000	

* Estimated

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Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

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THE *Wyatt* company

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years the annual payment will cover the interest and also repay a portion of the unfunded.

<u>Sources of Actuarial Gains and Losses (Table 10)</u>

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The assumptions used in making the calculations using the Entry Age Normal Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. The major sources of gain and loss, which have been identified, are:

- A gain from salaries where the average increase was 5.7% compared to the expected 6.5%
- A loss from Non-MPRIF Assets (i.e. Current Assets reduced by MPRIF
 Reserves) because the return was 5.3% instead of the assumed 8%.
- A loss of \$64,501,000 (reported on line D5) due to fewer active members terminating than anticipated.
- A loss of \$12,720,000 (reported on line D5) due to fewer active members dying than anticipated.

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<u>Contribution Sufficiency (Table 11)</u>

This report answers the question of "How adequate are the Statutory Contributions?" by comparing the Statutory Contributions to the Required Contributions. The Required Contributions, set forth in Chapter 356, consist of:

- o Normal Costs based on the Entry Age Normal Cost Method
- A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability
- o An Allowance for Expenses

Table 11 shows the Fund has a contribution deficiency since the Statutory Contribution Rate is 8.94% compared to the Required Contribution Rate of 9.42%.

Projected Cash Flow (Table 12)

Table 12 illustrates the anticipated cash flow the amortization period. The cash flow begins with the Non-MPRIF Assets, which are the Current Assets reduced by the MPRIF Reserves. Contributions are then added based on the present statutory rates for employers and employees. As members become eligible for payments from MPRIF an amount of reserve is transferred to SBI. The other disbursements represent benefit payments and expenses made directly by the Fund.

This projected cash flow assumes that future payrolls increase by 6.5%. Table 12 is the only table in this report where new members are assumed to be hired in order to replace those who terminate from the active group. This open group method provides a more realistic picture of future cash flow. The statutory interest rate of 8% is used to project future investment return.

The amounts transferred to MPRIF will be affected by the number of members who reach the assumed retirement age during a given year. The amount for 1990 is large because it includes those already over age 64 who are assumed to retire a year from the valuation date.

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THE Wyatt COMPANY

Changes in Actuarial Assumptions

The mortality table has been updated to reflect improvements in life expectancy. The prior mortality table was the UP-1984 Unisex set forward one year for males and set back four years for females. The new table is based on the 1971 Group Annuity Mortality Table projected to 1984 for males and females. The projection is made in accordance with projection Scale D without interpolation within age groups.

Prior to the actuarial assumption change the Fund had an Unfunded Actuarial Accrued Liability of \$881,272,000 (see Table 10, line E). With the adoption of the new table the Unfunded Actuarial Accrued Liability is \$1,098,570,000 and the funding date has changed from 2009 to 2010.

	Impact Due To Change In Mortality Table				
Actuarial Accrued Liability Projected Benefit Obligation	\$217,298,000				
for GASB No. 5	179,670,000				
Normal Cost Supplemental Contribution Required Contribution	.31% <u>.56</u> .87%				

Changes in Plan Provisions

This valuation does not reflect any changes in benefits since the prior valuation.

Basic and Coordinated

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Additional tables at the end of this report show membership data, statutory contributions and normal costs for the Basic and Coordinated Plans.

THE Wyatt COMPANY -

PUBLIC EMPLOYEES RETIREMENT FUND

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ACCOUNTING BALANCE SHEET (DOLLARS IN THOUSANDS)

July 1, 1988

	MARKET VALUE	<u>COST VALUE</u>
A. ASSEIS 1. Cash, Equivalents, Short-Term Securities 2. Investments	\$55,416	\$55,416
a. Fixed Income	306,021	313,882
b. Equity	879,782	753,922
3. Equity in Minnesota Post-Retirement	1,476,424	1.476.424
Investment Fund (MPRIF)	-,,	-,,.
4. Other	660	660
B. TOTAL ASSETS	\$2,839,366	\$2,700,990

C. AMOUNTS CURRENTLY PAYABLE	\$90,077	\$90,077
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$484,819	\$484,819
2. Employer Reserves 3. MPRIF Reserves	788,046 1 476 424	649,6/U 1 476 424
4. Non-MPRIF Reserves	1,470,424	1,470,424
5. Total Assets Available for Benefits	\$2,749,289	\$2,610,913
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND	\$2,839,366	\$2,700,990
ASSETS AVAILABLE FOR BENEFITS		
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
 Cost Value of Assets Available for Benefits (D5) 		\$2,610,913
2. Market Value (D5)	\$2,749,289	
3. Cost Value (DŠ)	2,610,913	
4. Market Over Cost (F2-F3)	\$138,376	
5. 1/3 of Market Over Cost(F4)/3		46,125
6. Actuarial Value of Assets (F1+F5)		\$2,657,038
(same as current Assets)		

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---- THE Wyatt COMPANY ------

PUBLIC EMPLOYEES RETIREMENT FUND

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CHANGES IN ASSETS AVAILABLE FOR BENEFITS (DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1988

	MARKET VALUE	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF YEAR	\$2,608,691	\$2,382,503
 B. OPERATING REVENUES Member Contributions Employer Contributions Investment Income MPRIF Income Net Realized Gain (Loss) Other Net Change in Unrealized Gain (Loss) 	\$71,504 78,092 91,155 153,826 0 2,394 (87,812)	\$71,504 78,092 91,155 153,826 0 2,394 0
8. Total Revenue	\$309,159	\$396,971
 C. OPERATING EXPENSES Service Retirements Disability Benefits Survivor Benefits Refunds Expenses Other 	\$135,602 3,683 9,302 14,175 5,081 718	\$135,602 3,683 9,302 14,175 5,081 718
7. Total Disbursements	\$168,561	\$168,561
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF YEAR	\$2,749,289	\$2,610,913

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PUBLIC EMPLOYEES RETIREMENT FUND

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ACTIVE MEMBERS AS OF JUNE 30, 1988

				YEAR	S OF SER	VICE			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u> 30+</u>	<u>TOTAL</u>
<25 25-29	1,518 1,851	2,374 5,152	100 2,455	150					3,992 9,608
30-34 35-39	1,912 1,789	5,480 5,798	4,053 3,992	2,118 3,113	127 1,207	48			13,690 15,947
40-44 45-49	1,886 816	5,186 2,944	3,544 2,891	2,559 2,305	1,626 1,562	475 822	25 216	24	15,301 11,580
50-54 55-59	464 321	1,876 1,316	2,064 1,550	2,093 1,660	1,773 1,776	903 981	470 524	243 247	9,886 8,375
60-64 65+	145 74	694 257	963 353	1,123 346	1,257 275	751 138	230 40	163 36	5,326 1,519
TOTAL	10,776	31,077	21,965	15,467	9,603	4,118	1,505	713	95,224

AVERAGE ANNUAL EARNINGS

				YEAR	S OF SER	VICE			
<u>AGE</u>	<u><1</u>	1-4	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL
<25 25-29	8,375 10,519	12,607 16,111	13,863 18,192	19,204					11,029 15,614
30-34 35-39	9,727 9,103	16,188 14,964	21, 299 21,515	21,675 25,403	22,325 25,537	25,562			17,705 18,795
40-44 45-49	7,854 8,455	13,434 13,349	18,842 16,996	24,506 19,638	28,806 24,204	30,312 29,235	26,533 30,207	30,864	18,029 18,109
50-54 55-59	7,974 7,592	13,029 11,830	15,962 15,432	17,612 17,573	19,813 18,714	26,079 23,236	31,468 29,299	31,483 30,820	18,113 17,921
60-64 65+	6,714 5,511	10,588 7,141	14,866 9,957	16,757 11,665	18,062 14,041	21,208 16,907	24,793 22,549	29,234 23,719	17,002 11,681
ALL	8,936	14,359	18,615	20,995	22,205	25,318	29,192	30,326	17,424

 PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

 <1</td>
 1-4
 5-9
 10-14
 15-19
 20-24
 25-29
 30+
 TOTAL

 96,295
 446,223
 408,870
 324,731
 213,233
 104,261
 43,935
 21,623
 1,659,171

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PUBLIC EMPLOYEES RETIREMENT FUND

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<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
<50 50-54	2 2	7			-			2 9
55-59 60-64	199 482	746 2,852	1 201	1				946 3,536
65-69 70-74	413 36	4,083 746	1,734 4,083	43 469	2 6			6,275 5,340
75-79 80-84	5 2	85 20	420 61	2,589 357	129 1,063	4 45		3,232 1,548
85+		3	15	57	273	451	195	994
TOTAL	1,141	8,542	6,515	3,516	1,473	500	195	21,882

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

			·	YEARS RE	TIRED			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
<50 50-54	5,637 15,382	9,748						5,637 11,000
55-59 60-64	4,133 3,459	9,637 8,606	8,096 13,271	7,921				8,477 8,170
65-69 70-74	3,816 2,097	5,966 4,126	7,467 5,578	6,162 8,182	8,610 1,947			6,242 5,577
75-79 80-84	1,058 234	1,549 1,383	4,239 2,510	5,228 4,680	3,587 3,365	5,499 4,158		4,931 3,628
85+		4,832	4,989	4,355	3,617	3,837	3,969	3,853
ALL	3,672	6,956	6,202	5,564	3,432	3,880	3,969	6,002

	TOTAL	ANNUAL	ANNUITY	(IN 1	THOUSANDS) BY	YEARS O	F RETIREMEN	Τ
<1	L .	<u>1-4</u>	<u>5-9</u>	<u>10-</u>	<u>14 15-</u>	<u>19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
4,189	59	,415	40,408	19,56	63 5,0	56	1,940	774	131,345

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PUBLIC EMPLOYEES RETIREMENT FUND

	YEARS DISABLED							
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
<50 50-54	13 18	28 44	8 13	4 6				53 81
55-59 60-64	32 24	96 150	48 105	16 38	1 4	2		193 323
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	87	318	174	64	5	2	0	650

DISABILITY RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

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				YEARS DIS	ABLED			
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
<50 50-54	3,670 4,621	3,556 5,247	7,313 6,322	2,033 5,061				4,036 5,267
55-59 60-64	4,138 2,735	6,131 4,700	7,565 6,864	7,339 4,954	1,638 3,264	2,622		6,234 5,257
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	3,781	5,107	7,038	5,378	2,939	2,622	0	5,449

	TOTAL ANNUAL	BENEFIT	(IN THOU	SANDS) BY	YEARS OF	DISABILITY	(
<u><1</u>	<u>1-4</u>	<u>5-9</u>	10-14	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
329	1,624	1,225	344	15	5	0	3,542

THE Wyall COMPANY

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PUBLIC EMPLOYEES RETIREMENT FUND

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JUNITIONS NO VI DUNE DUI 190	SURVIVORS	AS	0F	JUNE	30,	1988
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	YEARS SINCE DEATH							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
<50	5	39	33	23	4	2	2	108
50-54	10	51	30	16	4	2		113
55-59	20	113	44	32	14	9	5	237
60-64	19	139	154	59	31	19	4	425
65-69	6	128	247	125	44	43	28	621
70-74	4	65	191	236	85	73	33	687
75-79	16	67	85	219	125	93	74	679
80-84	11	52	100	116	117	112	55	563
85+	16	80	82	133	140	149	135	735
TOTAL	107	734	966	959	564	502	336	4,168

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50	5,975	6,917	5,930	4,896	1,784	1,762	1,934	5,763
50-54	5,638	7,034	6,216	5,849	1,669	1,896		6,244
55-59	5,002	7,853	5,484	6,210	1,851	1,776	1,931	6,241
60-64	4,957	6,581	6,067	5,562	1,809	1,802	1,900	5,575
65-69	5,144	5,758	5,280	5,224	1,931	1,800	1,846	4,733
70-74	2,184	3,369	4,918	4,166	1,802	1,791	1,917	3,635
75-79	2,362	2,540	3,114	4,307	2,383	1,852	1,859	2,980
80-84	2,115	2,075	2,421	3,234	2,437	2,070	1,918	2,435
85+	2,114	2,098	2,254	2,270	2,177	2,455	2,027	2,221
ALL	3,878	5,221	4,651	4,160	2,166	2,063	1,943	3,752

	TOTAL ANNUAL	BENEFIT	(IN	THOUSANDS)	BY YEARS	SINCE DEATH	
<1	<u>1-4</u>	<u>5-9</u>	<u>10-1</u>	<u>4 15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
415	3,832	4,492	3,99	0 1,222	1,036	653	15,640

PUBLIC EMPLOYEES RETIREMENT FUND

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RECONCILIATION OF MEMBERS

		TERMINATED		
	<u>ACTIVES</u>	DEFERRED RETIREMENT	OTHER Non-Vested	
A. On June 30, 1987	92,497	2,152	40,185	
B. Additions	12,130	853	2,684	
 C. Deletions: Service Retirement Disability Death Terminated-Deferred Terminated-Refund Terminated-Other Non-v Returned as Active 	(1,574) (124) (79) (850) (4,865) vested (1,791)	(482) (15) (10) 0 (73)	(89) (1) (14) (1,202) (889)	
D. Data Adjustments	(120)	(331)	(34,053)	
Ve Non-Ve	ested 53,371 ested 41,853			
E. Total on June 30, 1988	95,224	2,094	6,621	

		RECIPIENTS	
	RETIREMENT <u>ANNUITANTS</u>	DISABLED	<u>SURVIVORS</u>
A. On June 30, 1987	20,341	645	4,029
B. Additions	2,271	166	343
 C. Deletions: 1. Service Retirement 2. Death 3. Annuity Expired 4. Returned as Active 	(720) 0 0	(96) (56) 0 0	(193) 0
D. Data Adjustments	(10)	(9)	(11)
E. Total on June 30, 1988	21,882	650	4,168

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PUBLIC EMPLOYE	ES RETIREMENT	FUND	TABLE 8
ACTUARIAL I (DOLLARS)	BALANCE SHEET IN THOUSANDS)	•	
JULY	1, 1988		
A. CURRENT ASSETS (TABLE 1, F6)			\$2,657,038
 B. EXPECTED FUTURE ASSETS 1. Present Value of Expected Future S Supplemental Contributions 	Statutory		944,017
2. Present Value of Future Normal Cos	sts		762,151
3. Total Expected Future Assets			1,706,168
. TOTAL CURRENT AND EXPECTED FUTURE ASS	SETS		\$4,363,206
). CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	Vested	<u>Total</u>
a. Retirement Annuities b. Disability Benefits		\$1,415,847 21,154	\$1,415,847 21,154
Child Benefits		154,218	154,218
2. Deferred Retirements with Future Augmentation		34,747	34,747
3. Former Members without Vested Rig	nts	7,425	7,425
 4. Active Members a. Retirement Annuities b. Disability Benefits c. Survivors' Benefits d. Deferred Retirements e. Refund Liability Due to 	32,430 71,795 74,985 16,689	1,122,465 0 0 295,888	1,154,895 71,795 74,985 312,577
Death or Withdrawal	0	86,780	86,780
5. Total Current Benefit Obligations	\$195,899	\$3,138,524	\$3,334,423
E. EXPECTED FUTURE BENEFIT OBLIGATIONS			\$1,183,336
F. TOTAL CURRENT AND EXPECTED FUTURE BEI	NEFIT OBLIGAT	TIONS	\$4,517,759
G. CURRENT UNFUNDED ACTUARIAL LIABILITY	(D5-A)		\$677,385

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THE *Wyatt* company

PUBLIC EMPLOYEES RETIREMENT FUND

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DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1988

		ACTUARIAL PRESENT VALUE OF PROJECTED <u>BENEFITS</u> (1)	ACTUARIAL PRESENT VALUE OF FUTURE <u>NORMAL COSTS</u>	ACTUARIAL ACCRUED LIABILITY (3)=(1)-(2)
Α.	DETERMINATION OF ACTUARIAL ACC	RUED	(2)	()/-(1) (2)
	1. Active Members			
	a. Retirement Annuities	\$2,026,863	\$408,511	\$1,618,352
	c Survivors Benefits	124 084	31,835	87,174
	d. Deferred Retirements	490,447	142,513	347,934
	e. Refunds Due to Death or Withdrawal	123,965	144,456	(20,491)
	f. Total	\$2,884,368	\$762,151	\$2,122,217
	Future Augmentation	\$34,747		\$34,747
	 Former Members Without Vested Rights 	7,425		7,425
	4. Annuitants in MPRIF	1,476,424		1,476,424
	5. Recipients Not in MPRIF	114,795		114,795
	6. Total	\$4,517,759	\$762,151	\$3,755,608
D	DETERMINATION OF UNFUNDED ACTU			
р.	1. AAL (A6)	ARIAL ACCRUED LI	ABILITY (UAAL)	\$3,755,608
	2. Current Assets (Table 1,F6)			2,657,038
	3. UAAL (B1-B2)			\$1,098,570
c	DETERMINATION OF SUPPLEMENTAL			
ι.	1. Present Value of Future Pay Amortization Date of July 1	rolls through th , 2010	E ne	\$32,329,361
	2. Supplemental Contribution R	ate (B3/C1)		3.40%

----- THE Myatt COMPANY ------

	PUBLIC EMPLOYEES RETIREMENT FUND	TABLE 1
	CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (DOLLARS IN THOUSANDS)	(UAAL)
	YEAR ENDING JUNE 30, 1988	
A.	UAAL AT BEGINNING OF YEAR	\$731,06
Β.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
	1. Normal Cost and Expenses 2. Contribution 3. Interest on A, B1, and B2	\$96,33 (149,59 56,35
	4. Total (B1+B2+B3)	\$3,09
c.	EXPECTED UAAL AT END OF YEAR (A+B4)	\$734,16
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
	 Salary Increases Investment Return MPRIF Mortality Mortality of Other Benefit Recipients Other Items 	(\$14,56 35,62 7,58 3,60 114,86
	6. Total	\$147,11
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$881,27
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$217,29
Η.	UAAL AT END OF YEAR (E+F+G)	\$1,098,57

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PUBLIC EMPLOYEES RETIREMENT FUND

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DETERMINATION OF CONTRIBUTION SUFFICIENCY (DOLLARS IN THOUSANDS)

JULY 1, 1988

	% OF <u>PAYROLL</u>	\$ AMOUNT
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.27%	\$75,475
2. Employer Contributions	4.67%	82,588
3. Total	8.94%	\$158,063
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
 Normal Cost a. Retirement Benefits b. Disability Benefits c. Survivors d. Deferred Retirement Benefits e. Refunds Due to Death or Withdrawal 	3.03% 0.22% 0.25% 1.10% 1.12%	\$53,533 3,967 4,409 19,514 19,712
f. Total	5.72%	\$101,135
2. Supplemental Contribution Amortization by July 1, 2010 of UAAL of \$1,098,570	3.40%	\$60,079
3. Allowance for Expenses	0.30%	\$5,301
4. Total	9.42%	\$166,515
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	-0.48%	(\$8,452)
Note: Projected Annual Payroll for Fiscal on July 1, 1988 is \$1,767,041	Year Beginning	

PUBLIC EMPLOYEES RETIREMENT FUND

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PROJECTED CASH FLOW (DOLLARS IN THOUSANDS)

		TRANSFERS	-		NON-MPRIF
FISCAL	STATUTORY	TO	OTHER	INVESTMENT	ASSETS
YFAR	CONTRIBUTIONS	MPRIF	DISBURSEMENTS	RETURN	YFAR FND
<u> </u>			DISDORSENENIS		TEAN LIND
1000					¢1 100 C14
1900					\$1,180,614
1000	£150 0C0	£05 007	t.c. 005	£07 000	1 265 257
1909	\$158,003	\$25,237	\$40,005	\$97,922	1,305,35/
1990	166,640	144,325	43,6/3	108,374	1,452,3/3
1991	176,406	109,546	42,376	117,169	1,594,026
1992	186,491	128,673	41,980	128,156	1,738,020
1993	197,349	158,421	42,290	138,907	1,873,565
1994	208,642	160,701	43,549	150,061	2,028,018
1995	220,902	178,926	44,936	162,123	2,187,181
1996	233,965	198,654	46,861	174.512	2,350,143
1997	247,682	213,249	49 405	187 413	2 522 584
1998	262 546	243 220	52 260	200 400	2,522,504 2,600,120
1330	202,540	243,220	52,200	200,409	2,090,139
1999	278 398	261 198	55 345	213 685	2 865 670
2000	205 387	262 576	59 022	213,003	2,003,073
2000	212 520	202,370	50,923	220,210	3,007,777
2001	313, 339	207,400	02,084	243,958	3,2/5,135
2002	332,994	330,379	66,730	259,446	3,4/0,466
2003	353,880	352,719	71,052	274,842	3,675,417
2004	276 210	047 100	75 540	000 170	
2004	376,312	347,192	75,549	292,176	3,921,164
2005	400,379	367,533	80,592	311,783	4,185,201
2006	426,080	380,559	86,031	333,196	4,477,887
2007	453,451	459,450	91,785	354,320	4,734,423
2008	482,674	481,771	97,648	374.884	5,012,562
				· · ·	-,,
2009	513,802	492,740	104.065	397,685	5.327.244
2010	547,034	484,770	110,956	424,232	5,702,784
2011	582,509	504, 193	118 344	454 622	6 117 379
2012	620,200	637 018	125 664	193 605	6 / 59 600
2012	660 576	500 70E	122,004	703,033	6 001 005
2013	000,570	590,705	132,/94	513,858	0,901,625

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PUBLIC EMPLOYEES RETIREMENT FUND

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

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Interest:	Pre-Retirement: 8% per annum
	Post-Retirement: 5% per annum
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Effective July 1, 1988 Male - 1971 Group Annuity Mortality Table male rates projected to 1984 by Scale D Female - 1971 Group Annuity Mortality Table female rates projected to 1984 by Scale D Prior to July 1, 1988 Male - UP-1984 Unisex set forward 1 year Female - UP-1984 Unisex set back 4 years Post-Retirement:
	Male - Same as above Female - Same as above
	Post-Disability: Male - 1965 RRB rates Female - 1965 RRB rates
Retirement Age:	Age 64, or if over age 64, one year from valuation date. In addition, 50% of employees are assumed to retire under the Rule of 90 when first eligible.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Administrative and Investment Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.30% of payroll)
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
Social Security:	NA

______ THE *Wyatt* company ______

TABLE 13 (cont)

Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA
Actuarial Cost Method:	Entry Age Normal Cost Method with normal costs expressed as a level percentage of earnings. Under this method Actuarial Gains(Losses) reduce(increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.
Projected Cash Flow Method:	Cash flows from the Non-MPRIF portion of the Fund were projected based on the current plan benefits, participant data, and actuarial assumptions. In addition, new entrants were assumed so that the total payroll would increase by 6.5% per annum.

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TABLE 13 (cont)

SEPARATIONS EXPRESSED AS THE NUMBER OF OCCURRENCES PER 10,000

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	<u>Deat</u>	<u>h</u>	<u>With</u>	<u>drawal</u>	<u>Disabi</u>	lity	<u>Reti</u>	<u>rement</u>
<u>Aqe</u> 20 21 22 23 24	<u>Male F</u> 5 5 5 5 5 5	<u>emale</u> 2 2 3 3	<u>Male</u> 2,750 2,638 2,505 2,390 2,265	<u>Female</u> 3,832 3,777 3,712 3,631 3,516	<u>Male</u> 9 9 10 10	<u>Female</u> 9 9 10 10	<u>Male</u> 0 0 0 0 0	<u>Female</u> 0 0 0 0 0
25 26 27 28 29	6 6 7 7	3 3 3 3 4	2,160 2,045 1,925 1,820 1,715	3,356 3,226 3,103 2,997 2,891	10 10 10 11 11	10 10 10 11 11	0 0 0 0	0 0 0 0
30 31 32 33 34	7 8 9 10	4 4 5 5	1,610 1,528 1,435 1,330 1,245	2,805 2,694 2,590 2,463 2,325	11 11 11 12 12	11 11 11 12 12	0 0 0 0	0 0 0 0
35 36 37 38 39	10 11 12 13 14	5 6 7 7	1,170 1,092 1,010 940 880	2,160 1,990 1,830 1,650 1,485	12 12 13 13 14	12 12 13 13 14	0 0 0 0 0	0 0 0 0
40 41 42 43 44	15 16 18 21 24	8 9 9 10 11	818 762 715 670 622	1,340 1,230 1,130 1,045 972	15 16 17 18 20	15 16 17 18 20	0 0 0 0	0 0 0 0
45 46 47 48 49	27 30 34 39 44	12 13 14 15 17	580 539 497 450 420	900 830 787 745 704	22 23 25 27 30	22 23 25 27 30	0 0 0 0	0 0 0 0
50 51 52 53 54	49 54 60 65 72	18 20 21 23 25	385 345 310 270 230	663 628 595 555 522	33 36 40 45 51	33 36 40 45 51	0 0 0 0	0 0 0 0

- the *Wyatt* company -

TABLE 13 (cont)

	Dea	ath	With	<u>ndrawal</u>	Disal	bility	<u>Ret</u>	<u>irement</u>
<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	Male	<u>Female</u>
55	78	27	195	478	58	58	0	0
56	85	30	150	410	66	66	0	0
57	92	33	100	362	76	76	0	0
58	100	37	50	210	88	88	0	0
59	110	41	0	50	102	102	0	0
60	101	16	0	0	110	110	0	0
61	121	40	0	0	110	110	0	0
60	135	52	0	0	150	150	0	0
02	140	50	U	U	157	15/	0	0
63	160	65	U	0	181	181	U	0
64	176	73	0	0	208	208	10,000	10,000
65	195	81	0	0	0	0	0	0
66	219	90	Õ	Ō	Õ	õ	Õ	ñ
67	243	99	Ő	Õ	Ő	õ	Õ	õ
68	270	109	Õ	Ô	Õ	ň	ñ	õ
69	300	123	Õ	Õ	ŏ	Õ	Õ	õ
70	224	140	0	•	•	0	•	•
70	334	140	U	U	U	U	U	0

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TABLE 3A BASIC

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PUBLIC EMPLOYEES RETIREMENT FUND

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	YEARS OF SERVICE										
<u>AGE</u>	<1	<u>1-4</u>	5-9	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>TOTAL</u>		
<25 25-29									0 0		
30-34 35-39		1		1	10	23			1 34		
40-44 45-49				1	10 13	274 503	25 177	22	309 716		
50-54 55-59	3	1	3 3	1	11 19	581 619	361 403	214 188	1,174 1,233		
60-64 65+		1	1		13 2	481 96	165 35	113 26	774 159		
TOTAL	3	3	7	3	78	2,577	1,166	563	4,400		

ACTIVE MEMBERS AS OF JUNE 30, 1988

AVERAGE ANNUAL EARNINGS

	YEARS OF SERVICE									
<u>AGE</u>	<u><1</u>	1-4	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u> 30+</u>	ALL	
<25 25-29									0	
30-34 35-39		1,231		8,950	22,472	25,751			1,231 24,293	
40-44 45-49				44,342	33,538 27,028	29,739 28,184	26,533 29,570	30,674	29,603 28,605	
50-54 55-59	7,291	24,229	26,569 17,909	33,554	18,882 17,351	25,279 21,744	29,632 27,441	31,046 29,444	27,565 24,712	
60-64 65+		22,000	14,118		12,535 8,917	19,405 15,484	23,041 20,984	26,653 24,539	21,119 18,093	
ALL	7,291	15,820	21,079	28,949	20,893	24,014	27,606	29,314	25,571	
	-									

	PRIOR FISC	AL YEAR	EARNINGS	(IN TH	OUSANDS)	BY YEAR	S OF SER	VICE
~ [<u><1 1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	TOTAL
2	2 47	148	87	1,630	61,883	32,189	16,504	112,510

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TABLE 4A BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

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	YEARS RETIRED										
<u>AGE</u>	<1	1-4	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL			
<50 50-54	2 1	7						2 8			
55-59 60-64	65 72	455 1,559	1 183	1				521 1,815			
65-69 70-74	117 5	1,729 229	1,131 2,358	38 395	2 6			3,017 2,993			
75-79 80-84	1	13 5	177 30	1,797 246	117 779	4 45		2,109 1,105			
85+		2	9	50	198	436	195	890			
TOTAL	263	3,999	3,889	2,527	1,102	485	195	12,460			

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

	YEARS RETIRED									
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>		
<50 50-54	5,637 23,828	9,748						5,637 11,508		
55-59 60-64	8,844 7,896	14,160 12,639	8,096 13,728	7,921				13,485 12,558		
65-69 70-74	7,018 6,277	9,865 8,662	9,693 7,649	6,695 8,802	8,610 1,947			9,649 7,865		
75-79 80-84	2,476	5,252 3,584	7,440 3,969	6,187 5,521	3,638 3,844	5,499 4,158		6,142 4,232		
85+		6,181	7,855	4,624	4,154	3,860	3,969	4,038		
ALL	7,732	11,341	8,492	6,509	3,876	3,902	3,969	8,330		

	TOTAL	ANNUAL	ANNUITY	(IN THOUS	ANDS) BY	YEARS OF	RETIREMEN	Т
4	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
2,03	33 45	,353	33,025	16,447	4,272	1,892	774	103,796

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PUBLIC EMPLOYEES RETIREMENT FUND

YEARS DISABLED 25+ AGE 1-4 5-9 10-14 15-19 20-24 TOTAL <u><1</u> 2 3 2 <50 4 11 50-54 4 9 9 6 28 55-59 7 31 32 14 84 60-64 2 39 53 29 2 2 127 0 65-69 70-74 0 75-79 0 80-84 0 85+ 0 TOTAL 15 51 2 2 0 82 98 250

DISABILITY RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

	YEARS DISABLED							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	11,257 12,125	11,073 14,041	10,853 7,871	2,458 5,061				9,460 9,860
55-59 60-64	9,120 6,835	13,860 9,426	10,297 11,204	7,562 6,073	5,126	2,622		11,058 9,187
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	9,902	11,669	10,588	6,221	5,126	2,622	0	9,903

	TOTAL ANNUAL	BENEFIT	(IN ⁻	THOUSANDS)	BY YEARS	OF DISABIL	ITY
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>4 15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
149	957	1,038	317	7 10	5	0	2,476

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— THE Wyatt COMPANY -

TABLE 5A BASIC

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TABLE 6A BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

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SURVIVORS AS OF JUNE 30, 1988

	YEARS SINCE DEATH							
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
<50 50-54	2 6	25 30	28 26	22 16	4	2 2	2	85 84
55-59 60-64	5 8	70 92	32 121	30 53	14 30	9 19	5 4	165 327
65-69 70-74	5 3	80 50	174 142	106 189	43 82	43 73	28 33	479 572
75-79 80-84	16 11	64 51	79 94	171 104	115 108	93 111	74 55	612 534
85+	16	80	81	131	137	147	130	722
TOTAL	72	542	777	822	537	499	331	3,580

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	<u>ALL</u>
<50	12,000	9,076	6,288	5,087	1,784	1,762	1,934	6,511
50-54	8,023	9,600	6,888	5,849	1,669	1,896		7,372
55-59	12,870	10,941	6,863	6,423	1,851	1,776	1,931	7,843
60-64	9,190	8,487	7,178	5,981	1,832	1,802	1,900	6,534
65-69	5,694	7,401	6,464	5,842	1,958	1,800	1,846	5,382
70-74	2,315	3,580	5,916	4,644	1,830	1,791	1,917	3,930
75-79	2,362	2,505	3,070	4,805	2,392	1,852	1,859	3,018
80-84	2,115	2,085	2,346	3,278	2,456	2,072	1,918	2,419
85+	2,114	2,098	2,249	2,283	2,185	2,475	2,052	2,234
ALL	4,726	6,028	5,217	4,469	2,176	2,068	1,951	3,961

	TOTAL ANNUAL	BENEFIT	(IN THOUS	SANDS) BY	YEARS S	SINCE DEATH	
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	TOTAL
340	3,267	4,053	3,674	1,169	1,032	646	14,181

- THE Myatt COMPANY -----

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	DETERMINATION OF CONTRIB (DOLLARS IN TH	JTION SUFFICIENCY DUSANDS)	
	JULY 1, 1	988	
		% OF <u>PAYROLL</u>	\$ <u>AMOUNT</u>
Α.	STATUTORY CONTRIBUTIONS - CHAPTER 353		
	1. Employee Contributions	8.00%	\$9,586
	2. Employer Contributions	10.50%	12,581
	3. Total	18.50%	\$22,167
B.	REQUIRED CONTRIBUTIONS - CHAPTER 356 (NOR	1AL COST ONLY)	
	 Normal Cost a. Retirement Benefits b. Disability Benefits c. Survivors d. Deferred Retirement Benefits e. Refunds Due to Death or Withdrawal 	3.79% 0.42% 0.96% 2.00% 2.28%	\$4,549 502 1,150 2,395 2,726
	f. Total	9.45%	\$11,322

PUBLIC EMPLOYEES RETIREMENT FUND

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TABLE 11A

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Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1988 is \$119,824

— THE *Wyall* company ————
TABLE 14A BASIC

PUBLIC EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility

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A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees. City managers and persons holding elective office may choose to become Members.

Contributions Member

8% of Salary.

10.5% of Salary.

Employer

Allowable Service Service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.

Salary

Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.

Average Salary

Average of the 5 highest successive years of Salary.

RETIREMENT

Normal Retirement Benefit Eligibility Ad

Age 65 and 5 years of Allowable Service. Age 62 and 30 years of Allowable Service. Rule of 90: Age plus Allowable Service totals 90. Proportionate Retirement Annuity is available at age 65 and 1 year of Allowable Service.

Amount 2% of Average Salary for the first 10 years of Allowable Service and 2.5% of Average Salary for each subsequent year.

Early Retirement Benefit Eligibility Age

Age 55 and 5 years of Allowable Service. Any age with 30 years of Allowable Service.

Amount

Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.25% for each month the Member is under age 65 at time of retirement (age 62 if 30 years of Allowable Service).

THE Wyatt COMPANY -

TABLE 14A BASIC (cont) Form of Payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary) Benefit Increases Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). DISABILITY Disability Benefit Eliqibility Total and permanent disability before age 65 with 5 years of Allowable Service if age 50 or older, or with 5 years of Allowable Service if younger than age 50. Amount Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before age 65. Supplemental benefit of \$5 per month for each year under age 65 at commencement of disability (maximum of \$50 per month). The disability benefit is reduced to that amount which when added to Workers' Compensation, does not exceed Average Salary. Payments stop at age 65, or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment. Form of Payment Same as for retirement. Benefit Increases Adjusted by PERA to provide same increase as MPRIF. Retirement After Disability Eligibility Age 65 with continued disability. Amount Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity. Benefit Increases Same as for retirement. DEATH Surviving Spouse Benefit Eliqibility Active Member with 18 months of Allowable Service or Member receiving a disability benefit.

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THE Whatt COMPANY -

TABLE 14A BASIC (cont)

Amount 50% of Salary averaged over last 6 months. Maximum family benefit is \$1,000 per month. Benefits paid until spouse's death but no payments while spouse is remarried. Surviving spouse optional annuity may be elected in lieu of this benefit. Surviving Dependent Children's Benefit Active Member with 18 months of Allowable Service or Eligibility Member receiving a disability benefit. Amount 10% of Salary averaged over last 6 months for each child. Family benefit minimum (including spouse's benefit) of 50% of Salary and maximum of \$1,000 per month. Benefits paid until child marries. dies, or attains age 18 (age 22 if full time student). Surviving Spouse Optional Annuity Eligibility Member or former Member who dies before retirement or disability benefits commence, if age 50 with 5 years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. Amount Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated. Benefit Increases Adjusted by PERA to provide same increase as MPRIF. Refund of Contributions Eligibility Member dies before receiving any retirement benefits and survivor benefits are not payable. Amount The excess of the Member's contributions with 5% interest over any disability or survivor benefits paid. TERMINATION Refund of Contributions Eliqibility Termination of public service. Amount Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund. Deferred Benefit Eligibility 5 years of Allowable Service.

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- THE Wyatt COMPANY -

TABLE 14A BASIC (cont)

Amount

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Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

- THE Myatt COMPANY --

TABLE 3B COORDINATED

PUBLIC EMPLOYEES RETIREMENT FUND

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ACTIVE MEMBERS AS OF JUNE 30, 1988

	YEARS OF SERVICE											
<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u> 30+</u>	TOTAL			
<25 25-29	1,518 1,851	2,374 5,152	100 2,455	150					3,992 9,608			
30-34 35-39	1,912 1,789	5,479 5,798	4,053 3,992	2,118 3,112	127 1,197	25			13,689 15,913			
40-44 45-49	1,886 816	5,186 2,944	3,544 2,891	2,559 2,304	1,616 1,549	201 319	39	2	14,992 10,864			
50-54 55-59	4 61 321	1,875 1,316	2,061 1,547	2,093 1,659	1,762 1,757	322 362	109 121	29 59	8,712 7,142			
60-64 65+	145 74	693 257	962 353	1,123 346	1,244 273	270 42	65 5	50 10	4,552 1,360			
TOTAL	10,773	31,074	21,958	15,464	9,525	1,541	339	150	90,824			

AVERAGE ANNUAL EARNINGS

	YEARS OF SERVICE										
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL		
<25 25-29	8,375 10,519	12,607 16,111	13,863 18,192	19,204					11,029 15,614		
30-34 35-39	9,727 9,103	16,191 14,964	21, 299 21,515	21,675 25,408	22,325 25,563	25,387			17,706 18,783		
40-44 45-49	7,854 8,455	13,434 13,349	18, 842 16,996	24,506 19,627	28,776 24,180	31,092 30,894	33,096	32,943	17,791 17,418		
50-54 55-59	7,978 7,592	13,023 11,830	15,946 15,427	17,612 17,563	19,819 18,729	27,521 25,789	37,549 35,487	34,711 35,204	16,840 16,749		
60-64 65+	6,714 5,511	10,571 7,141	14,866 9,957	16,757 11,665	18,119 14,078	24,421 20,160	29,239 33,504	35,068 21,588	16,302 10,932		
ALL	8,937	14,358	18,614	20,994	22,216	27,500	34,648	34,125	17,029		

_		PRIOR F	<u>ISCAL YEA</u>	R EARNI	NGS (IN	THOUSANDS)	BY YEAR	S OF SE	RVICE
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	TOTAL
96,	274	446,175	408,722	324,644	211,603	42,377	11,746	5,119	1,546,660

_____ THE *Wyatt* company _____

TABLE 4B COORDINATED

PUBLIC EMPLOYEES RETIREMENT FUND

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				YEARS RE	TIRED			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
<50 50-54	1							0 1
55-59 60-64	134 410	291 1,293	18					425 1,721
65-69 70-74	296 31	2,354 517	603 1,725	5 74				3,258 2,347
75-79 80-84	4 2	72 15	243 31	792 111	12 284			1,123 443
85+		1	6	7	75	15		104
TOTAL	878	4,543	2,626	9 89	371	15	0	9,422

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

				YEARS RE	TIRED			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	6,935							0 6,935
55-59 60-64	1,847 2,680	2,565 3,745	8,628					2,338 3,542
65-69 70-74	2,551 1,423	3,103 2,117	3,290 2,749	2,113 4,869				3,086 2,659
75-79 80-84	704 234	880 649	1,907 1,098	3,050 2,818	3,090 2,050			2,655 2,120
85+		2,133	690	2,436	2,198	3,167		2,266
ALL	2,455	3,096	2,811	3,151	2,114	3,167	0	2,924

	TOTAL	ANNUAL	ANNUITY	(IN	THOUSA	NDS) BY	YEARS	0F	RETIREMENT	•
<u><</u>	1	<u>1-4</u>	<u>5-9</u>	10-	14	<u>15-19</u>	<u>20-2</u>	<u>4</u>	<u>25+</u>	TOTAL
2,156	5 14	,063	7,382	3,1	16	784	48	8	0	27,549

_____ THE Myatt COMPANY _____

PUBLIC EMPLOYEES RETIREMENT FUND COORDINATED

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TABLE 5B

				YEARS DI	SABLED			
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
<50 50-54	11 14	25 35	4 4	2				42 53
55-59 60-64	25 22	65 111	16 52	2 9	1 2			109 196
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	72	236	76	13	3	0	0	400

DISABILITY RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

				YEARS DI	SABLED			
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	2,290 2,477	2,654 2,986	3,773 2,836	1,609				2,616 2,840
55-59 60-64	2,742 2,363	2,444 3,040	2,101 2,441	5,776 1,349	1,638 1,402			2,516 2,710
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	2,506	2,827	2,460	2,070	1,480	0	0	2,665

	TOTAL ANNUAL	BENEFIT	(IN T	THOUSANDS)	BY YEARS	OF DISABI	LITY
<u><1</u>	<u>1-4</u>	<u>5-9</u>	10-14	<u>4 15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
180	668	187	27	7 4	0	0	1,066

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TABLE 6B COORDINATED

PUBLIC EMPLOYEES RETIREMENT FUND

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SURVIVORS AS OF JUNE 30, 1988

	YEARS SINCE DEATH								
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>	
<50 50-54	3 4	14 21	5 4	1				23 29	
55-59 60-64	15 11	43 47	12 33	2 6	1			72 98	
65-69 70-74	1 1	48 15	73 49	19 47	1 3			142 115	
75-79 80-84		3 1	6 6	48 12	10 9	1		67 29	
85+			1	2	3	2	5	13	
TOTAL	35	192	189	137	27	3	5	588	

AVERAGE ANNUAL BENEFIT

				YEARS SI	NCE DEATH			
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	1,958 2,060	3,060 3,368	3,921 1,849	693				3,001 2,978
55-59 60-64	2,380 1,879	2,825 2,850	1,807 1,992	3,020 1,860	1,125			2,568 2,374
65-69 70-74	2,398 1,791	3,019 2,664	2,458 2,027	1,774 2,246	778 1,030			2,544 2,172
75-79 80-84		3,284 1,573	3,695 3,596	2,532 2,858	2,277 2,218	1,864		2,631 2,734
85+			2,640	1,459	1,835	969	1,366	1,525
ALL	2,133	2,944	2,326	2,306	1,971	1,267	1,366	2,482

	TOTAL ANNUAL	BENEFIT	(IN T	HOUSANDS)	BY YEARS	SINCE DEATH	
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
75	564	440	316	53	4	7	1,459

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THE Wyatt COMPANY _____

PUBLIC EMPLOYEES RETIREMENT FUND

TABLE 11B COORDINATED

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DETERMINATION OF CONTRIBUTION SUFFICIENCY (DOLLARS IN THOUSANDS)

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JULY 1, 1988

	% OF <u>PAYROLL</u>	\$ <u>AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.00%	\$65,889
2. Employer Contributions	4.25%	70,007
3. Total	8.25%	\$135,896
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356 (NORMAL 1. Normal Cost a. Potimement Repofits 	COST ONLY) 2 97%	¢10 001
a. Retirement Benefits b. Disability Benefits c. Survivors d. Deferred Retirement Benefits e. Refunds Due to Death or Withdrawal	2.97% 0.21% 0.20% 1.04% 1.03%	\$48,984 3,465 3,259 17,119 16,986
f. Total	5.45%	\$89,813

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1988 is \$1,647,218

_____ THE *Wyatt* company ______

TABLE 14B COORDINATED

PUBLIC EMPLOYEES RETIREMENT FUND

SUMMARY OF PLAN PROVISIONS

Eligibility A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds and certain part-time employees. City managers and persons holding elective office may choose to become Members.

Contributions Member

4% of Salary.

4.25% of Salary.

Employer

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Allowable Service Service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.

Salary Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.

Average Salary Average of the 5 highest successive years of Salary.

RETIREMENT

Normal Retirement Benefit Eligibility

Age 65 and 5 years of Allowable Service. Age 62 and 30 years of Allowable Service. Rule of 90: Age plus Allowable Service totals 90. Proportionate Retirement Annuity is available at age 65 and 1 year of Allowable Service.

Amount 1% of Average Salary for the first 10 years of Allowable Service and 1.5% of Average Salary for each subsequent year.

Early Retirement Benefit Eligibility

Age 55 and 5 years of Allowable Service. Any age with 30 years of Allowable Service.

Amount Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.25% for each month the Member is under age 65 at time of retirement (age 62 if 30 years of Allowable Service).

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- THE Wyatt COMPANY -

TABLE 14B COORDINATED (cont) Form of Payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary). Benefit Increases Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). DISABILITY Disability Benefit Eliqibility Total and permanent disability before age 65 with 5 years of Allowable Service if age 50 or older, or with 5 years of Allowable Service if younger than age 50. Amount Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before age 65. The disability benefit is reduced to that amount which when added to Worker's Compensation, does not exceed Average Salary. Payments stop at age 65, or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment. Form of Payment Same as for retirement. Benefit Increases Adjusted by PERA to provide same increase as MPRIF. Retirement After Disability Eligibility Age 65 with continued disability. Amount Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity. Benefit Increases Same as for retirement. DEATH Surviving Spouse Optional Annuity Eligibility Member or former Member who dies before retirement or disability benefits commence, if age 50 with 5 years of Allowable Service or any age with 30 years of -42-

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THE Wyatt COMPANY -

TABLE 14B COORDINATED (cont)

Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55.

Amount Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated.

- Benefit Increases Adjusted by PERA to provide same increase as MPRIF.
- Refund of Contributions Eligibility Member dies before receiving any retirement benefits and survivor benefits are not payable.

Amount

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The excess of the Member's contributions with 5% interest over any disability or survivor benefits paid.

TERMINATION

Refund of Contributions Eligibility

Termination of public service.

Amount Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.

Deferred Benefit Eligibility

5 years of Allowable Service.

Amount

Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3%thereafter until the annuity begins. Amount is payable as a normal or early retirement.

THE Wyatt COMPANY

PUBLIC EMPLOYEES POLICE AND FIRE FUND

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ACTUARIAL VALUATION REPORT

JULY 1, 1988

—— THE *Wyatt* company -

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AN INDEPENDENT WORLDWIDE BENEFITS AND COMPENSATION CONSULTING FIRM

SUITE 1525 8400 NORMANDALE LAKE BOULEVARD MINNEAPOLIS, MINNESOTA 55437

(612) 921-8700

EMPLOYEE BENEFITS EMPLOYEE COMMUNICATIONS RISK MANAGEMENT INSURANCE CONSULTING HEALTH CARE CONSULTING

November 3, 1988

Legislative Commission on Pensions and Retirement 55 State Office Building St. Paul, Minnesota 55155

RE: PUBLIC EMPLOYEES POLICE AND FIRE FUND

Commission Members:

We have prepared an actuarial valuation of the Fund as of July 1, 1988 based on membership and financial data supplied by the Fund.

We certify that to the best of our knowledge and belief this actuarial valuation was performed in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on August 22, 1988.

Respectfully submitted,

THE WYATT COMPANY

Robert E. Pachina

Robert E. Perkins, FSA Consulting Actuary

Michael C. In

Michael C. Gunvalson, ASA Associate Actuary

ACTUARIAL SERVICES COMPENSATION PROGRAMS ADMINISTRATIVE SYSTEMS INTERNATIONAL SERVICES ORGANIZATION SURVEYS

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

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_____ THE Wyatt COMPANY _____

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

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REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	07/01/87 <u>VALUATION</u>	07/01/88 <u>VALUATION</u>
A. CONTRIBUTIONS (TABLE 11)		
<pre>1. Statutory Contributions - Chapter 353 % of Payroll</pre>	20.00%	20.00%
2. Required Contributions - Chapter 356 % of Payroll	15.97%	16.69%
3. Sufficiency (Deficiency) (A1-A2)	4.03%	3.31%
B. FUNDING RATIOS		
 Accrued Benefit Funding Ratio a. Current Assets (Table 1) b. Current Benefit Obligations (Table 8 c. Funding Ratio (a/b) 	\$506,153 3) \$437,229 115.76%	\$557,669 \$512,921 108.72%
 Accrued Liability Funding Ratio a. Current Assets (Table 1) b. Actuarial Accrued Liability (Table 9 c. Funding Ratio (a/b) 	\$506,153 \$486,674 104.00%	\$557,669 \$574,133 97.13%
 Projected Benefit Funding Ratio (Table a. Current and Expected Future Assets b. Current and Expected Future Benefit Obligations c. Funding Ratio (a/b) 	8) \$946,283 \$805,164 117.53%	\$1,077,023 \$936,934 114.95%
C. PLAN PARTICIPANTS		
 Active Members a. Number (Table 3) b. Projected Annual Earnings c. Average Annual Earnings (Actual \$) d. Average Age e. Average Service 	5,385 \$164,975 \$30,636 37.2 9.6	5,611 \$178,768 \$31,860 37.3 9.8
 Others a. Service Retirements (Table 4) b. Disability Retirements (Table 5) c. Survivors (Table 6) d. Deferred Retirements (Table 7) e. Terminated Other Non-vested (Table 7 f. Total 	895 66 310 97 7) 462 1,830	965 73 325 105 107 1,575

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

COMMENTARY

<u>Purpose</u>

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The purpose of this valuation is to determine the financial status of the Fund. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

Report Highlights

The statutory contributions for the PERA Police and Fire Fund continue to be sufficient following the adoption of a new mortality table that reflects longer life expectancy (see page 10 for more information regarding the mortaility table). The margin of sufficiency has decreased from 4.03% in 1987 to 3.31% in 1988. According to this valuation a contribution rate of 16.69% is required to comply with Minnesota Law.

The financial status of the Fund can be measured by three different funding ratios:

The Accrued Benefit Funding Ratio is a measure of current funding status, and when viewed over a period of years, presents a view of the funding progress. This ratio is based on Statement No. 5 of the Governmental Accounting Standards Board. This year's ratio is 108.72%. The corresponding ratio for the prior year was 115.76%.

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- o The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used. For 1988 the ratio is 97.13%, which is a decrease from the 1987 value of 104.00%.
- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio exceeds 100% and verifies that the current statutory contributions are adequate.

Asset Information (Tables 1 and 2)

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Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gains and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Fund participates in the MPRIF (i.e. Minnesota Post Retirement Investment

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Fund). The asset value shown for MPRIF on line A3 is set equal to the MPRIF Reserves reported on line D3 for both market and cost value purposes. This reserve is based on a 5% interest assumption.

Investment performance by SBI (i.e. State Board of Investment) above the 5% level is not shown in the assets but will be added in on January 1, 1989 when benefits will be increased for those annuitants who have been receiving payments for 18 months. Next year's valuation will include the 1989 benefit increase in determining the MPRIF value.

After the MPRIF liability has been calculated for each participating Fund, SBI will determine each Fund's portion of the excess earnings for the January benefit increase as well as the Fund's allocated market share of MPRIF. An approximation of those values on June 30, 1988 is provided below:

MPRIF Reserves	\$145,187,000
Reserves Plus Excess Earnings	155,000,000
MPRIF Market Value	156,000,000

Membership Data (Tables 3, 4, 5, 6 and 7)

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Tables 3 through 6 summarize statistical information about members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year except in the case of new hires whose earnings have been annualized.

The service retirements in Table 4 include not only those retiring from active status but also disabled members who have attained retirement age. Disabled members under retirement age are shown in Table 5. The survivors category (Table 6) includes spouses and children of deceased members.

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THE *Wyatt* company

A reconciliation of members in Table 7 provides a method for tracking what happened to members during the past year.

Actuarial Balance Sheet (Table 8)

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An actuarial balance sheet is required by Section 356.215, Subdivision 4f of Minnesota Law. This balance sheet (Table 8) establishes a method for evaluating both current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to Current Benefit Obligations on line D5. The difference between the obligations and the assets is shown as Current Unfunded Actuarial Liability on line G.

The first step in the calculation of the Current Benefit Obligation involves projecting salary and service of active members to determine future benefits payable under the plan and then discounting those projected benefits to the date of the valuation. The second step is to determine the discounted value of benefits for the non-active members. For those non-active members whose benefits have not commenced, the liability includes augmentation of benefits to date of commencement. The result of the first two steps is shown on line F, Total Current and Expected Future Benefit Obligations.

The third step is to determine the portion of line F that represents the Current Benefit Obligations. In the case of active members the Current Benefit Obligation is computed by attributing an equal benefit amount to each year of credited and expected future employee service. For all others, their entire liability is considered a Current Benefit Obligation.

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Current and future funding levels are evaluated by comparing Current and Future Expected Assets on line C to Current and Expected Future Benefit Obligations on line F. The difference between the obligations and the assets is shown as the Current and Future Unfunded Actuarial Liability on line H.

Since line F has already been calculated, the remaining step is to determine the Expected Future Assets. First, the excess of the statutory contribution rate over the combined normal cost rate and expense rate is calculated. Then, the excess rate is applied to the present value of future payrolls up to the amortization date (the date for paying off all unfunded liabilities) on the assumption that the total payroll will increase 6.5% annually.

The Current Unfunded Actuarial Liability, line G, is a measurement of the status of the funding to the date of the valuation. The Current and Future Unfunded Actuarial Liability is a measurement of the adequacy of the current statutory contribution level.

GASB Disclosure

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The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1988 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table. The liabilities using the old mortality table are provided for comparison. See page 10 for an

THE Whatt COMPANY

explanation of the change in actuarial assumptions.

	<u>Old Assumptions</u>	New Assumptions
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$167,149,000	\$174,131,000
Current Employees - Accumulated employee contributions including allocated investment income Employer-financed vested Employer-financed nonvested	124,176,000 * 129,224,000 73,567,000	124,176,000 * 145,928,000 68,686,000
Total Pension Benefit Obligation	\$494,116,000	\$512,921,000

* Estimated

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Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain

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a constant percentage of payroll each year.

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The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years the annual payment will cover the interest and also repay a portion of the unfunded.

Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. The major sources of gain and loss, which have been identified, are:

- A gain from salaries where the average increase was 5.6% compared to the expected 6.5%
- A loss from Non-MPRIF Assets (i.e. Current Assets reduced by MPRIF Reserves) because the return was 4.4% instead of the assumed 8%.

<u>Contribution Sufficiency (Table 11)</u>

This report answers the question of "How adequate are the Statutory Contributions?" by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

THE Whatt COMPANY

- o Normal Costs based on the Entry Age Normal Cost Method
- A Supplemental Contribution for amortizing any Unfunded Actuarial
 Accrued Liability
- o An Allowance for Expenses

Table 11 shows the Fund has a contribution sufficiency since the Statutory Contribution Rate is 20.00% compared to the Required Contribution Rate of 16.69%.

Projected Cash Flow (Table 12)

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Table 12 illustrates the anticipated cash flow over the amortization period. The cash flow begins with the Non-MPRIF Assets, which are the Current Assets reduced by the MPRIF Reserves. Contributions are then added based on the present statutory rates for employers and employees. As members become eligible for payments from MPRIF an amount of reserve is transferred to SBI. The other disbursements represent benefit payments and expenses made directly by the Fund.

This projected cash flow assumes that future payrolls increase by 6.5%. Table 12 is the only table in this report where new members are assumed to be hired in order to replace those who terminate from the active group. This open group method provides a more realistic picture of future cash flow. The statutory interest rate of 8% is used to project future investment return.

The amounts transferred to MPRIF will be affected by the number of members who reach the assumed retirement age during a given year. The amount for 1990 is large because it includes those already over age 60 who are assumed to retire a year from the valuation date.

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<u>Changes in Actuarial Assumptions</u>

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The mortality table has been updated to reflect improvements in life expectancy. The prior mortality table was the UP-1984 Unisex set forward one year for males and set back four years for females. The new table is based on the 1971 Group Annuity Mortality Table projected to 1984 for males and females. The projection is made in accordance with projection Scale D without interpolation within age groups.

Prior to the actuarial assumption change the Fund had a surplus of \$8,224,000 (see Table 10, line E). With the adoption of the new table the surplus is replaced by an Unfunded Actuarial Accrued Liability of \$16,464,000 which will be amortized by the Supplemental Contribution over the next 30 years.

	Impact Due To Change In <u>Mortality Table</u>				
Actuarial Accrued Liability	\$ 24,688,000				
for GASB No. 5	18,805,000				
Normal Cost Supplemental Contribution	. 52%				
Required Contribution	<u>. 39</u> . 91%				

Changes in Plan Provisions

This valuation does not reflect any changes in benefits since the prior valuation.

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ACCOUNTING BALANCE SHEET (DOLLARS IN THOUSANDS)

July 1, 1988

	ACCETC	MARKET VALUE	<u>COST VALUE</u>
Α.	ASSETS 1. Cash, Equivalents, Short-Term Securities 2. Investments	\$19,682	\$19,682
	a. Fixed Income	99,761	102,208
	b. Equity	286,797	249,704
	c. Real Estate	39,465	33,308
	3. Equity in Minnesota Post-Retirement	145,187	145,187
	4. Other	172	172
D		fE01 064	¢550.001
D.	IUTAL ASSETS	\$591,004 ==========	\$350,201 ==========
•			
C.	AMOUNTS CURRENTLY PAYABLE	\$6,193	\$6,193
D.	ASSETS AVAILABLE FOR BENEFITS		
	1. Member Reserves	\$95,440	\$95,440
	2. Employer Reserves	344,244	303,441
	3. MPRIF Reserves	145,187	145,187
	4. Non-MPRIF Reserves	U	0
	5. Total Assets Available for Benefits	\$584,871	\$544,068
E.	TOTAL AMOUNTS CURRENTLY PAYABLE AND	\$591,064	\$550,261
	ASSETS AVAILABLE FOR BENEFITS		
F.	DETERMINATION OF ACTUARIAL VALUE OF ASSETS	<u></u>	
	 Cost Value of Assets Available for Benefits (D5) 		\$544,068
	2. Market Value (D5)	\$584,871	
	3. Cost Value (D5)	544,068	
	 Market Over Cost (F2-F3) 	\$40,803	
	5. 1/3 of Market Over Cost(F4)/3		13,601
	6. Actuarial Value of Assets (F1+F5)		\$557 669
	(Same as "Current Assets")		#337,003 ==========
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CHANGES IN ASSETS AVAILABLE FOR BENEFITS (DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1988

	MARKET VALUE	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$549,534	\$484,462
B. OPERATING REVENUES	\$13,436	\$13,436
2. Employer Contributions 3. Investment Income	20,126 25,153	20,126 25,153
5. Net Realized Gain (Loss) 6. Other	14,594 0 1,697	14,594 0 1,697
7. Net Change in Unrealized Gain (Loss)	(24,269)	0
8. Total Revenue	\$50,737	\$75,006
C. OPERATING EXPENSES		
1. Service Retirements 2. Disability Benefits	\$11,842 864	\$11,842 864
3. Survivor Benefits	1,115	1,115
5. Expenses	773	773
6. Other	113	113
7. Total Disbursements	\$15,400	\$15,400
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	\$584,871	\$544,068 ========

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ACTIVE MEMBERS AS OF JUNE 30, 1988

	YEARS OF SERVICE								
AGE	<1	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u> 30+</u>	TOTAL
<25 25-29	122 122	197 558	279	1		¥			319 960
30-34 35-39	71 25	323 168	556 290	254 536	1 165				1,205 1,184
40-44 45-49	15 5	81 26	127 48	248 80	317 164	66 176	12		854 511
50-54 55-59	5 1	20 10	27 18	47 21	92 30	98 30	66 31	4 10	359 151
60-64 65+	1	5	6	14 1	14 1	10 3	8 1	2 2	60 8
TOTAL	367	1,388	1,351	1,202	784	383	118	18	5,611

AVERAGE ANNUAL EARNINGS

	YEARS OF SERVICE								
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL
<25 25-29	14,851 14,910	22,263 26,486	30,306	28,602					19,428 26,127
30-34 35-39	17,167 18,061	27,312 25,290	31,704 31,510	32,635 33,316	36,204 33,431				29,870 31,429
40-44 45-49	13,356 15,634	24,421 19,976	29,339 25,951	33,895 32,703	35,738 34,742	36,239 36,990	34,625		32,824 33,430
50-54 55-59	18,101 790	23,802 10,421	25,890 26,112	28,522 23,939	32,771 31,705	35,377 35,007	36,055 37,847	36,657 39,376	32,352 30,769
60-64 65+	3,400	10,918	29,350	28,665 23,692	29,648 49,280	33,190 25,135	36,206 32,646	46,581 25,932	29,420 29,111
ALL	15,462	25,481	30,746	32,834	34,451	36,101	36,362	38,079	29,916

	PRIOR FIS	CAL YEAR	EARNINGS	(IN TH	IOUSANDS)	BY YEARS	OF SER	VICE
<]	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	25-29	<u>30+</u>	TOTAL
5,674	35,367	41,538	39,466	27,009	13,827	4,291	685	167,857

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

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		YEARS RETIRED									
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL			
<50 50-54								0 0			
55-59 60-64	39 9	150 127	119					189 255			
65-69 70-74	1	68 11	111 68	39 70	14			219 163			
75-79 80-84		6 1	9	45 6	18 18	3 3	1	81 29			
85+				1	11	16	1	29			
TOTAL	49	363	307	161	61	22	2	965			

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

	YEARS RETIRED							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54								0 0
55-59 60-64	13,606 5,610	15,263 14,010	14,749					14,921 14,059
65-69 70-74	10,217	12,282 8,760	10,926 9,958	12,931 9,727	5,943			11,701 9,433
75-79 80-84		3,505 8,042	6,907	7,593 12,779	5,833 5,973	5,413 2,900	2,430	6,742 7,012
85+				6,151	7,631	5,063	6,521	6,125
ALL	12,068	13,855	12,076	9,998	6,224	4,816	4,476	11,847

	TOTAL ANNUAL	ANNUITY	(IN THOU	SANDS) BY	YEARS OF	RETIREMENT	
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
591	5,029	3,707	1,610	380	106	9	11,432

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YEARS DISABLED								
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
<50 50-54	9 5	16 11	13 7	4 8				42 31
55-59 60-64								0 0
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	14	27	20	12	0	0	0	73

DISABILITY RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

	YEARS DISABLED							
<u>AGE</u>	<1	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	12,634 10,096	11,430 13,780	10,955 13,827	9,990 9,655				11,404 12,132
55-59 60-64								0 0
65-69 70-74								0 0
75-79 80-84								0 0
85+								0
TOTAL	11,727	12,387	11,960	9,767	0	0	0	11,713

-		TOTAL ANNUAL	BENEFIT	(IN	THOUSANDS)	BY YEARS	OF DISABI	LITY
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	10-1	<u>4 15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
	164	335	239	11	7 0	0	0	855

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		YEARS SINCE DEATH									
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>			
<50 50-54	4	18 5	15 9	4 5	3 1	1 1		45 21			
55-59 60-64	2	9 7	10 12	7 10	2 12	1 2		31 43			
65-69 70-74		4 7	20 10	17 17	2 7	1 6	1 4	45 51			
75-79 80-84		4 6	5 6	9 4	12 7	5 4	2 1	37 28			
85+		4	8	4	3	2	3	24			
TOTAL	6	64	95	77	49	23	11	325			

SURVIVORS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

		YEARS SINCE DEATH									
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>			
<50 50-54	9,252	9,406 10,105	9,466 9,739	4,664 7,061	2,339 434	1,767 1,841		8,350 8,369			
55-59 60-64	14,211	8,652 7,036	9,029 8,297	6,572 5,569	2,550 2,719	1,881 1,323		8,051 5,576			
65-69 70-74		4,256 3,542	7,167 7,186	6,738 5,394	2,507 2,601	1,890 1,883	1,963 1,942	6,306 4,424			
75-79 80-84		3,469 2,869	7,925 2,635	3,777 2,680	2,446 2,825	1,720 1,628	1,861 1,963	3,491 2,571			
85+		2,289	2,244	1,858	1,907	2,496	2,217	2,163			
ALL	10,905	6,704	7,453	5,377	2,515	1,801	2,006	5,549			

	TOTAL ANNUAL	BENEFIT	(IN TH	OUSANDS) BY	YEARS	SINCE DEATH	
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
65	429	709	414	123	41	22	1,803

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

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RECONCILIATION OF MEMBERS

		TERMI	TERMINATED			
	<u>ACTIVES</u>	DEFERRED RETIREMENT	OTHER Non-Vested			
A. On June 30, 1987	5,385	97	462			
B. Additions	434	36	46			
 C. Deletions: 1. Service Retirement 2. Disability 3. Death 4. Terminated-Deferred 5. Terminated-Refund 6. Terminated-Other Non-vested 7. Returned as Active 	(65) (14) (5) (36) (51) (31)	(21) (1) (1) 0 (4)	(7) (2) (1) (18) (17)			
D. Data Adjustments	(6)	(1)	(356)			
Vested Non-Vested	3,856 1,755					
E. Total on June 30, 1988	5,611	105	107			

		RECIPIENTS	
	RETIREMENT <u>ANNUITANTS</u>	DISABLED	SURVIVORS
A. On June 30, 1987	895	66	310
B. Additions	107	24	21
C. Deletions: 1. Service Retirement 2. Death 3. Annuity Expired 4. Returned as Active	(36) 0 0	(12) (3) 0 0	(5) 0
D. Data Adjustments	(1)	(2)	(1)
E. Total on June 30, 1988	965	73	325

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PUBLIC EMPLOYEES	POLICE AND FI	RE FUND	
ACTUARIAL (DOLLARS	BALANCE SHEET In Thousands)		
JULY	1, 1988		
A. CURRENT ASSETS (TABLE 1, F6)			\$557,669
 EXPECTED FUTURE ASSETS Present Value of Expected Future Supplemental Contributions 	Statutory		156,553
2. Present Value of Future Normal Co.	sts		362,801
3. Total Expected Future Assets			519,354
. TOTAL CURRENT AND EXPECTED FUTURE AS	SETS		\$1,077,023
. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>
a. Retirement Annuities b. Disability Benefits		\$137,170 8,353	\$137,170 8,353
Child Benefits		20,524	20,524
2. Deferred Retirements with Future Augmentation		7,527	7,527
3. Former Members without Vested Rig	nts	557	557
4. Active Members			
a. Retirement Annuities	7,642	232,333	239,975
c. Survivors' Benefits	26,950	0	26,950
d. Deferred Retirements	3,739	34,460	38,199
e. Refund Liability Due to Death or Withdrawal	0	3,311	3,311
5. Total Current Benefit Obligations	\$68,686	\$444,235	\$512,921
. EXPECTED FUTURE BENEFIT OBLIGATIONS			\$424,013
. TOTAL CURRENT AND EXPECTED FUTURE BEI	NEFIT OBLIGAT	IONS	\$936,934
. CURRENT UNFUNDED ACTUARIAL LIABILITY	(D5-A)		(\$44,748)

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- THE Wyatt COMPANY

PUBLIC EMPLOYEES POLICE AND FIRE FUND

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DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) AND SUPPLEMENTAL CONTRIBUTION RATE (DOLLARS IN THOUSANDS)

JULY 1, 1988

	ACTUARIAL PRESENT VALUE OF PROJECTED <u>BENEFITS</u> (1)	ACTUARIAL PRESENT VALUE OF FUTURE <u>NORMAL COSTS</u> (2)	ACTUARIAL ACCRUED LIABILITY (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACC LIABILITY (AAL)	RUED	(-)	
 a. Retirement Annuities b. Disability Benefits c. Survivors Benefits d. Deferred Retirements e. Refunds Due to Death or Withdrawal 	\$573,039 62,676 54,468 66,471 6,149	\$240,043 30,845 29,363 52,654 9,896	\$332,996 31,831 25,105 13,817 (3,747)
f. Total	\$762,803	\$362,801	\$400,002
2. Deferred Retirements with Future Augmentation	\$7,527		\$7,527
 Former Members Without Vested Rights 	557		557
4. Annuitants in MPRIF	145,187		145,187
5. Recipients Not in MPRIF	20,860		20,860
6. Total	\$936,934	\$362,801	\$574,133
B. DETERMINATION OF UNFUNDED ACTU 1. AAL (A6)	ARIAL ACCRUED L	IABILITY (UAAL)	\$574,133
2. Current Assets (Table 1,F6)			557,669
3. UAAL (B1-B2)			\$16,464
C. DETERMINATION OF SUPPLEMENTAL 1. Present Value of Future Pay Amortization Date of July 1	CONTRIBUTION RAT rolls through th , 2018	re ne	\$4,231,155
2. Supplemental Contribution R	ate (B3/C1)		0.39%

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	PUBLIC EMPLOYEES POLICE AND FIRE FUND	TABLE 10	
	CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL) (DOLLARS IN THOUSANDS))	
YEAR ENDING JUNE 30, 1988			
A. U	AAL AT BEGINNING OF YEAR	(\$19,479)	
B. C	HANGE DUE TO INTEREST REQUIREMENTS AND URRENT RATE OF FUNDING		
1	. Normal Cost and Expenses	\$26,822	
2	. Contribution . Interest on A, B1, and B2	(33,562) (1,828)	
4	. Total (B1+B2+B3)	(\$8,568)	
C. E	XPECTED UAAL AT END OF YEAR (A+B4)	(\$28,047)	
D. II B	NCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) ECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED		
1	. Salary Increases	(\$5,874)	
23	. Investment Return . MPRIF Mortality	14,604 81	
4 5	. Mortality of Other Benefit Recipients . Other Items	(348) 11,360	
6	. Total	\$19,823	
E. U/ AN	AAL AT END OF YEAR BEFORE PLAN AMENDMENTS ND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	(\$8,224)	
F. CH PL	ANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO AN AMENDMENTS	\$0	
G. CH CH	IANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO IANGES IN ACTUARIAL ASSUMPTIONS	\$24,688	
H. UA	AL AT END OF YEAR (E+F+G)	16,464	

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

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DETERMINATION OF CONTRIBUTION SUFFICIENCY (DOLLARS IN THOUSANDS)

JULY 1, 1988

	% OF PAYROLL	\$ <u>AMOUNT</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	8.00%	\$14,301
2. Employer Contributions	12.00%	21,452
3. Total	20.00%	\$35,753
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
 Normal Cost a. Retirement Benefits b. Disability Benefits c. Survivors d. Deferred Retirement Benefits e. Refunds Due to Death or Withdrawal 	10.54% 1.32% 1.30% 2.25% 0.43%	\$18,855 2,361 2,327 4,019 761
f. Total	15.84%	\$28,323
2. Supplemental Contribution Amortization by July 1, 2018 of UAAL of \$16,464	0.39%	\$697
3. Allowance for Expenses	0.46%	\$822
4. Total	16.69%	\$29,842
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	3.31%	\$5,911
Note: Projected Annual Payroll for Fiscal on July 1, 1988 is \$178,768	Year Beginning	

------ THE *Wyatt* company ------

PUBLIC EMPLOYEES POLICE AND FIRE FUND

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PROJECTED CASH FLOW (DOLLARS IN THOUSANDS)

FISCAL YEAR	STATUTORY <u>CONTRIBUTIONS</u>	TRANSFERS TO <u>MPRIF</u>	OTHER DISBURSEMENTS	INVESTMENT RETURN	NON-MPRIF ASSETS <u>YEAR END</u>
1988					\$412,482
1989	\$35,753	\$1,619	\$3,322	\$34,231	477,525
1990	38,078	15,673	3,513	38,958	535,375
1991	40,553	6,398	3,760	44,046	609,816
1992	43,189	6,550	4,044	50,089	692,500
1993	45,996	11,988	4,355	56,586	778,739
1994	48,986	17,993	4,751	63,349	868,330
1995	52,170	20,864	5,162	70,512	964,986
1996	55,561	21,920	5,657	78,318	1,071,288
1997	59,172	22,160	6,165	86,937	1,189,072
1998	63,018	33,765	6,713	96,027	1,307,639
1999	67,114	38,701	7,301	105,456	1,434,207
2000	71,477	43,948	7,920	115,521	1,569,337
2001	76,123	43,738	8,635	126,497	1,719,584
2002	81,071	52,745	9,378	138,325	1,876,857
2003	86,340	74,893	10,093	150,203	2,028,414
2004	91,953	70,962	10,956	162,675	2,201,124
2005	97,930	80,096	11,863	176,329	2,383,424
2006	104,295	92,517	12,862	190,631	2,572,971
2007	111,074	118,911	13,933	204,967	2,756,168
2008	118,294	170,720	14,988	217,797	2,906,551
2009	125,983	156,933	16,131	230,641	3,090,111
2010	134,172	170,485	17,368	245,062	3,281,492
2011	142,893	180,522	18,690	260,267	3,485,440
2012	152,181	177,276	20,089	277,028	3,717,284
2013	162,073	219,444	21,411	294,231	3,932,733
2014	172,608	218,926	22,865	311,851	4,175,401
2015	183,827	222,776	24,277	331,503	4,443,678
2016	195,776	218,901	25,831	353,536	4,748,258
2017	208,501	201,913	27,509	379,024	5,106,361
2018	222,054	247,828	29,068	406,315	5,457,834

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- THE *Wyatt* company -

PUBLIC EMPLOYEES POLICE AND FIRE FUND

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SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest:	Pre-Retirement: 8% per annum
	Post-Retirement: 5% per annum
Salary Increases:	Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Effective July 1, 1988 Male - 1971 Group Annuity Mortality Table male rates projected to 1984 by Scale D Female - 1971 Group Annuity Mortality Table female rates projected to 1984 by Scale D Prior to July 1, 1988 Male - UP-1984 Unisex set forward 1 year Female - UP-1984 Unisex set back 4 years Post-Retirement: Male - Same as above Female - Same as above Post-Disability: Male - 1965 RBB rates
	Female - 1965 RRB rates
Retirement Age:	Age 60, or if over age 60, one year from the valuation date.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.46% of payroll)
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit were assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is four years younger than male. Assume Members have no children.
Social Security:	ΝΑ

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TABLE 13 (cont)

Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	NA
Actuarial Cost Method:	Entry Age Normal Cost Method with normal costs expressed as a level percentage of earnings. Under this method Actuarial Gains(Losses) reduce(increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.
Projected Cash Flow Method:	Cash flows for the non-MPRIF portion of the Fund were projected based on the current plan benefits, participant data, and actuarial assumptions. In addition, new entrants were assumed so that the total payroll would increase by 6.5% per annum.

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- THE *Wyatt* company -

TABLE 13 (cont)

SEPARATIONS EXPRESSED AS THE NUMBER OF OCCURRENCES PER 10,000

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	Deat	<u>.h</u>	Witho	rawal	<u>Disabi</u>	lity	Reti	rement
<u>Age</u> 20 21 22 23	<u>Male F</u> 5 5 5 5	<u>emale</u> 2 2 2 3	<u>Male</u> 700 700 700 699	<u>Female</u> 700 700 700 699	<u>Male</u> 11 11 12 12	Female 11 11 12 12	<u>Male</u> 0 0 0 0	<u>Female</u> 0 0 0 0
24	5	3	698	698	13	13	0	0
25 26 27 28 29	6 6 7 7	3 3 3 3 4	697 694 689 680 670	697 694 689 680 670	13 14 14 14 15	13 14 14 14 15	0 0 0 0	0 0 0 0
30 31 32 33 34	7 8 8 9 10	4 4 5 5	658 643 624 598 561	658 643 624 598 561	16 16 17 17 18	16 16 17 17 18	0 0 0 0	0 0 0 0
35 36 37 38 39	10 11 12 13 14	5 6 7 7	511 454 395 336 287	511 454 395 336 287	19 20 22 23 24	19 20 22 23 24	0 0 0 0	0 0 0 0
40 41 42 43 44	15 16 18 21 24	8 9 9 10 11	245 213 185 160 137	245 213 185 160 137	26 28 29 31 34	26 28 29 31 34	0 0 0 0	0 0 0 0
45 46 47 48 49	27 30 34 39 44	12 13 14 15 17	118 102 87 73 61	118 102 87 73 61	36 41 46 52 60	36 41 46 52 60	0 0 0 0	0 0 0 0
50 51 52 53 54	49 54 60 65 72	18 20 21 23 25	50 39 29 22 15	50 39 29 22 15	69 80 91 104 119	69 80 91 104 119	0 0 0 0	0 0 0 0

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- the *Myatt* company -

TABLE 13 (cont)

	Dea	th	With	<u>ndrawal</u>	Disa	bility	Ret	irement
<u>Age</u>	Male	<u>Female</u>	Male	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
55	78	27	11	11	135	135	0	0
56	85	30	7	7	152	152	0	0
57	92	33	5	5	171	171	0	0
58	100	37	3	3	192	192	0	0
59	110	41	1	1	215	215	0	0
60	121	46	0	0	0	0	10.000	10.000
61	133	52	Ō	Õ	Õ	Õ	0	10,000
62	146	58	Õ	Ō	Õ	Õ	Õ	õ
63	160	65	Õ	Õ	Ō	ŏ	õ	Ő
64	176	73	Ő	Ő	Ő	Õ	Õ	Ŏ
65	195	81	٥	0	0	0	0	٥
66	219	90	õ	ň	ñ	õ	ů	ő
67	243	99	Õ	ň	Ő	õ	ů N	õ
68	270	109	ŏ	õ	õ	Ő	ů	Ő
69	300	123	Õ	Õ	Ŭ Ū	Õ	Õ	ŏ
70	334	140	0	0	0	0	0	0

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PUBLIC EMPLOYEES POLICE AND FIRE FUND

SUMMARY OF PLAN PROVISIONS

Eligibility All full time, and certain part time, police officers and fire fighters, who are not contributing to any other local retirement fund.

Contributions Member

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r 8% of Salary.

Employer 12% of Salary.

- Allowable Service Police and fire service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.
- Salary Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.

Average Salary Average of the 5 highest successive years of Salary.

RETIREMENT

Normal Retirement Benefit

- Eligibility Age 55 and 5 years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and 1 year of Allowable Service.
- Amount 2.5% of Average Salary for the first 25 years of Allowable Service and 2.0% of Average Salary for each subsequent year.
- Form of Payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary).
- Benefit Increases Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

TABLE 14 (cont)

DISABILITY Duty Disability Benefit Eligibility	Under age 55 and physically unfit to perform his duties as a police officer or fire fighter as a direct result of an act of duty.
Amount	50% of Average Salary plus 2.5% of Average Salary for each year in excess of 20, but not exceeding 25 years of Allowable Service plus 2.0% of Average Salary for each year in excess of 25 years of Allowable Service. The disability benefit is reduced to that amount which when added to Workers' Compensation, does not exceed Average Salary. Payments cease at age 55.
Normal Disability Benefi Eligibility	t Totally and permanently disabled before age 55 with 5 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 55.
Form of Payment	Same as for retirement.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
Retirement Benefits Eligibility	Age 55 with continued disability.
Amount	Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
Benefit Increases	Same as for retirement.
DEATH Surviving Spouse Benefit Eligibility	Active Member with surviving spouse.
Amount	30% of Salary averaged over last 6 months. Benefit paid until spouse's death but no payments while spouse is remarried.
Surviving Dependent Child Benefit Eligibility	Active Member with dependent child.

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THE *Wyatt* company

(cont) Amount 10% of Salary averaged over last 6 months for each child. Family benefit minimum (including spouse's benefit) of 30% of Salary and maximum of 50% of Salary. Benefits paid until child marries, dies, or attains age 18. Surviving Spouse Optional Annuity Eligibility Member who dies before termination if age 50 with 5 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. Amount Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated. Alternatively, spouse may elect refund of deceased contributions with interest if there are no dependent children. Benefit Increases Adjusted by PERA to provide same increase as MPRIF. TERMINATION Refund of Contributions Eligibility Termination of public service. Amount Member's contributions with 5% interest compounded annually. A deferred annuity may be elected in lieu of a refund. Deferred Annuity Eligibility 5 years of Allowable Service. Amount Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

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TABLE 14

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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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ACTUARIAL VALUATION REPORT

JULY 1, 1988

- THE *Wyatt* company

DEC - 7 1988 LCP&R

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AN INDEPENDENT WORLDWIDE BENEFITS AND COMPENSATION CONSULTING FIRM

SUITE 1525 8400 NORMANDALE LAKE BOULEVARD MINNEAPOLIS, MINNESOTA 55437

(612) 921-8700

EMPLOYEE BENEFITS EMPLOYEE COMMUNICATIONS RISK MANAGEMENT INSURANCE CONSULTING HEALTH CARE CONSULTING

November 18, 1988

Legislative Commission on Pensions and Retirement 55 State Office Building St. Paul, Minnesota 55155

RE: RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

Commission Members:

We have prepared an actuarial valuation of the Consolidation Accounts as of July 1, 1988 based on membership and financial data supplied by PERA Police and Fire.

We certify that to the best of our knowledge and belief this actuarial valuation was performed in accordance with the requirements of Section 353A.09 and Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on August 22, 1988.

Respectfully submitted,

THE WYATT COMPANY

Robert E. Perkins, FSA Consulting Actuary

Michael C. Gunvalson, ASA Associate Actuary

ACTUARIAL SERVICES COMPENSATION PROGRAMS ADMINISTRATIVE SYSTEMS INTERNATIONAL SERVICES ORGANIZATION SURVEYS

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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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REPORT HIGHLIGHTS (ACTUAL DOLLARS)

		07/01/88 <u>VALUATION</u>
Α.	CONTRIBUTIONS (TABLE 11)	
	1. Employee Contribution	8.00%
	2. Required Municipal Contribution	12.00%
	3. Additional Municipal Contribution	\$1,323,094
Β.	FUNDING RATIOS	
	 Accrued Benefit Funding Ratio a. Current Assets (Table 1) b. Current Pension Benefit Obligation (Table 8) c. Funding Ratio (a/b) 	\$22,648,279 \$38,407,541 58.97%
	 Accrued Liability Funding Ratio a. Current Assets (Table 1) b. Actuarial Accrued Liability (Table 9) c. Funding Ratio (a/b) 	\$22,648,279 \$35,221,498 64.30%
	 3. Projected Benefit Funding Ratio (Table 8) a. Current and Expected Future Assets b. Current and Expected Future Pension Benefit Obligation c. Funding Ratio (a/b) 	\$42,911,574 \$42,911,574 100.00%
C.	PLAN PARTICIPANTS	
	 Active Members a. Number (Table 3) b. Projected Annual Earnings c. Average Annual Earnings d. Average Age e. Average Service 	93 \$2,719,551 \$29,242 44.0 18.0
	 2. Others a. Service Retirements (Table 4) b. Disability Retirements (Table 5) c. Survivors (Table 6) d. Deferred Retirements (Table 7) e. Terminated Other Non-vested (Table 7) f. Total 	85 0 41 5 0 131
D.	NUMBER OF RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS	2

THE Myatt COMPANY _____

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS COMMENTARY

<u>Purpose</u>

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The purpose of this valuation is to determine if the current assets and future anticipated contributions for each Consolidation Account are adequate to provide for future benefits. If future contributions are more than adequate, an actuarial gain arises which will be amortized over 15 years and will reduce the Additional Municipal Contribution. Conversly, if future contributions are inadequate, an actuarial loss is produced which will be amortized over 15 years and will increase the Additional Municipal Contribution.

Report Highlights

The 1988 report is the first valuation of the Relief Association Consolidation Accounts. This commentary reports the aggregate results for all Accounts. Information is provided in the tables at the end of this report for each individual Account listed below:

o Buhl Police

o Duluth Police

The Additional Municipal Contribution for the Relief Association Consolidation Accounts must be increased by \$23,742. This increase to last year's Additional Municipal Contribution of \$1,299,352 produces a new Additional Municipal Contribution of \$1,323,094. The new Additional Municipal Contribution is based on the new mortality table that reflects longer life expectancy (see page 9 for more information regarding the mortality table).

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The financial status of the Accounts can be measured by three different funding ratios:

- o The Accrued Benefit Funding Ratio is a measure of current funding status, and when viewed over a period of years, presents a view of the funding progress. This ratio is based on Statement No. 5 of the Governmental Accounting Standards Board. This year's ratio is 58.97%.
- o The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used. For 1988 the ratio is 64.30%.
- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio, which is 100%, verifies that the contributions are adequate based on the new level of Additional Municipal Contributions.

Asset Information (Tables 1 and 2)

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Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gains and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is performed in total for all

Consolidation Accounts as shown in Table 1 on lines F1 to F6. The aggregate result is allocated to each individual Consolidation Account based on its proportionate share of the cost value of the Assets Available for Benefits for all Consolidated Accounts. The Actuarial Value of Assets combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

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The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

The Accounts participate in the MPRIF (i.e. Minnesota Post Retirement Investment Fund). The asset value shown for MPRIF on line A3 is set equal to the MPRIF Reserves reported on line D3 for both market and cost value purposes. This reserve is based on a 5% interest assumption.

Investment performance by SBI (i.e. State Board of Investment) above the 5% level is not shown in the assets but will be added in on January 1, 1989 when benefits will be increased for those annuitants who have been receiving payments for 18 months. Next year's valuation will include the 1989 benefit increase in determining the MPRIF value.

After the MPRIF liability has been calculated for each participating Fund, SBI will determine each Fund's portion of the excess earnings for the January benefit increase as well as the Fund's allocated market share of MPRIF. An approximation of those values on June 30, 1988 is provided on the next page:

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MPRIF Reserves \$ Reserves Plus Excess Earnings MPRIF Market Value

\$16,405,410 17,400,000 17,600,000

Membership Data (Tables 3, 4, 5, 6 and 7)

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Tables 3 through 6 summarize statistical information about members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year.

The service retirements in Table 4 include not only those retiring from active status but also disabled members who have attained retirement age. Any disabled members under retirement age would have been shown in Table 5. The survivors category (Table 6) includes spouses and children of deceased members.

A reconciliation of members in Table 7 provides a method for tracking what happened to members during the past year.

Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to the Pension Benefit Obligation on line D3. Current and future funding levels are evaluated by comparing the Total Current and Expected Future Assets on line C to the Total Current and Expected Future Pension Obligation on line F.

The process used in this valuation will always produce an exact balance when measured on a "current and future" basis (i.e. line C will equal line F). This exact balance is possible because of the annual adjustment in the Additional

-5-

Municipal Contribution.

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The Pension Benefit Obligation (PBO) used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

- o For active members salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to total service establishes the portion of the projected benefit to be used in calculating the current funding level.
- For non-active members the PBO is the discounted value of benefits, including augmentation in cases where benefits have not commenced.

GASB Disclosure

The Pension Benefit Obligation reported in Table 8 is for GASB reporting purposes. The following table shows the impact of the change in actuarial assumptions on the liabilities under the old plan provisions. See page 9 for an explanation of the change in actuarial assumptions.

	<u>Old Assumptions</u>	<u>New Assumptions</u>	
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$18,346,870	\$19,685,212	
Current Employees - Accumulated employee contributions including allocated investment incom Employer-financed vested Employer-financed nonvested	ne 3,224,629 * 13,487,877 0	3,224,629 * 14,609,477 0	
Total Pension Benefit Obligation	\$35,059,376	\$37,519,318	
* Estimated			

-6-

The following table shows the impact of the change in plan provisions using the new actuarial assumptions. See page 10 for an explanation of the change in plan provisions.

	<u>Old Benefits</u>	<u>New Benefits</u>	
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$19,685,212	\$19,685,212	
Current Employees - Accumulated employee contributions including allocated investment income Employer-financed vested Employer-financed nonvested	3,224,629 * 14,609,477 0	3,224,629 15,497,700 0	*
Total Pension Benefit Obligation	\$37,519,318	\$38,407,541	
* Estimated			

Entry Age Normal Cost Calculations (Table 9)

Subdivision 7 of Section 353A.09 of Minnesota Statutes requires disclosure of the Actuarial Accrued Liability, Current Assets, Unfunded Actuarial Accrued Liability and Normal Cost using the Entry Age Normal Cost Method.

These items are shown for informational purposes and are not used in calculating contributions.

Table 9 displays the individual elections as of the valuation date. If a member has not elected, the liability shown is the larger of the local Relief Association benefit liability or the PERA Police and Fire benefit liability. The normal cost, although shown as a single number, is also calculated based on the elections made.

<u>Calculation of Net Actuarial Loss (Gain) (Table 10)</u>

The calculation of the actuarial gain or loss produces the annual adjustment in

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-7-

the Additional Municipal Contribution.

The concept is the same as that presented in the Actuarial Balance Sheet (Table

8), however the order is turned around. The Balance Sheet approach shows: Assets

+ Employee Contributions

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- + Regular Municipal Contributions
- + Additional Municipal Contributions (after the current year's adjustment)
- = Total Current and Expected Future Pension Benefit Obligation

The Actuarial gain or loss calculation renames the "Total Current and Expected Future Pension Benefit Obligation" as the "Actuarial Value of Projected Benefits" and calculates the gain or loss as follows:

Actuarial Value of Projected Benefits

- Employee Contributions
- Regular Municipal Contributions
- Assets
- Additional Municipal Contributions (before the current year's adjustment)
- = Loss (Gain)

The loss (gain) funded as a level dollar amount over 15 years determines the current year's adjustment to the Additional Municipal Contribution.

In the analysis of the gains and losses, the significant amount of loss reported under Other (line G3) is attributable to the adoption of a new mortality table and an improved vesting benefit for Duluth Police. See page 9 for more information regarding the new mortality table and page 10 regarding the plan

provision change.

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Statutory Contributions (Table 11)

The Statutory Contributions are reported either as a percentage that must be applied to the appropriate compensation to determine the corresponding dollar contributions or as a dollar amount derived from actual calculations.

The amounts to be contributed by the Municipality should be adjusted to reflect any available State Aid.

Each year the Additional Municipal Contribution will be adjusted up (down) depending on the amount of actual loss (gain) that is calculated. After December 31, 2002 a second adjustment will occur as the 15 year amortization payments are completed.

Projected Cash Flow (Table 12)

Cash flow (which is normally reported in Table 12) has not been projected for the Consolidation Accounts.

Changes in Actuarial Assumptions

The mortality table has been updated by PERA to reflect improvements in life expectancy. The prior mortality table was the UP-1984 Unisex set forward one year for males and set back four years for females. The new table is based on the 1971 Group Annuity Mortality Table projected to 1984 for males and females. The projection is made in accordance with projection Scale D without interpolation within age groups.

-9-

	Impact Due To Change In Mortality Table
Actuarial Present Value of Projected Benefits Projected Benefit Obligation for GASB No. 5	\$2,736,385 2,459,942
Additional Municipal Contribution	306,684

Changes in Plan Provisions

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Vesting eligibility for Duluth Police members has been reduced from 20 years to 5 years. This change applies to the Deferred Annuity, the Normal Retirement Benefit and the Disability Benefit.

	Impact Due To Change In <u>Plan Provisions</u>
Actuarial Present Value of Projected Benefits Projected Benefit Obligation for GASB No. 5	\$1,064,605 888,223
Additional Municipal Contribution	119,653

Individual Consolidation Accounts

Additional tables at the end of this report show membership data, liabilities and contributions for the individual Consolidation Accounts.

-10-

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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ACCOUNTING BALANCE SHEET (ACTUAL DOLLARS)

July 1, 1988

<u>م</u>	ACCETC	MARKET VALUE	<u>COST VALUE</u>
A. /	L. Cash, Equivalents, Short-Term Securities	\$1,100,145	\$1,100,145
•	a. Fixed Income	1 251 412	1 318 438
	b. Equity	3,598,976	3 320 573
	c. Real Estate	495,061	484 696
3	B. Equity in Minnesota Post-Retirement	16,405,410	16.405.410
	Investment Fund (MPRIF)	,,	10,100,110
2	. Other	799,000	799,000
B. 1	TOTAL ASSETS	\$23,650,004	\$23,428,262
		********	**********
C. /	MOUNTS CURRENTLY PAYABLE	\$853,897	\$853,897
D. /	ASSETS AVAILABLE FOR BENEFITS		
]	. Member Reserves	\$2,521,688	\$2,521,688
2	2. Benefit Reserves	3,869,009	3,647,267
3	3. MPRIF Reserves	16,405,410	16,405,410
4	. Non-MPRIF Reserves	0	0
Ę	5. Total Assets Available for Benefits	\$22,796,107	\$22,574,365
E. 1	OTAL AMOUNTS CURRENTLY PAYABLE AND	\$23,650,004	\$23,428,262
A	SSETS AVAILABLE FOR BENEFITS		=======================================
F. C	ETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1	 Cost Value of Assets Available for Benefits (D5) 		\$22,574,365
2	. Market Value (D5)	\$22,796,107	
3	. Cost Value (DŠ)	22,574,365	
	Markat Over Cost (50 52)		
4	. Markel Uver LOST (12-13)	\$221,742	
5	1/3 UT Market Over COST(14)/3		/3,914
6	Actuarial Value of Assets (F1+F5)		\$22 649 270
·	(Same as "Current Assets")		JLL,040,2/J
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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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CHANGES IN ASSETS AVAILABLE FOR BENEFITS (ACTUAL DOLLARS)

YEAR ENDING JUNE 30, 1988

	MARKET VALUE	COST VALUE
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$0	\$0
B. OPERATING REVENUES		
1. Member Contributions 2. Employer Contributions	\$105,633	\$105,633
3. Investment Income	1,121,003	1,121,003
4. MPRIF Income	187,643	187,643
6. Other (Includes Additional Municipal	U	0
Contributions with Interest)	1,525,185	1,525,185
7. Net change in Unrealized Gain (Loss)	221,742	0
9 Total Doverve		
o. lotal Revenue	\$3,319,655	\$3,09/,913
C. OPERATING EXPENSES		
1. Service Retirements	\$810,128	\$810,128
3. Survivor Benefits	36,198	0 36,198
4. Refunds	0	0
5. Expenses 6. Other	9,953 220,014	9,953 220 014
7. Total Disbursements	\$1.076.293	\$1.076.293
D. OTHER CHANGES IN RESERVES	20,552,745	20,552,745
E. ASSETS AVAILABLE AT END OF PERIOD	\$22,796,107	\$22,574,365

- THE Wyatt COMPANY -

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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	YEARS OF SERVICE										
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	TOTAL		
<25 25-29									0 0		
30-34 35-39			7 9	10	2				7 21		
40-44 45-49			1	4	15 5	6 16	2		25 24		
50-54 55-59			1		1	3	3 2	3	7 6		
60-64 65+								3	3 0		
TOTAL	0	0	18	14	23	25	7	6	93		

ACTIVE MEMBERS AS OF JUNE 30, 1988

AVERAGE ANNUAL EARNINGS

	YEARS OF SERVICE										
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL		
<25 25-29									0 0		
30-34 35-39			27,119 26,070	27,309	29,516				27,119 26,988		
40-44 45-49			26,566	26,922	27,402 27,681	27,380 26,819	27,036		27,320 27,006		
50-54 55-59			28,061		26,485	26,896	31,481 29,808	29,162	28,802 29,194		
60-64 65+								29,689	29,689 0		
ALL	0	0	26,616	27,198	27,607	26,963	29,733	29,425	27,458		
	PRI	OR FIS	CAL YEAR	EARNING	S (ACTUA	L DOLLAR	S) BY YE	ARS OF SE	RVICE		
	<u><1</u>	1-4	<u>5-9</u>	10-14	15-19	20-24	25-29	<u>30+</u>	TOTAL		
	_										

0 0 479,093 380,776 634,955 674,064 208,130 176,551 2,553,569

THE Wyatt COMPANY -----

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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	YEARS RETIRED								
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL	
<50 50-54	4	3						0 7	
55-59 60-64	1 2	7 7	2 2	2	3			10 16	
65-69 70-74		1	2 5	5 5	5 3	4 6	2	17 21	
75-79 80-84				1	1 2	3 1	1 1	6 4	
85+						1	3	4	
TOTAL	7	18	11	13	14	15	7	85	

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

	YEARS RETIRED										
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL			
<50 50-54	14,395	15,083						0 14,690			
55-59 60-64	20,852 20,738	16,108 16,572	14,338 16,572	16,572	14,270			16,228 16,661			
65-69 70-74		16,572	17,469 16,773	16,084 16,572	16,572 15,760	13,323 15,489	13,526	15,769 15,904			
75-79 80-84				16,572	16,572 16,572	16,301 12,916	13,323 13,323	15,895 14,846			
85+						16,572	15,353	15,658			
ALL	17,129	16,143	16,420	16,384	15,905	14,974	14,251	15,896			
	T(TAL ANNUA	L ANNUITY	(ACTUAL	DOLLARS)	BY YEARS	OF RETIRE	MENT			

	UTAL ANNU	AL ANNUII	T (ALTUAL	DULLAKS)	BY YEARS	OF RETIF	REMENT
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
119,906	290,577	180,624	212,997	222,665	224,614	99,757	1,351,140

- THE Wyatt COMPANY -----

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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		YEARS SINCE DEATH								
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL		
<50 50-54	1	1	1					2 1		
55-59 60-64		1	2	1		1	1	0 6		
65-69 70-74		1 1	1 2	2		1	2	4 6		
75-79 80-84		2 1	1	1 2	2 1	1	1 1	6 7		
85+			1	2	1	1	4	9		
TOTAL	1	7	8	8	4	4	9	41		

SURVIVORS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL
<50 50-54	7,518	8,124	6,499					7,009 8,124
55-59 60-64		8,124	9,012	8,124		8,124	8,124	0 8,420
65-69 70-74		8,124 8,124	8,124 8,124	8,124		7,518	7,821	8,124 7,922
75-79 80-84		8,124 8,124	8,124	8,124 8,124	8,124 8,124	8,124	8,124 8,124	8,124 8,124
85+			8,124	7,821	8,124	8,124	8,124	8,056
ALL	7,518	8,124	8,143	8,048	8,124	7,973	8,056	8,068

	TOTAL	ANNUAL	BENEFIT	(ACTUAL	DOLLARS)	BY YEARS	SINCE DEATH	4
<u><1</u>	<u>-</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	TOTAL
7,518	56	,867 (65,141	64,384	32,495	31,890	72,508	330,803



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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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RECONCILIATION OF MEMBERS

		TERMINATED		
	ACTIVES	DEFERRED <u>RETIREMENT</u>	OTHER Non-Vested	
A. On July 1, 1987	0	0	0	
B. Additions	93	5	0	
 C. Deletions: 1. Service Retirement 2. Disability 3. Death 4. Terminated-Deferred 5. Terminated-Refund 6. Terminated-Other Non-vested 7. Returned as Active 	0 0 0 0 0	0 0 0 0	0 0 0 0	
D. Data Adjustments	0	0	0	
Vested Non-Vested	93 0			
E. Total on June 30, 1988	93	5	0	

	RECIPIENTS		
	RETIREMENT <u>ANNUITANTS</u>	DISABLED	SURVIVORS
A. On July 1, 1987	0	0	0
B. Additions	86	0	52
C. Deletions: 1. Service Retirement 2. Death 3. Annuity Expired 4. Returned as Active	(1) 0 0	0 0 0 0	(2) (9)
D. Data Adjustments	0	0	0
E. Total on June 30, 1988	85	0	41

TABLE 7

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RELIEF ASSOCIATION CONSOLIDATIO	TABLE 8	
ACTUARIAL BALANCE SHE (ACTUAL DOLLARS)	ET	
JULY 1, 1988		
A. CURRENT ASSETS (TABLE 1, F6)		\$22,648,279
 B. EXPECTED FUTURE ASSETS 1. Present Value of Employee Contributions 2. Present Value of Regular Municipal Contributions 3. Present Value of Additional Municipal Contribution 	2,417,714 3,626,572 14,219,009	
4. Total Expected Future Assets		\$20,263,29
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS		\$42,911,574
D. CURRENT PENSION BENEFIT OBLIGATION 1. Retirees and Beneficiaries Currently Receivir and Terminated Employees Not Yet Receiving Be	ng Benefits enefits	\$19,685,21
 Current Employees Accumulated employee contributions including allocated investment income* 	3,224,629	
b. Employer-financed vested	15,497,700	
c. Employer-financed nonvested	0	
d. Total		18,722,329
3. Total Pension Benefit Obligation		\$38,407,541
E. EXPECTED FUTURE PENSION BENEFIT OBLIGATION		\$4,504,033
F. TOTAL CURRENT AND EXPECTED FUTURE PENSION BENEFI	T OBLIGATION	\$42,911,574
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D3-A)		\$15,759,262
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY	(F-C)	\$0
* Ectimatod		

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- THE Wyatt COMPANY -

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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SUMMARY OF ENTRY AGE NORMAL COST CALCULATIONS

(ACTUAL DOLLARS)

JULY 1, 1988

		NUMBER OF <u>PARTICIPANTS</u>	ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS	ACTUARIAL ACCRUED LIABILITY
A.	DETERMINATION OF ACTUARIAL ACCRUER LIABILITY (AAL)	D		
	a. Elected PERA Police and Fire b. No Election (Greater Value)	e 2 91	\$439,263 22,787,099	\$391,636 15,144,650
	c. Total	93	\$23,226,362	\$15,536,286
	 Former Members a. Elected PERA Police and Fire b. No Election (Greater Value) 	e 0 5	\$0 1,480,912	\$0 1,480,912
	c. Total	5	\$1,480,912	\$1,480,912
	 Benefit Recipients a. Elected PERA Police and Fire b. Elected Relief Association 	e 120 6	\$16,898,752 1,305,548	\$16,898,752 1,305,548
	c. Total	126	\$18,204,300	\$18,204,300
	 Total a. Elected PERA Police and Fire b. Elected Relief Association c. No Election (Greater Value) 	e 122 6 96	\$17,338,015 1,305,548 24,268,011	\$17,290,388 1,305,548 16,625,562
	d. Total	224	\$42,911,574	\$35,221,498
Β.	DETERMINATION OF UNFUNDED ACTUARIA 1. AAL (A4)	AL ACCRUED LIA	BILITY (UAAL)	\$35,221,498
	2. Current Assets (Table 1,F6)			22,648,279
	3. UAAL (B1-B2)			\$12,573,219
C.	NORMAL COST			\$714,122

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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS	TABLE 10
CALCULATION OF NET ACTUARIAL LOSS (GAIN) (ACTUAL DOLLARS)	
YEAR ENDING JUNE 30, 1988	
 A. ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS (TABLE 9) 1. Elected PERA Police and Fire 2. Elected Relief Association 3. No Election (Greater Value) 	\$17,338,015 1,305,548 24,268,011
4. Total	\$42,911,574
 B. PRESENT VALUE OF FUTURE EMPLOYEE CONTRIBUTIONS 1. Elected PERA Police and Fire 2. No Election (Greater Value) 	\$22,806 2,394,908
3. Total	\$2,417,714
C. PRESENT VALUE OF FUTURE REGULAR MUNICIPAL CONTRIBUTIONS 1. Elected PERA Police and Fire 2. No Election (Greater Value)	\$34,210 3,592,362
3. Total	\$3,626,572
D. CURRENT VALUE OF ASSETS (TABLE 1, F6)	\$22,648,279
 E. PRESENT VALUE OF FUTURE ADDITIONAL MUNICIPAL CONTRIBUTIONS 1. Initial Contribution - Annual Payment of \$1,299,352 through the Amortization Date of December 31, 2010 	\$14,007,769
F. LOSS (GAIN) [A-B-C-D-E]	\$211,240
 G. ANALYSIS OF LOSS (GAIN) 1. MPRIF Mortality 2. Election of PERA Police and Fire Fund 3. Other 	\$138,177 (4,267,185) 4,340,248
4. Total	\$211,240
H. 15 YEAR AMORTIZATION OF LOSS (GAIN)	\$23,742

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TABLE 11 **RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS** DETERMINATION OF STATUTORY CONTRIBUTIONS (ACTUAL DOLLARS) JULY 1, 1988 AMOUNT AMOUNT % \$ A. EMPLOYEE CONTRIBUTIONS 8.00% **B. EMPLOYER CONTRIBUTIONS** (BEFORE ADJUSTMENT FOR STATE AID) 1. Regular Municipal Contribution 12.00% 2. Additional Municipal Contribution Current Last Established Balance Payment 14,007,769 Initial а. 12/31/2010 1,299,352 7/1/88 211,240 b. 12/31/2002 23,742 с. Total \$1,323,094 * ============ C. TOTAL STATUTORY CONTRIBUTION IS 20.00% OF COMPENSATION PLUS \$1,323,094

* Contribution is assumed to be paid on December 31, 1988.

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RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

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SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Interest: Pre-Retirement: 8.0% per annum Post-Retirement: PERA Police and Fire 5.0% per annum Relief Association 8.0% per annum Salary Increases: Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year. Mortality: **Pre-Retirement:** Effective July 1, 1988 Male - 1971 Group Annuity Mortality Table male rates projected to 1984 by Scale D Female - 1971 Group Annuity Mortality Table female rates projected to 1984 by Scale D Prior to July 1, 1988 Male - UP-1984 Unisex set forward 1 year Female - UP-1984 Unisex set back 4 years Post-Retirement: Male - Same as above Female - Same as above Post-Disability: Male - 1965 RRB rates Female - 1965 RRB rates Retirement Age: PERA Police and Fire Age 60, or if over age 60, one year from the valuation date. Buhl Police Age 58 and 20 years of service, or if over 58, one year from the valuation date. Duluth Police Age 58 and 5 years of service, or if over 58, one year from the valuation date. Separation: Graded rates shown in rate table. Disability: Rates as shown in rate table. Return of Contributions: PERA Police and Fire All employees withdrawing after becoming eligible for a deferred benefit were assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.

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TABLE 13 (cont)

Relief Association If a relief association allows for the return of contributions, the contributions are returned to the Member if the Member is not eligible for any other benefit.

85% of male Members and 65% of female Members are Family Composition: assumed to be married. Female is four years younger than male. Assume Members have no children.

NA

NA

Social Security:

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Benefit Increases After Retirement:

Buhl Police

Duluth Police

PERA Police and Fire Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement interest assumption. 3.5% per annum 6.5% per annum

Special Consideration:

Actuarial Cost Method:

Calculations of the Actuarial Accrued Liability and Normal Cost under the Entry Age Normal Cost Method are disclosed in the report.

The Additional Municipal Contribution is derived by subtracting the following items from the Actuarial Present Value of Projected Benefits:

- Present Value of Future Employee Contributions

- Present Value of Future Regular Municipal
- Contributions
- Current Value of Assets
- Present Value of Additional Municipal Contributions (amount determined in the prior year)

Any excess (deficit) is a loss (gain) to be funded over 15 years and is added to the prior year Additional Municipal Contributions.

Asset Valuation Method: Cost Value plus one-third Unrealized Gains or Losses.
TABLE 13 (cont)

SEPARATIONS EXPRESSED AS THE NUMBER OF OCCURRENCES PER 10,000

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	D				-		_ <u>PER</u> /	<u> </u>
100	Mala F	<u>n</u> Semele	Withd	<u>rawa l</u>	<u>Disabi</u>	lity	Reti	<u>rement</u>
<u>Aqe</u>	<u>male</u> r	emare	Male	remaie	Male	Female	Male	<u>Female</u>
20	5 F	2	700	700	11	11	U	0
21	5	2	700	700	11	11	U	0
22	5 F	2	700	700	12	12	U	0
23	5 F	3	099	699	12	12	0	0
24	5	3	098	098	13	13	0	0
25	6	3	697	697	13	13	0	0
26	6	3	694	694	14	14	0	0
27	6	3	689	689	14	14	0	0
28	7	3	680	680	14	14	0	0
29	7	4	670	670	15	15	0	0
30	7	4	658	658	16	16	0	0
31	8	4	643	643	16	16	Ō	Ō
32	8	4	624	624	17	17	Ō	Õ
33	9	5	598	598	17	17	Ő	Õ
34	10	5	561	561	18	18	Ŏ	Õ
35	10	5	511	511	19	19	0	n
36	11	6	454	454	20	20	ň	ň
37	12	6	395	395	22	22	ñ	Õ
38	13	7	336	336	23	23	õ	ň
39	14	7	287	287	24	24	ň	ň
••					-		Ũ	Ŭ
40	15	8	245	245	26	26	0	0
41	16	9	213	213	28	28	0	0
42	18	9	185	185	29	29	0	0
43	21	10	160	160	31	31	0	0
44	24	11	137	137	34	34	0	0
45	27	12	118	118	36	36	0	0
46	30	13	102	102	41	41	Õ	Õ
47	34	14	87	87	46	46	Ő	0
48	39	15	73	73	52	52	õ	Ő
49	44	17	61	61	60	60	Õ	õ
50	49	18	50	50	69	69	0	0
51	54	20	39	39	80	80	ñ	0
52	60	21	29	29	Q1	Q1	0	0
53	65	23	22	22	104	104	0	0
54	72	25	15	15	110	110	0	0
	• =		* v	10	***	113	v	0

- THE Wyatt COMPANY ------

TABLE 13 (cont)

							PEI	RA P&F
	Deat	<u>th</u>	<u>With</u>	<u>idrawal</u>	Disal	<u>pility</u>	Ret	irement
<u>Aqe</u>	<u>Male </u>	Female	Male	Female	Male	Female	Male	Female
55	78	27	11	11	135	135	0	0
56	85	30	7	7	152	152	Õ	ň
57	92	33	5	5	171	171	Õ	Õ
58	100	37	3	3	192	192	ñ	ŏ
59	110	41	ĩ	1	215	215	ŏ	0
00	110	41	1	1	215	215	U	U
60	121	46	0	0	0	0	10.000	10 000
61	133	52	õ	Õ	ŏ	ŏ	10,000	10,000
62	146	58	ň	ň	õ	Ő	ŏ	Ŏ
63	160	65	ň	Õ	õ	ŏ	ŏ	0
64	176	72	0	ő	0	0	0	0
04	170	13	U	U	U	U	U	U
65	105	81	0	0	0	0	0	•
65	210	00	0	0	0	0	0	0
00	219	90	U	U	U	U	U	0
6/	243	99	0	0	0	0	0	0
68	270	109	0	0	0	0	0	0
69	300	123	0	0	0	0	0	0
						_	-	•
70	334	140	0	0	0	0	0	0

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TABLE 14

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

SUMMARY OF PERA POLICE AND FIRE PLAN PROVISIONS

Eligibility All full time, and certain part time, police officers and fire fighters, who are not contributing to any other local retirement fund.

Contributions Member

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8% of Salary.

Employer 12% of Salary.

Allowable Service Police and fire service during which Member contributions were deducted. May also include certain leaves of absence, military service, and service prior to Membership.

Salary Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes lump sum payments at separation and Workers' Compensation benefits.

Average Salary

RETIREMENT

Normal Retirement Benefit Eligibility

Age 55 and 5 years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and 1 year of Allowable Service.

Average of the 5 highest successive years of Salary.

Amount 2.5% of Average Salary for the first 25 years of Allowable Service and 2.0% of Average Salary for each subsequent year.

Form of Payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary).

Benefit Increases Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF).

TABLE 14 (cont)

DISABILITY Duty Disability Benefit Eligibility	Under age 55 and physically unfit to perform his duties as a police officer or fire fighter as a direct result of an act of duty.
Amount	50% of Average Salary plus 2.5% of Average Salary for each year in excess of 20, but not exceeding 25 years of Allowable Service plus 2.0% of Average Salary for each year in excess of 25 years of Allowable Service. The disability benefit is reduced to that amount which when added to Workers' Compensation, does not exceed Average Salary. Payments cease at age 55.
Normal Disability Benefi	t
Eligibility	Totally and permanently disabled before age 55 with 5 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 55.
Form of Payment	Same as for retirement.
Benefit Increases	Adjusted by PERA to provide same increase as MPRIF.
Retirement Benefits Eligibility	Age 55 with continued disability.
Amount	Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
Benefit Increases	Same as for retirement.
DEATH Surviving Spouse Benefit Eligibility	Active Member with surviving spouse.
Amount	30% of Salary averaged over last 6 months. Benefit paid until spouse's death but no payments while spouse is remarried.
Surviving Dependent Child Benefit Eligibility	Active Member with dependent child.

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- the *Wyatt* company -

TABLE 14 (cont) Amount 10% of Salary averaged over last 6 months for each child. Family benefit minimum (including spouse's benefit) of 30% of Salary and maximum of 50% of Salary. Benefits paid until child marries, dies, or attains age 18. Surviving Spouse Optional Annuity Eligibility Member who dies before termination if age 50 with 5 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. Amount Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated. Alternatively, spouse may elect refund of deceased contributions with interest if there are no dependent children. Benefit Increases Adjusted by PERA to provide same increase as MPRIF. TERMINATION Refund of Contributions Eligibility Termination of public service. Amount Member's contributions with 5% interest compounded annually. A deferred annuity may be elected in lieu of a refund. Deferred Annuity Eligibility 5 years of Allowable Service. Amount Benefit computed under law in effect at termination and increased by the following annual percentage: 0% before 7/1/71, 5% from 7/1/71 to 1/1/81, and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

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TABLE 15

RELIEF ASSOCIATION CONSOLIDATION ACCOUNTS

SUMMARY OF LOCAL POLICE OR FIREFIGHTERS PLAN PROVISIONS

Eligibility A Member of a local relief association consolidating with PERA Police and Fire Fund who elects to retain benefit coverage in the local relief association benefit plan.

8% of Contribution Salary.

12% of Contribution Salary.

Contributions Member

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Employer

Allowable Service Any service rendered in the municipality in which the Local relief association is located before the effective date of consolidation and any service rendered by a covered employee as a police officer or firefighter in the municipality in which the local relief association is located.

Salary

Benefit SalaryBuhl PoliceFinal salary.Duluth PoliceSalary of a First Class Patrol Officer with 16 yearsof service.

Contribution Salary Buhl Police Benefit Salary. Duluth Police Greater of Benefit Salary or actual salary.

RETIREMENT

Normal Retirement Benefit Eligibility Buhl Police Age 50 and 20 years of Allowable Service. Duluth Police Age 50 and 5 years of Allowable Service. <u>(Amended)</u>

Amount

Buhl Police 4.25% of Benefit Salary for each of the first 20 years of Allowable Service and \$120 per year for each year of Allowable Service in excess of 20 years of Allowable Service but not more than 25 years of Allowable Service.

Duluth Police 1.9875% of Benefit Salary for each of the first 20 years of Allowable Service, 1.25% of Benefit Salary for the 21st year of Allowable Service, and 2.5% of Benefit Salary for each year of Allowable Service in excess of 21 years but not more than 25 years of Allowable Service.

TABLE 15 (cont)

Form of Payment	Life annuity.
Benefit Increases Buhl Police Duluth Police	3.5% if there is any increase in the salary base. Same increase that Benefit Salary is increased.
DISABILITY Duty Disability Benefit Eligibility	Not eligible for a retirement benefit and physically unfit to perform his duties as a police officer or firefighter as a direct result of an act of duty.
Amount Buhl Police	The retirement benefit calculated using the Benefit Salary as of the date of disability and the Allowable Service as of the date of disability with a minimum of 20 years of Allowable Service. Payments cease at
Duluth Police	The retirement benefit calculated using the Benefit Salary as of the date of disability and the Allowable Service as of the date of disability with a minimum of 20 years of Allowable Service. Payments cease at age 50.
Non-Duty Disability Bene Eligibility	fit Not eligible for a retirement benefit and physically unfit to perform his duties as a police officer or firefighter which did not arise as a direct result of an act of duty.
Amount Buhl Police Duluth Police	Same as the Duty Disability Benefit. Same as the Duty Disability Benefit.
Form of Payment	Same as for retirement.
Benefit Increases	Same as for retirement.
Retirement Benefits Eligibility Buhl Police Duluth Police	Age 50 and continued disability. Age 50 and continued disability.
Amount	The larger of the disability benefit paid before age 50 or the retirement benefit available at age 50.
Benefit Increases	Same as for retirement.

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THE *Wyatt* company

TABLE 15 (cont)

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DEATH

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Surviving Spouse Benefit Eligibility Any

Any active, retired, disabled or deferred Member with surviving spouse.

Any active, deferred, retired or disabled Member with a

Any active, deferred, retired or disabled Member with a

\$1.500 per year if surviving spouse benefit is payable.

child younger than age 18, or if the child is a

child younger than age 18, or if the child is a

If no surviving spouse benefit is payable, then surviving spouse benefit is payable divided in equal

full-time student, younger than age 22.

full-time student, younger than age 22.

shares to all surviving children.

Amount

Buhl Police Duluth Police 72.25% of the Benefit Salary. 25% of the Benefit Salary.

Surviving Dependent Child Benefit Eligibility Buhl Police

Duluth Police

Amount Buhl Police

Duluth Police

Benefit Increases Buhl Police Duluth Police

None. Same as retirement.

10% of Benefit Salary.

TERMINATION

Refund of Contributions Eligibility Termination of public service and not eligible for any other benefits.

Amount Buhl Police

Duluth Police

Members accumulated contributions without interest. No refunds.

Deferred Annuity Eligibility

Any active Member with sufficient Allowable Service for the retirement benefit, but does not meet the age requirement for the retirement benefit.

Amount Buhl Police

The amount calculated under the retirement benefit using the Allowable Service and Benefit Salary as of date of termination.

TABLE 15 (cont)

Duluth Police

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The amount calculated under the retirement benefit using the Allowable Service and Benefit Salary as of date of termination.

Benefit Increases Buhl Police Duluth Police

Same as retirement. Same as retirement.

TABLE 3A

BUHL POLICE CONSOLIDATION ACCOUNT

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ACTIVE MEMBERS AS OF JUNE 30, 1988

AVERAGE ANNUAL EARNINGS



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- THE Wyatt COMPANY ------

TABLE 4A

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BUHL POLICE CONSOLIDATION ACCOUNT

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YEARS RETIRED AGE <1 1-4 20-24 5-9 10-14 15-19 25+ TOTAL <50 0 1 50-54 1 55-59 0 60-64 0 65-69 0 70-74 0 75-79 0 80-84 0 85+ 0 TOTAL 1 0 0 0 0 0 0 1

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY



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- THE Wyatt COMPANY -

TABLE 6A

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BUHL POLICE CONSOLIDATION ACCOUNT

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	YEARS SINCE DEATH								
AGE	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL	
<50 50-54								0 0	
55-59 60-64			1					0 1	
65-69 70-74								0 0	
75-79 80-84								0 0	
85+								0	
TOTAL	0	0	1	0	0	0	0	1	

SURVIVORS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT



<u> </u>	ANNUAL	BENEFIT	(ACTUAL	DOLLARS)	BY YEARS	SINCE DEATH	
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL
0	0	9,899	0	0	0	0	9,899

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- THE Wyatt COMPANY -

TABLE 7A

BUHL POLICE CONSOLIDATION ACCOUNT

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RECONCILIATION OF MEMBERS

	TERMI	TERMINATED		
<u>ACTIVES</u>	DEFERRED RETIREMENT	OTHER NON-VESTED		
0	0	0		
1	0	0		
0 0 0 0 0	0 0 0 0	0 0 0 0		
0	0	0		
1 0				
1	0	0		
	ACTIVES 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ACTIVES DEFERRED RETIREMENT 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0		

		RECIPIENTS	
	RETIREMENT ANNUITANTS	DISABLED	SURVIVORS
A. On July 1, 1987	0	0	0
B. Additions	1	0	1
C. Deletions: 1. Service Retirement 2. Death 3. Annuity Expired 4. Returned as Active	0 0 0	0 0 0 0	0 0
D. Data Adjustments	0	0	0
E. Total on June 30, 1988	1	0	1

BUHL POLICE CONSOLIDATION ACCOUNT					
ACTUARIAL BALANCE SHEET (ACTUAL DOLLARS)	ſ				
JULY 1, 1988					
A. CURRENT ASSETS (2.99% OF TABLE 1, F6)		\$677,184			
 B. EXPECTED FUTURE ASSETS 1. Present Value of Employee Contributions 2. Present Value of Regular Municipal Contribution 3. Present Value of Additional Municipal Contribution 	2,249 3,373 106,196				
4. Total Expected Future Assets		\$111,818			
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS		\$789,002			
D. CURRENT PENSION BENEFIT OBLIGATION 1. Retirees and Beneficiaries Currently Receiving and Terminated Employees Not Yet Receiving Ben) Benefits Defits	\$ 427,576			
2. Current Employees a. Accumulated employee contributions including allocated investment income*	39,557				
b. Employer-financed vested	310,481				
c. Employer-financed nonvested	0				
d. Total		350,038			
3. Total Pension Benefit Obligation		\$777,614			
E. EXPECTED FUTURE PENSION BENEFIT OBLIGATION		\$11,388			
F. TOTAL CURRENT AND EXPECTED FUTURE PENSION BENEFIT	OBLIGATION	\$789,002			
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D3-A)		\$100,430			
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)	\$0			
* Estimated					

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- THE *Wyatt* company

TABLE 9A

BUHL POLICE CONSOLIDATION ACCOUNT

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SUMMARY OF ENTRY AGE NORMAL COST CALCULATIONS

(ACTUAL DOLLARS)

JULY 1, 1988

		NUMBER OF <u>PARTICIPANTS</u>	ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS	ACTUARIAL ACCRUED LIABILITY
Α.	DETERMINATION OF ACTUARIAL ACCRUE LIABILITY (AAL)	D		
	a. Elected PERA Police and Fire b. No Election (Greater Value)	e 0 1	\$ 0 361,426	\$0 353,821
	c. Total	1	\$361,426	\$353,821
	 Former Members a. Elected PERA Police and Fire b. No Election (Greater Value) 	e 0 0	\$0 0	\$0 0
	c. Total	0	\$0	\$0
	 Benefit Recipients a. Elected PERA Police and Fire b. Elected Relief Association 	e 2 0	\$427,576 0	\$427,576 0
	c. Total	2	\$427,576	\$427,576
	 Total a. Elected PERA Police and Fire b. Elected Relief Association c. No Election (Greater Value) 	e 2 0 1	\$427,576 0 361,426	\$427,576 0 353,821
	d. Total	3	\$789,002	\$781,397 ========
Β.	DETERMINATION OF UNFUNDED ACTUARIA 1. AAL (A4)	AL ACCRUED LIA	BILITY (UAAL)	\$781,397
	2. Current Assets (2.99% of Table	1,F6)		677,184
	3. UAAL (B1-B2)			\$104,213
C.	NORMAL COST			\$7,604

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_____ THE Wyatt COMPANY _____

	BUHL POLICE CONSOLIDATION ACCOUNT
	CALCULATION OF NET ACTUARIAL LOSS (GAIN) (ACTUAL DOLLARS)
	YEAR ENDING JUNE 30, 1988
\$427,576 (361,426	 A. ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS (TABLE 9A) 1. Elected PERA Police and Fire 2. Elected Relief Association 3. No Election (Greater Value)
\$789,002	4. Total
\$(2,249	 B. PRESENT VALUE OF FUTURE EMPLOYEE CONTRIBUTIONS 1. Elected PERA Police and Fire 2. No Election (Greater Value)
\$2,249	3. Total
\$0 3,373	C. PRESENT VALUE OF FUTURE REGULAR MUNICIPAL CONTRIBUTIONS 1. Elected PERA Police and Fire 2. No Election (Greater Value)
\$3,373	3. Total
\$677,184	D. CURRENT VALUE OF ASSETS (2.99% OF TABLE 1, F6)
\$103,019	 PRESENT VALUE OF FUTURE ADDITIONAL MUNICIPAL CONTRIBUTIONS 1. Initial Contribution - Annual Payment of \$9,556 through the Amortization Date of December 31, 2010
\$3,177	F. LOSS (GAIN) [A-B-C-D-E]
\$4,367 0	G. ANALYSIS OF LOSS (GAIN) 1. MPRIF Mortality 2. Election of PERA Police and Fire Fund
(1,190	3. Other
\$3,177 =========	4. Total

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- THE WYall COMPANY

TABLE 11A BUHL POLICE CONSOLIDATION ACCOUNT DETERMINATION OF STATUTORY CONTRIBUTIONS (ACTUAL DOLLARS) JULY 1, 1988 AMOUNT AMOUNT %____ ___\$ A. EMPLOYEE CONTRIBUTIONS 8.00% **B. EMPLOYER CONTRIBUTIONS** (BEFORE ADJUSTMENT FOR STATE AID) 1. Regular Municipal Contribution 12.00% 2. Additional Municipal Contribution Current Last **Established** Balance Payment a. Initial 103,019 12/31/2010 9.556 7/1/88 b. 3,177 12/31/2002 357 - - -Total c. \$9,913 * _____ C. TOTAL STATUTORY CONTRIBUTION IS 20.00% OF COMPENSATION PLUS \$9,913

* Contribution is assumed to be paid on December 31, 1988.

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TABLE 3B

DULUTH POLICE CONSOLIDATION ACCOUNT

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		YEARS OF SERVICE							
<u>AGE</u>	<1	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u> 30+</u>	TOTAL
<25 25-29									0 0
30-34 35-39			7 9	10	2				7 21
40-44 45-49			1	4	15 5	6 16	2		25 24
50-54 55-59			1		1	3	3 2	2	7 5
60-64 65+								3	3 0
TOTAL	0	0	18	14	23	25	7	5	92

ACTIVE MEMBERS AS OF JUNE 30, 1988

AVERAGE ANNUAL EARNINGS

				YEA	RS OF SE	RVICE			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	ALL
<25 25-29									0
30-34 35-39			27,119 26,070	27,309	29,516				27,119 26,988
40-44 45-49			26,566	26,922	27, 4 02 27,681	27,380 26,819	27,036		27,320 27,006
50-54 55-59			28,061		26,485	26,896	31,481 29,808	30,545	28,802 29,753
60-64 65+								29,689	29,689 0
ALL	0	0	26,616	27,198	27,607	26,963	29,733	30,031	27,469
	PRIC	R FIS	CAL YEAI	R EARNING	GS (ACTU/	AL DOLLAI	RS) BY YE	FARS OF S	SERVICE
-	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	15-19	20-24	25-29	<u>30+</u>	TOTAL
	0	0	479,093	380,776	634,955	674,064	208,130	150,156	2,527,174

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_____ THE Myatt COMPANY _____

TABLE 48

DULUTH POLICE CONSOLIDATION ACCOUNT

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				YEARS RE	TIRED			
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	TOTAL
<50 50-54	3	3						0 6
55-59 60-64	1 2	7 7	2 2	2	3			10 16
65-69 70-74		1	2 5	5 5	5 3	4 6	2	17 21
75-79 80-84				1	1 2	3 1	1 1	6 4
85+						1	3	4
TOTAL	6	18	11	13	14	15	7	84

SERVICE RETIREMENTS AS OF JUNE 30, 1988

AVERAGE ANNUAL ANNUITY

	YEARS RETIRED							
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	ALL
<50 50-54	12,410	15,083						0 13,746
55-59 60-64	20,852 20,738	16,108 16,572	14,338 16,572	16,572	14,270			16,228 16,661
65-69 70-74		16,572	17,469 16,773	16,084 16,572	16,572 15,760	13,323 15,489	13,526	15,769 15,904
75-79 80-84				16,572	16,572 16,572	16,301 12,916	13,323 13,323	15,895 14,846
85+						16,572	15,353	15,658
ALL	16,593	16,143	16,420	16,384	15,905	14,974	14,251	15,843

T	OTAL ANNU	AL ANNUITY	(ACTUAL	DOLLARS)	BY YEARS	OF RETIR	REMENT
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	TOTAL
99,556	290,577	180,624	212,997	222,665	224,614	99,757	1,330,790

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TABLE 6B

DULUTH POLICE CONSOLIDATION ACCOUNT

	YEARS SINCE DEATH								
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	TOTAL	
<50 50-54	1	1	1					2 1	
55-59 60-64		1	1	1		1	1	0 5	
65-69 70-74		1 1	1 2	2		1	2	4 6	
75-79 80-84		2 1	1	1 2	2 1	1	1 1	6 7	
85+			1	2	1	1	4	9	
TOTAL	1	7	7	8	4	4	9	40	

SURVIVORS AS OF JUNE 30, 1988

AVERAGE ANNUAL BENEFIT

	YEARS SINCE DEATH								
<u>AGE</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	ALL	
<50 50-54	7,518	8,124	6,499					7,009 8,124	
55-59 60-64		8,124	8,124	8,124		8,124	8,124	0 8,124	
65-69 70-74		8,124 8,124	8,124 8,124	8,124		7,518	7,821	8,124 7,922	
75-79 80-84		8,124 8,124	8,124	8,124 8,124	8,124 8,124	8,124	8,124 8,124	8,124 8,124	
85+			8,124	7,821	8,124	8,124	8,124	8,056	
ALL	7,518	8,124	7,892	8,048	8,124	7,973	8,056	8,023	

	TOTAL ANNU	AL BENEFIT	(ACTUAL	DOLLARS)	BY YEARS	SINCE DEATH	1
<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	20-24	<u>25+</u>	TOTAL
7,518	56,867	55,242	64,384	32,495	31,890	72,508 3	20,904

_____ THE Wyatt COMPANY _____

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TABLE 7B

DULUTH POLICE CONSOLIDATION ACCOUNT

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RECONCILIATION OF MEMBERS

		TERMI	NATED
	ACTIVES	DEFERRED <u>RETIREMENT</u>	OTHER Non-Vested
A. On July 1, 1987	0	0	0
B. Additions	92	0	0
 C. Deletions: 1. Service Retirement 2. Disability 3. Death 4. Terminated-Deferred 5. Terminated-Refund 6. Terminated-Other Non-vested 7. Returned as Active 	0 0 0 0 0 0	0 0 0 0	0 0 0 0
D. Data Adjustments	0	0	0
Vested Non-Vested	92 0		
E. Total on June 30, 1988	92	5	0

		RECIPIENTS	
	RETIREMENT <u>ANNUITANTS</u>	DISABLED	SURVIVORS
A. On July 1, 1987	0	0	0
B. Additions	85	0	51
 C. Deletions: 1. Service Retirement 2. Death 3. Annuity Expired 4. Returned as Active 	(1) 0 0	0 0 0 0	(2) (9)
D. Data Adjustments	0	0	0
E. Total on June 30, 1988	84	0	40

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_____ THE Wyatt COMPANY _____

	.	
ACTUARIAL BALANCE SHEE (ACTUAL DOLLARS)	1	
JULY 1, 1988		
A. CURRENT ASSETS (97.01% OF TABLE 1, F6)		\$21,971,09
 B. EXPECTED FUTURE ASSETS 1. Present Value of Employee Contributions 2. Present Value of Regular Municipal Contributi 3. Present Value of Additional Municipal Contrib 	ons utions	2,415,46 3,623,19 14,112,81
4. Total Expected Future Assets		\$20,151,47
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS		\$42,122,57
 D. CURRENT PENSION BENEFIT OBLIGATION 1. Retirees and Beneficiaries Currently Receivin and Terminated Employees Not Yet Receiving Be 	g Benefits nefits	\$19,257,63
2. Current Employees a. Accumulated employee contributions including allocated investment income*	3,185,072	
b. Employer-financed vested	15,187,219	
c. Employer-financed nonvested	0	
d. Total		18,372,29
3. Total Pension Benefit Obligation		\$37,629,92
E. EXPECTED FUTURE PENSION BENEFIT OBLIGATION		\$4,492,64
F. TOTAL CURRENT AND EXPECTED FUTURE PENSION BENEFI	T OBLIGATION	\$42,122,57
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D3-A)		\$15,658,83
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY	(F-C)	\$(
+ Fatimited		

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- THE Wyatt COMPANY -

TABLE 9B

DULUTH POLICE CONSOLIDATION ACCOUNT

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SUMMARY OF ENTRY AGE NORMAL COST CALCULATIONS

(ACTUAL DOLLARS)

JULY 1, 1988

		NUMBER OF <u>PARTICIPANTS</u>	ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS	ACTUARIAL ACCRUED LIABILITY
Α.	DETERMINATION OF ACTUARIAL ACCRUEE LIABILITY (AAL))		
	a. Elected PERA Police and Fire b. No Election (Greater Value)	e 2 90	\$439,263 22,425,673	\$391,636 14,790,829
	c. Total	92	\$22,864,936	\$15,182,465
	 Former Members a. Elected PERA Police and Fire b. No Election (Greater Value) 	e 0 5	\$0 1,480,912	\$0 1,480,912
	c. Total	5	\$1,480,912	\$1,480,912
	 Benefit Recipients a. Elected PERA Police and Fire b. Elected Relief Association 	e 118 6	\$16,471,176 1,305,548	\$16,471,176 1,305,548
	c. Total	124	\$17,776,724	\$17,776,724
	 4. Total a. Elected PERA Police and Fire b. Elected Relief Association c. No Election (Greater Value) d. Total 	120 6 95 221	\$16,910,439 1,305,548 23,906,585 	\$16,862,812 1,305,548 16,271,741 \$34,440,101
		===		===========
Β.	DETERMINATION OF UNFUNDED ACTUARIA 1. AAL (A4)	L ACCRUED LIA	BILITY (UAAL)	\$34,440,101
	2. Current Assets (97.01% of Table	1,F6)		21,971,095
	3. UAAL (B1-B2)			\$12,469,006
C.	NORMAL COST			\$706,518

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_____ THE *Wyatt* company ______

	CALCULATION OF NET ACTUARIAL LOSS (GAIN)	
	(ACTUAL DOLLARS)	
	YEAR ENDING JUNE 30, 1988	
A. AC 1. 2. 3.	CTUARIAL PRESENT VALUE OF PROJECTED BENEFITS (TABLE 9B) Elected PERA Police and Fire Elected Relief Association No Election (Greater Value)	\$16,910,439 1,305,548 23,906,585
4.	Total	\$42,122,572
B. PR 1. 2.	RESENT VALUE OF FUTURE EMPLOYEE CONTRIBUTIONS Elected PERA Police and Fire No Election (Greater Value)	\$22,806 2,392,659
3.	Total	\$2,415,465
C. PR 1. 2.	ESENT VALUE OF FUTURE REGULAR MUNICIPAL CONTRIBUTIONS Elected PERA Police and Fire No Election (Greater Value)	\$34,210 3,588,989
3.	Total	\$3,623,199
D. CU	RRENT VALUE OF ASSETS (97.01% OF TABLE 1, F6)	\$21,971,095
E. PR 1.	ESENT VALUE OF FUTURE ADDITIONAL MUNICIPAL CONTRIBUTIONS Initial Contribution - Annual Payment of \$1,289,796 through the Amortization Date of December 31, 2010	\$13,904,750
F. LO	SS (GAIN) [A-B-C-D-E]	\$208,063
G. AN 1. 2. 3.	ALYSIS OF LOSS (GAIN) MPRIF Mortality Election of PERA Police and Fire Fund Other	\$133,810 (4,267,185 4,341,438
4.	Total	\$208,063
	VEAD AMODITIZATION OF LOSS (CAIN)	¢22 30E

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- THE Wyatt COMPANY -

TABLE 11B

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DULUTH POLICE CONSOLIDATION ACCOUNT

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DETERMINATION OF STATUTORY CONTRIBUTIONS (ACTUAL DOLLARS)

JULY 1, 1988

					Amount	AMOUNT	
Α.	EMPLO	YEE CONTRIBUTION	NS		8.00%		
Β.	EMPLO (BEFOI	YER CONTRIBUTION RE ADJUSTMENT FO	NS DR STATE AID)				
	 Regular Municipal Contribution Additional Municipal Contribution 				12.00%		
	a. b.	<u>Established</u> Initial 7/1/88	Current <u>Balance</u> 13,904,750 208,063	Last <u>Payment</u> 12/31/2010 12/31/2002		1,289,796 23,385	
	c.	Total				\$1,313,181 ·	*
C.	TOTAL	STATUTORY CONTR	RIBUTION IS 20.00	% OF COMPENSAT	ION PLUS \$1	,313,181	

* Contribution is assumed to be paid on December 31, 1988.

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------ THE Myatt COMPANY ------