## CITY OF GREENVILLE

# FIREMEN'S PENSION FUND ACTUARIAL REVIEW 

July 1, 2005

## Prepared By:

STANLEY, HUNT, DuPREE \& RHINE, INC.

Employee Benefit Consultants
Consulting Actuarial Services

August 31, 2005
Board of Trustees
Greenville Fire Department
22 West Broad Street
Greenville, SC 29601

## Gentlemen:

Stanley, Hunt, DuPree \& Rhine, Inc. has prepared an actuarial review for The City of Greenville Firemen's Pension Fund as of July 1, 2005. The financial information presented in this valuation is applicable to the twelve months ending June 30, 2006. The purpose of the review is to:
--- determine the existing and projected plan liabilities for benefits earned by active, retiree, and widowed participants.
--- determine the sufficiency of current funding levels and investment returns.
--- provide disclosures which can be utilized to meet all of the requirements of the Government Accounting Standards Board Statements relating to the Pension Fund.

The Table of Contents following this letter outlines the text and tables included in this report.
Sincerely,
Stanley, Hunt, DuPree \& Rhine, Inc.


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attachments
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## SECTION I

## BASIS OF VALUATION

In this section, the basis of the valuation is presented and described. This information - the provisions of the plan and census of participants - is the foundation of the valuation, since these are the present facts upon which benefit payments will depend.

The valuation is based upon the premise that the plan will continue in existence, so that future events must also be considered. These future events are assumed to occur in accordance with the actuarial assumptions and concern such events as the earnings of the fund, the number of participants who will remain to retirement, their ages at retirement and expected benefits.

The actuarial assumptions and the actuarial cost method, or funding method, which has been adopted to guide the sponsor in funding the plan in a reasonable and acceptable manner, are described in this section.

## SECTION I.A

## Effective Date

June 25, 1946

## Eligibility Requirements

All regular employees of the Fire Department hired prior to the attainment of age 35 are eligible for benefits provided by this plan.

## Contributions by Participating Employees

Participating employees contributed initially at the rate of $1 \%$ of salary. Salary deductions were increased, effective July 1, 1952, to $3 \%$ of salary. Deductions remained at this level until June 24,1975 when they were raised to the current level of $5.775 \%$ of salary. Beginning in the 1997 plan year, the City offered to pay $4 \%$ of the State-directed contribution level, so that the net rate is now $1.775 \%$.

## Contributions from Other Sources

The following sums are also paid into the Fund:

1. Any money, real estate, personal property or other assets made available by gift, devise or bequest;
2. All forfeitures and fines imposed upon any member of the Department by way of discipline;
3. All proceeds from sales of condemned or discarded personal property and equipment in use by the Department;
4. The income from any tax levy imposed by the City Council in order to supplement or support this fund.

The City currently contributes $19.425 \%$ of participating payroll.

SECTION I.A Summary of Plan Provisions (Continued)

## Service Retirement Benefits

A member who has attained age 55 and completed at least 25 years of service may retire with a monthly benefit equal to $50 \%$ of his monthly compensation at the time of his retirement. For each year of service in excess of 25 years, an additional $2 \%$ of final compensation will be provided. In no event will more than 35 years of service be considered for the purpose of benefit determination. An adjustment of up to $6 \%$ of the percentage of benefit will be added to the benefit calculation to reflect accrued general leave time.

## Disability Retirement Benefits

1. Line of Duty Disability

A member who incurs a disability while engaged in the performance of his duty will be retired with a monthly benefit equal to $50 \%$ of his monthly compensation at the time of his disability.
2. Disability Other Than in Line of Duty
a. A member who becomes disabled other than in the line of duty after the completion of 10 years of service will be retired with a monthly benefit equal to one-third of his monthly compensation at the time of disability.
b. A member who becomes disabled other than in the line of duty after the completion of 20 years of service will be retired with a monthly benefit equal to one-half of his monthly compensation at the time of disability.

## Death Benefits

1. Upon the death of a retired member, the lawful widow will receive a monthly benefit equal to one-half of the benefit which the member was receiving, plus a lump sum of $\$ 200$. Such monthly benefit shall continue during her lifetime regardless of whether she remarries.
2. Upon death of an active member, the lawful widow will receive a monthly benefit equal to one-half of the member's monthly salary at the time of his death, plus a lump sum of $\$ 200$. Such monthly benefit shall continue during her lifetime regardless of whether she remarries.
3. If in the case of (1) or (2) above there is no lawful widow, the monthly benefits shall be paid to the surviving children until the youngest child attains age 18.
4. In the case of (2) above, the designated beneficiary may elect to take a refund of the member's contributions with $4 \%$ interest thereon in lieu of any monthly pension.
5. The minimum widow's benefit is $\$ 750$ per month.

SECTION I.A Summary of Plan Provisions (Continued)

## Withdrawal Benefits

A member who leaves the service of the Fire Department prior to becoming eligible for retirement benefits shall be entitled to a refund of his contributions plus four percent interest.

Members have a vested interest in their accrued benefits from the retirement plan of fifty percent after ten years of service. For each year of service beyond ten years, a member shall be entitled to an additional ten percent. A member becomes one hundred percent vested in his accrued retirement benefit after the completion of fifteen years of service.

A member's accrued retirement benefit will be based on earnings at the time of termination and will be prorated based on the number of years of actual service at date of termination to the total number of years of service anticipated at retirement age. For this purpose, retirement age is the later of age 55 and completion of 25 years of service. In lieu of a monthly pension, a vested participant may elect upon termination to take a refund of his contributions with $4 \%$ interest.

## Development of Actuarial Assumptions

In determining costs for a retirement program, it is necessary to make certain assumptions as to the expected future experience that will take place within the program. These assumptions include the rates of mortality to be experienced by both the active, retired and widowed plan participants, the rates of termination of employment prior to retirement, the rates at which plan participants can be expected to take disability retirement, the age at which retirement will actually occur, the rates at which salaries will increase, the rate of investment return to be earned by the fund and the expenses to be incurred. The ultimate cost of any given retirement plan will depend upon actual plan experience.

It is possible to derive actuarial assumptions from the experience of the group under consideration. This is most often the case in very large groups. For plans of this size, the assumptions are best determined from the experience of similar groups, and standard published tables are available which can be used. Changes to assumptions will be considered when actual experience differs substantially and when estimates for the future suggest these changes.

1. Actuarial Assumptions for Valuation of Liabilities
a. Mortality Rate: GAM 83 - Sex Distinct
b. Disability Rate: The following are examples of the probability that a participant will become disabled within one year. A disabled mortality assumption is also utilized. Duty-related disabilities are assumed to be $50 \%$ of all disabilities.

| $\frac{\text { Age }}{25}$ | Percentage |
| :---: | :---: |
| 40 | $0.068 \%$ |
| 55 | $0.230 \%$ |
|  | $1.180 \%$ |

c. Withdrawal Rate: The following are examples of the probability that a participant will terminate within one year for reasons other than death.

| $\frac{\text { Age }}{25}$ | Percentage |
| :---: | :---: |
| 40 | $7.72 \%$ |
| 55 | $5.15 \%$ |
|  | $0.90 \%$ |

d. Salary Scale: Assumes salaries increase at 4\% per year. Below is the ratio of salary at normal retirement to salary at the following ages:

| $\frac{\text { Age }}{25}$ | $\frac{\text { Percentage }}{324 \%}$ |
| :---: | :---: |
| 40 | $180 \%$ |

In addition, the inclusion of accrued general leave in the benefit calculation is assumed to increase retirement benefits by $4 \%$.
e. Rate of Retirement: Assumed $50 \%$ retire each year following attainment of age 55 or the completion of 35 years of service, if later, but not beyond age 62 .

Interest Rate:
Funding Purposes -
Pre-Retirement: 7.0\%
Post-Retirement: 7.0\%
f. Marriage: It is assumed that $75 \%$ of the actives are married at death or retirement with spouses that are three years younger.

## 2. Actuarial Assumptions for Valuation of Assets

Assets are carried at Market Value for valuation purposes.

## SECTION I.C

## Description of Valuation Method

The valuation method used is known as the Projected Unit Credit Method. The method divides the cost of funding benefits into two parts: normal cost and past service liability. Normal cost is the present value of the projected normal retirement benefit divided by a participant's total service. Past service liability is the present value of the projected retirement benefit multiplied by the ratio of past service over total service. If the past liability were fully funded, the total annual cost would be normal cost.

Because liabilities under a pension plan are based on actuarial assumptions (mortality, investment return, etc.) which will never precisely coincide with actual experience, variations known as actuarial gains and losses will occur, determined each time an actuarial valuation of the plan is made. Such gains or losses are a component of the unfunded liability and are amortized to determine the recommended contribution.

## 1. Plan Provisions

The benefits for Retirees and Widows were increased by 3\% effective February 1, 2005.
2. Actuarial Cost Method

No Changes.
3. Actuarial Assumptions

No Changes.

1. ACTIVES

| a. Number | 145 | 140 |  |
| :--- | :--- | ---: | ---: |
| b. Total Annual Earnings | $\$ 5,559,125$ | $\$ 5,826,831$ |  |
| c. Average Earnings | $\$ 38,339$ | $\$$ | 41,620 |
| d. Average Current Age | 39.0 | 39.8 |  |
| e. Average Past Service | 15.9 | 16.7 |  |

## 2. DEFERRED VESTED

| a. Number |  | 3 |  | 4 |
| :--- | ---: | ---: | ---: | ---: |
| b. Average Annual Deferred Pension | $\$$ | 9,571 | $\$$ | 8,060 |

## 3. PARTICIPANTS IN PAY STATUS

a. Retirees
56
55
b. Surviving Widows
30 31
c. Average Annual Retiree Pension
d. Average Annual Widow Pension

| $\$$ | 23,557 | $\$$ | 23,666 |
| :--- | :--- | :--- | :--- |
| $\$$ | 10,732 | $\$$ | 11,808 |

## SECTION II

## ACCOUNTING INFORMATION

We received bank statements from Wachovia Securities for the appropriate periods within the Plan Year ending June 30, 2005. This section provides a comparative summary statement of assets and liabilities as of each June 30 , as well as a statement of income and expenses for the plan year.

## SECTION II

## FINANCIAL STATEMENTS

Section II.A
Statement of Assets and Liabilities

| 06-30-04 | $06-30-05$ <br> Market Value <br> Market Value |
| :---: | :---: |

## Assets

Cash Equivalents
Accounts Receivable:
Accrued Income

Investments:
Government Securities
Corporate Debt and Equity Instruments
Mutual Funds
Total Assets

Liabilities

Total Liabilities

Net Assets
\$ 1,145,911 \$ 1,476,347

142,207
127,626

5,862,900
18,334,308
$4,157,459$
\$ 28,295,766 \$ 29,958,640

$\$ 28,295,766 \quad \$ 29,958,640$
Section II.B Financial Statements (Continued)

Income

| Employer Contribution | $\$ 1,157,575$ |
| :--- | ---: |
| Employee Contribution | 105,591 |
| Other Contributions | 157,829 |
| Interest Income | $1,052,867$ |
| Realized Gain/(Loss) | 785,374 |
| Unrealized Gain/(Loss) | 414,752 |

Total Income
\$ 3,673,988

## Expenses

| Pension Payments | $1,772,835$ |
| :--- | ---: |
| Fees | 238,279 |

Total Expenses
Statement of Income and Expenses
For Plan Year 07-01-04 To 06-30-05

238,279
$\underline{2,011,114}$

Net Income
$1,662,874$

Net Assets at End of Year
\$29,958,640

## SECTION III <br> SUMMARY OF VALUATION RESULTS

Section III.A Summary of Actuarial Valuation

1. Present Value of Benefits
a. Active Lives

| (1) | Retirement | $\$ 19,015,618$ |
| :--- | :--- | ---: |
| (2) | Vesting | $3,610,671$ |
| (3) | Death | 847,827 |
| (4) | Disability | $1,569,974$ |

(5) Total
b. Deferred Vesteds
c. Retirees
d. Widows
e. Total
2. Present Value of Future Normal Cost
3. Accrued Liability
a. Active Lives

17,777,565
b. Deferred Vesteds

161,465
c. Retirees
d. Widows
e. Total

3,106,798
33,251,695
4. Actuarial Value of Assets 29,958,640
5. Actual Unfunded Liability $=[(3)-(4)]$

3,293,055
6. Increase in (3) Due to Method Change
7. Increase in (3) Due to Benefit Changes

446,000
8. Increase in (3) Due to Assumption Change
9. Expected Unfunded Liability $1,960,884$
10. Gain or Loss $=(9)-[(5)-(6)-(7)-(8)]$
11. Funding Requirements
a. Normal Cost
(1) Retirement 509,591
(2) Vesting

140,567
(3) Death 26,355
(4) Disability 47,325
(5) Total

723,838
b. Less Expected Employee Contributions
c. Net Employer Normal Cost = (a)-(b)
d. Ten Year Amortization of Unfunded Liability
e. Minimum Employer Funding Requirement

## Section III.B Plan Termination Liability

1. Assumptions
a. Discount Rate: 7\%
b. Mortality Table:
(1) 1983 GAM Sex Distinct
(2) Females assumed to be 3 years younger than their spouses
(3) All Active Participants are $100 \%$ vested
2. Present Value of Accrued Benefits $\$ 30,976,153$
3. Market Value of Assets

29,958,640
4. Excess Assets/(Shortfall) $=(3)-(2)$
\$ $(1,017,513)$

## Investment Return

During our compilation of the plan's accounting over the prior year, we determined the approximate investment return over each period. We have summarized our results below and included results for the past 20 years.

Year
1985
1986
1987
1988
1989
Five Year Average
1990 8.9\%
1991
1992
12.9\%

1993
1994
Five Year Average
1995
6-30-97
6-30-98
6-30-99
6-30-00
Five Year Average
6-30-01
10.3\%

6-30-02
6.5\%

6-30-03
3.3\%

6-30-04
7.7\%

6-30-05
Five Year Average $\quad 7.0 \%$
7.2\%

Twenty Year Average $\quad 7.6 \%$

## Actual Salary Increases

Salaries increased over the past year an average of $8.8 \%$ ( $4.0 \%$ was assumed), reflecting both merit and cost of living components for some participants.

## Retirement

Over the prior year, no participants retired and began receiving payments from the plan. From the retirement rate assumption, zero participants were expected to retire.

Death
There was one death among active participants, two deaths were reported among retired plan participants, and one death was reported among surviving spouses. Based on the mortality assumption, there were zero deaths assumed for active participants, two deaths for the retired plan participants and one death among the surviving spouses.

## Disabilities

There was one disability during the period. Based on the disability assumption, we expect about one disability every three years.

## Terminations

Eleven active participants terminated or transferred before the earliest retirement age. All but two were paid the amount of their vested benefit. Based on the termination assumption, we expected about seven terminations.

Section III.D Actuarial Gain/Loss Analysis

## Total Actuarial Gain/(Loss) from 7-1-04 through 7-1-05

\$ $(886,171)$

Components of Total Loss:

- Gain on assets

| Expected assets at 7-1-05 | $\$ 29,912,524$ |
| :--- | ---: |
| Actual assets at 7-1-05 | $\underline{29,958,640}$ |

Gain/(Loss)
\$ 46,116

- Loss on liabilities

Expected accrued liability at 7-1-05
\$ 31,873,408
Actual accrued liability before plan changes at 7-1-05
32,805,695

Gain/(Loss)
$\$(932,287) *$

Aggregate Loss
$\$(886,171)$

* Primarily losses from salary increases in excess of assumed rate of $4 \%$.
Section III.E Cost of Living Adjustment Projections
Based Upon an Assumed 2\% Annual Cost of Living Adjustment

1. Accrued Liability
a. Active Lives ..... \$ 21,606,406
b. Deferred Vesteds ..... 194,531
c. Retirees ..... 14,248,029d. Widows3,635,329
e. Total ..... \$ 39,684,295
2. Actuarial Value of Assets ..... \$29,958,640
3. Unfunded Liability $=[(1)-(2)]$ ..... \$ 9,725,655
4. Funding Requirements
a. Normal Cost
(1) Retirement ..... \$ 617,120
(2) Vesting ..... 171,431
(3) Death ..... 33,337
(4) Disability ..... 57,129
(5) Total Normal Cost ..... \$ 879,017b. Less Expected Employee Contributions$(97,626)$
c. Net Employer Normal Cost ..... \$ 781,391
Option 1:d. Ten Year Amortization of Unfunded Liability1,294,126
e. Suggested Employer Funding for a $2 \%$ annual increase $=(\mathrm{c})+(\mathrm{d})$\$ 2,075,517
Option 2:
f. Twenty Year Amortization of Unfunded Liability857,975
g. Suggested Employer Funding for a $2 \%$ annual increase $=(\mathrm{c})+(\mathrm{f})$ ..... \$ 1,639,366
$\left.\begin{array}{lll} & \begin{array}{c}\text { One-Time } \\ \text { 1\% COLA }\end{array} & \begin{array}{c}\text { One-Time } \\ \text { 2\% COLA }\end{array} \\ \text { 1. Accrued Liability (Total) } & \$ 33,404,822\end{array}\right) \$ 33,557,949$
5. Accrued Liability (Total) $\$ 33,411,186$
6. Actuarial Value of Assets
\$29,958,640
7. Unfunded Liability $=[(1)-(2)]$
\$ 3,452,546
8. Funding Requirements
a. Net Employer Normal Cost
\$ 631,898
Option 1:
b. Ten Year Amortization of Unfunded Liability
459,406
c. Suggested Employer Funding for Adding Special Retirement Ages $=(a)+(b) \quad \$ 1,091,304$
Option 2:
d. Twenty Year Amortization of Unfunded Liability 304,576
e. Suggested Employer Funding for Adding Special Retirement Ages $=(a)+(d)$
\$ 936,474

* 35 \& Out - Members could retire at the earlier of age 55 with 25 years of service, or any age with 35 years of service.

| $35 \&$ Out <br> and | $35 \&$ Out <br> and |
| :---: | :---: |
| One-Time <br> 1\% COLA | One-Time <br> $2 \%$ COLA |
| $\$ 33,564,313$ | $\$ 33,717,440$ |

2. Actuarial Value of Assets
\$29,958,640
\$ 29,958,640
3. Unfunded Liability $=[(1)-(2)]$
\$ 3,605,673
$\$ 3,758,800$
4. Funding Requirements
a. Net Employer Normal Cost
Option 1:
b. Ten Year Amortization of Unfunded Liability
479,782
500,158
c. Suggested Employer Funding for Adding Special
Retirement Ages and a One-Time COLA $=(a)+(b)$
Option 2:
d. Twenty Year Amortization of Unfunded Liability
318,084
\$ 1,132,056
e. Suggested Employer Funding for Adding Special
Retirement Agesand a One-Time COLA $=(\mathrm{a})+(\mathrm{d})$
\$ 949,982
\$ 963,491

## SECTION IV

INFORMATION FOR ACCOUNTANTS PURSUANT TO GOVERNMENT ACCOUNTING STANDARDS BOARD'S (GASB) STATEMENT NO. 27
A. Development of Pension Cost for fiscal year ending 6-30-05

1. Annual Required Contribution
\$ 931,695
2. Interest on Net Pension Obligation
3. Amortization of Net Pension Obligation

467,874
4. Pension Cost $=(1)+(2)+(3)$
B. Net Pension Obligation as of 6-30-05

1. Net Pension Obligation at Beginning of Year
$\$(3,516,180)$
2. Actual Employer Contribution

1,315,404
3. Pension Cost
$1,153,436$
4. Net Pension Obligation 6-30-05 = (1)-(2)+(3)
\$ $(3,678,148)$
5. Increase/(Decrease) in NPO from Beginning of Period
\$ $(161,968)$
C. Basic Information

1. Amortization Method: Level Dollar
2. Amortization Period: 10 years
3. Amortization Period: Closed Method
4. The employer funding policy is based upon a 1974 City Ordinance (as subsequently modified) requiring an employer contribution of $19.425 \%$ of participating payroll. Employee contributions are mandatory at $1.775 \%$ of compensation.
5. See contents of 7-1-05 Actuarial Report for other required disclosures.
D. Trend Data
$\underline{06-30-05} \quad \underline{06-30-04} \quad \underline{06-30-03}$
6. Valuation Date

7-1-05
7-1-04
7-1-03
2. Actuarial Value of Assets
3. Actuarial Accrued Liability
4. Unfunded Actuarial Accrued Liability
5. Assets as \% of Actuarial Accrued Liability

3,293,055
2,623,761
2,753,238
6. Annual Covered Payroll

5,826,831
5,781,490
5,436,942
7. Unfunded Actuarial Liability as \% of Payroll
56.5\%
45.4\%
50.6\%
E. Development of Pension Cost for fiscal year ending 6-30-06

1. Annual Required Contribution
\$ 1,064,396
2. Interest on Net Pension Obligation
3. Amortization of Net Pension Obligation

489,426
4. Pension Cost $=(1)+(2)+(3)$
\$ 1,296,352

## VALUATION AS OF 07/01/2005

## AGE - SERVICE DISTRIBUTION FOR ACTIVE PARTICIPANTS



