

**ACTUARIAL VALUATION OF
CITY OF MIRAMAR
FIREFIGHTERS'
RETIREMENT PLAN
AS OF OCTOBER 1, 2018**

July, 2019

Determination of Contribution for the
Plan Year ending September 30, 2019
Contribution to be
Paid in Fiscal Year October 1, 2019
through September 30, 2020

DuLaney and Company, Inc.
Actuarial Services

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August 5, 2019

Board of Trustees
City of Miramar Firefighters'
Retirement Plan
c/o Ms. Denise McNeill
Resources Centers, LLC
4360 Northlake Boulevard, Ste. 206
Palm Beach Gardens, FL 33410

Dear Board Members:

We are pleased to present our October 1, 2018 Actuarial Valuation for the City of Miramar Firefighters' Retirement Plan. The purpose of this report is to indicate appropriate contribution levels and to satisfy State requirements. The report is prepared for and at the request of the Board of Trustees.

This report consists of this commentary, detail Tables I through XVI and State Required Exhibit - Table XVII. The Tables contain basic Retirement Plan cost figures plus significant detail on the benefits, liabilities and experience of your Plan.

Costs for Fiscal Year Beginning October 1, 2019

This Actuarial Valuation develops the required minimum Retirement Plan payment for the fiscal year beginning October 1, 2019 and ending September 30, 2020 under the Florida Protection of Public Employee Retirement Benefits Act and Chapter 175. The minimum payment consists of payment of annual normal cost plus amortization of the unfunded actuarial accrued liability. This amount to be met by the City and State contributions under Chapter 175 is **83.2%** of the covered payroll for the fiscal year. Based on a projected covered payroll of \$11,167,973, the minimum payment (City plus Chapter 175) would be **\$9,287,287** for the October 1, 2019 through September 30, 2020 fiscal year, if the payment requirement is met by September 30, 2020. The amount was computed based on the fixed dollar method, which was based on projected instead of actual emerging covered payroll during the plan year. The method was permitted by the Division of Retirement and was adopted by the Trustees. Please note that Chapter 175 states that employer contributions must be made at least quarterly.

This total cost must be met by City and State contributions. We have assumed that the State contribution available (limited by rules under Chapter 175) will be **\$0 (0.00% of projected covered payroll)** and the City contribution would be **\$9,287,287 (83.2% of projected covered payroll)**.

Changes in Plan Provisions, Actuarial Methods or Assumptions Recognized in this Valuation

In this valuation, the benefits recognized were the same as those as of the prior valuation. Plan provisions are outlined in Table XII.

Certain actuarial assumptions and methods employed for this valuation have been revised. The changes included:

- The assumed administrative expenses were changed from \$199,195 to \$174,259 for the plan/fiscal year.
- The actuarial cost method was changed to entry age normal cost method.
- The assumed interest to be earned by the Fund was changed from 8.15% to 7.50%, net of investment expenses, per annum.
- The annual payroll growth assumption was changed from 1.78% to 1.21%.

There were no other changes in actuarial assumptions and methods from those utilized in the last actuarial valuation. Table XI contains an outline of the assumptions and methods used.

Comparison of Costs With Previous Valuation Year of 2017/2018

Table II provides a comparison of the results for the 2016/2017 and 2017/2018 plan years.

The left column of Table II contains the results from the October 1, 2017 Actuarial Valuation while the results from our October 1, 2018 Actuarial Valuation are shown in the middle and right columns.

The experience of the plan year can be seen by comparing the left and middle columns. Covered payroll decreased by about 5.3% while the number of active participants decreased by 7.7%. Unfunded actuarial accrued liability increased from \$38,194,863 to \$38,649,444. The net City cost increased by 5.3% of covered pay, from \$7,063,958 (60.6% of the October 1, 2017 covered payroll) to \$7,266,383 (65.9% of the October 1, 2018 covered payroll).

Comparing the last two columns (II and III) of Table II illustrates the effects of the assumption changes. Unfunded actuarial accrued liability increased from \$38,649,444 to \$56,506,506, primarily due to the assumption changes. The net City cost increased by \$1,910,180, from \$7,266,383 (65.9% of covered pay) to \$9,176,563 (83.2% of covered pay).

The ratio of the market value of assets to the present value of vested accrued benefits (Vested Benefit Security Ratio) increased from 86.9% to 81.3% due to the assumption changes and market value asset return.

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Plan Experience

Table XVI indicates that the actuarial value of assets return was 10.4% for the 2017/2018 plan year, as compared to the assumed 8.15%. Employee turnover was 5.5% more than expected during the plan year. Average salary increase was 5.1%, compared to the assumed 6.0%. Turnover experience, salary increase, and assets return were sources of actuarial gain during the year. A more detailed analysis would be needed to determine the gain or loss attributable to each of these elements.

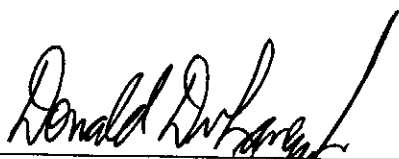
A review of Table IX shows that the total actuarial loss for the plan year was \$2,124,436 mainly generated from the 13 new drop retirees.

Participant Census and Financial Data

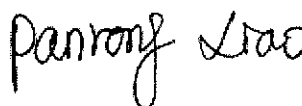
Participant census data for the fiscal year October 1, 2017 through September 30, 2018 was provided by the City. Supplemental information was also received on retirees and terminations from the plan administrator. The data was reviewed for consistency and is believed to be reliable.

Information on Plan assets was received from the Plan's auditors. We did not audit this information, however, we believe it to be reliable.

DuLaney and Company



Donald A. DuLaney, Jr. E.A., A.S.A.
Senior Consulting Actuary



Panrong Xiao, E.A. M.A.A.A.
Enrolled Actuary

DAD/PX/
Attachments

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Table I

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Summary of Retirement Plan Costs as of October 1, 2018**

	<u>Cost Data</u>	<u>% of Payroll</u>
A. <u>Participant Data Summary</u>		
1. Active employees	120	N/A
2. Terminated vested	3	N/A
3. Receiving benefits	46	N/A
4. DROP participants	27	N/A
5. Annual payroll of active employees	\$ 11,034,456	100.0%
B. <u>Total Actuarial Present Value of Future Benefits</u>		
1. Age retirement benefits active employees	\$ 78,936,443	715.4%
2. Termination benefits active employees	1,285,798	11.7%
3. Death benefits active employees	1,006,326	9.1%
4. Disability benefits active employees	7,360,591	66.7%
5. Post retirement supplement active employees	<u>3,537,792</u>	<u>32.1%</u>
6. Subtotal active employees	\$ 92,126,950	834.9%
7. Retired or terminated vested participants receiving benefits	52,431,322	475.2%
8. DROP participants	39,789,042	360.6%
9. Terminated vested participants entitled to future benefits	1,042,238	9.4%
10. Deceased participants whose beneficiaries are receiving benefits	2,306,822	20.9%
11. Disabled participants receiving benefits	4,950,814	44.9%
12. Post retirement supplement inactive participants		
a. Retired or terminated vested participants receiving benefits	\$ 1,936,568	
b. DROP participants	1,621,844	
c. Terminated vested participants entitled to future benefits	173,261	
d. Deceased participants whose beneficiaries are receiving benefits	0	
e. Disabled participants receiving benefits	<u>155,440</u>	
f. Total	\$ 3,887,113	35.2%
13. Subtotal inactive participants	\$ 104,407,351	946.2%
14. Total actuarial present value of future benefits (B.6. + B.13.)	\$ 196,534,301	1,781.1%

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Table 1
(continued two)

	<u>Cost Data</u>	<u>% of Payroll</u>
C. <u>Total Actuarial Accrued Liability</u>		
1. Age retirement benefits active employees	\$ 62,716,529	568.4%
2. Termination benefits active employees	616,450	5.6%
3. Death benefits active employees	586,600	5.3%
4. Disability benefits active employees	3,328,382	30.2%
5. Post retirement supplement active employees	<u>3,537,792</u>	<u>32.1%</u>
6. Subtotal active employees	\$ 70,785,753	641.5%
7. Retired or terminated vested participants receiving benefits	\$ 52,431,322	475.2%
8. DROP participants	39,789,042	360.6%
9. Terminated vested participants entitled to future benefits	1,042,238	9.4%
10. Deceased participants whose beneficiaries are receiving benefits	2,306,822	20.9%
11. Disabled participants receiving benefits	4,950,814	44.9%
12. Post retirement supplement inactive participants		
a. Retired or terminated vested participants receiving benefits	\$ 1,936,568	
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c. Terminated vested participants entitled to future benefits	173,261	
d. Deceased participants whose beneficiaries are receiving benefits	0	
e. Disabled participants receiving benefits	<u>155,440</u>	
f. Total	\$ 3,887,113	35.2%
13. Subtotal inactive participants	\$ 104,407,351	946.2%
14. Total actuarial present value of accrued liability	\$ 175,193,104	1,587.7%
D. <u>Value of Assets</u>		
1. Actuarial value	\$ 118,686,598	1075.6%
2. Market value	\$ 123,922,522	1123.1%
E. <u>Unfunded Actuarial Accrued Liability (C.-D1.)</u>	\$ 56,506,506	512.1%
F. <u>Actuarial Present Value of Future Employee Contributions</u> (8.47% of actuarial present value of future salaries)	\$ 6,445,651	58.4%
G. <u>Minimum Funding Requirements</u>		
1. Normal cost	\$ 3,203,460	29.0%
2. Amortization bases	6,347,129	57.5%
3. Administrative expenses	174,259	1.6%
4. Interest adjustment	<u>386,333</u>	<u>3.5%</u>
5. Total payment	\$ 10,111,181	91.6%
6. Expected employee contribution (A.5 x 8.47%)	934,618	8.5%
7. Expected State contribution	<u>0</u>	<u>0.0%</u>
8. City contribution (5. - 6. - 7.)	\$ 9,176,563	83.2%

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Table 1
(continued three)

H. <u>Contributions for Fiscal Year 10/1/2019 – 9/30/2020</u>		
1. Projected annual covered payroll active employees (A.5. x 1.0121)		\$ 11,167,973
2. Total payment required (1. x 91.63%)		\$ 10,233,214
3. Total payment required as % of projected covered payroll		91.63%
4. Expected State contribution		\$ 0
5. Expected employee contributions (H.1 x 8.47%)		945,927
6. City contribution (2. – 4. – 5.)		\$ 9,287,287
7. City contribution as % of projected covered payroll		83.2%
I. <u>Actuarial Present Value of Vested Accrued Benefits</u>		
1. Retired, terminated vested, beneficiaries and disabled receiving benefits	\$ 61,780,967	559.9%
2. DROP participants	41,410,886	375.3%
3. Terminated vested participants entitled to future benefits	1,215,499	11.0%
4. Active participants entitled to future benefits	<u>47,946,971</u>	<u>434.5%</u>
5. Total actuarial present value of vested accrued benefits	\$ 152,354,323	1,380.7%
J. <u>Unfunded Actuarial Present Value of Vested Accrued Benefits (I. - D.2.)</u>		
	\$ 28,431,801	257.7%
K. <u>Vested Benefit Security Ratio (D.2. ÷ I.)</u>		
	81.3%	N/A

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Table II

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN

Comparison of Cost Data of October 1, 2017 and October 1, 2018 Actuarial Valuations

	Column I October 1, 2017		Column II October 1, 2018		Column III October 1, 2018	
	% of Annual Pay		% of Annual Pay		% of Annual Pay	
	Cost Data		Cost Data		Cost Data	
A. Participants						
1. Active employees	130	N/A	120	N/A	120	N/A
2. Terminated vested	4	N/A	3	N/A	3	N/A
3. Receiving benefits	43	N/A	46	N/A	46	N/A
4. DROP participants	16	N/A	27	N/A	27	N/A
5. Annual payroll of active employees	\$ 11,648,795	100.00%	\$ 11,034,456	100.00%	\$ 11,034,456	100.00%
B. Normal Costs	\$ 3,192,886	27.4%	\$ 2,970,643	26.9%	\$ 3,203,460	29.0%
C. Total Actuarial Accrued Liability	\$ 143,787,092	1234.4%	\$ 157,336,042	1425.9%	\$ 175,193,104	1587.7%
D. Actuarial Value of Assets	\$ 105,592,229	906.5%	\$ 118,686,598	1075.6%	\$ 118,686,598	1075.6%
E. Unfunded Actuarial Accrued Liability	\$ 38,194,863	327.9%	\$ 38,649,444	350.3%	\$ 56,506,506	512.1%
F. Net City Cost	\$ 7,063,958	60.6%	\$ 7,266,383	65.9%	\$ 9,176,563	83.2%
G. Unfunded Actuarial Present Value of Vested Accrued Benefits*	\$ 16,397,821	140.8%	\$ 15,604,281	141.4%	\$ 28,431,801	257.7%
H. Vested Benefit Security Ratio*	86.9%	N/A	88.8%	N/A	81.3%	N/A

* Computed based on market value of assets.

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Table III

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLANCharacteristics of Participants in
Actuarial Valuation as of October 1, 2018**A. Characteristic of Active Participants**

1.	Active participants as of beginning of prior year	130
2.	New entrants during prior year	7
3.	Exits during prior year	(17)
4.	Active participants as of beginning of year	120
5.	Active participants fully vested	75
6.	Active participants partially vested	0
7.	Active participants non-vested	45
8.	Annual payroll of active participants	\$ 11,034,456
9.	Average pay	\$ 91,954
10.	Average hire age	27.9 years
11.	Average attained age	40.1 years

B. Characteristics of Inactive Participants

1.	Inactives as of beginning of prior year	63
2.	Newly inactive during prior year	13
3.	Exits during prior year	(0)
4.	Inactives as of beginning of year	76
5.	Age retirees	39
6.	Average age of age retirees	62.0 years
7.	Annual benefit for age retirees	\$ 3,208,767
8.	DROP participants	27
9.	Average age of DROP participants	52.4 years
10.	Annual benefit for DROP participants	\$ 2,235,786
11.	Beneficiaries receiving benefits	2
12.	Average age of beneficiaries receiving benefits	65.0 years
13.	Annual benefits for beneficiaries	\$ 165,690
14.	Disabled participants receiving benefits	5
15.	Average age of disabled participants	62.0 years
16.	Annual benefits for disabled participants	\$ 419,165
17.	Terminated vested due deferred benefits	3
18.	Average age of terminated vested participants	49.5 years
19.	Annual benefits for terminated vested participants	\$ 73,255

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Table IV

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Statement of Assets as of October 1, 2018¹**

<u>Assets</u>	<u>Market Value</u>
A. <u>General Investments</u>	
1. Cash and cash equivalents	\$ 555,378
2. Equity securities	108,833,664
3. Certificates of deposit	1,070,861
4. Fixed income international bonds	554,434
5. Collateralized mortgage obligations	1,192,875
6. Government securities	10,412,137
7. Asset backed securities	1,080,095
8. Corporate bonds	6,517,849
9. Real estate funds	15,173,266
10. Timber funds	5,275,864
11. Money market funds	<u>5,539,785</u>
12. Total investments	\$ 156,206,208
B. <u>Receivables</u>	
1. City contributions	\$ 0
2. Chapter 175 contributions receivable	89,693
3. Accrued interest and dividends	166,418
4. Prepaid expense	5,400
5. Receivable for securities sold	<u>678,368</u>
6. Total receivables	\$ 939,879
C. <u>Prepaid benefits and other assets</u>	\$ 0
D. <u>Payables</u>	
1. Accounts payable	\$ 111,316
2. DROP accounts payable	18,222,523
3. Payable for securities purchased	860,121
4. Deferred revenue	<u>0</u>
5. Total payables	\$ 19,193,960
E. <u>Total Fund</u> (A. + B. + C. - D.)	<u>\$ 137,952,127</u>
(includes Ch. 175 Excess Reserve of \$0 and Share Accounts balance of \$14,029,298)	

¹ As reported by Plan's Auditors.**D**

Table IV
(continued two)**CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Reconciliation of DROP Accounts Balance

A.	DROP Accounts Balance as of October 1, 2017	\$ 14,953,617
B.	Pension payments into DROP accounts during year	2,631,846
C.	Disbursements from DROP accounts during year	(490,216)
D.	Investment Gains/(Losses) during year	<u>1,127,275</u>
E.	DROP Accounts Balance as of September 30, 2018	\$ 18,222,523

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Table V

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Reconciliation of Plan Assets¹**

A.	<u>Market Value of Assets as of October 1, 2017</u>		\$ 122,692,639
B.	<u>Receipts During Period</u>		
1.	Contributions		
a.	Employee	\$ 1,985,058	
b.	Permissive service credit	792,779	
c.	City	6,888,087	
d.	State	89,693	
f.	Total		\$ 9,755,617
2.	Investment income		
a.	Interest, dividends and miscellaneous income	\$ 2,016,215	
b.	Investment expenses	(546,651)	
c.	Net		\$ 1,469,564
3.	Realized and unrealized appreciation		
a.	Realized appreciation	\$ 11,236,630	
b.	Unrealized appreciation	0	
c.	Net realized and unrealized appreciation		\$ 11,236,630
4.	Total receipts during period		\$ 22,461,811
C.	<u>Disbursements During Period</u>		
1.	Pension payments		\$ 4,396,218
2.	DROP payments including post retirement supplements		2,631,846
3.	Contribution refunds		0
4.	Administrative and miscellaneous expenses		174,259
5.	Total disbursements during period		\$ 7,202,323
D.	<u>Market Value of Assets as of October 1, 2018 (A.+B.4.-C.5.)</u>		\$ 137,952,127
E.	<u>Balance of Cumulative Excess Chapter 175 Contributions Reserve as of October 1, 2018</u>		\$ 0
F.	<u>Balance of Share Plan Accounts as of October 1, 2018</u>		\$ 14,029,605
G.	<u>Market Value of Assets as of October 1, 2018 Net of Cumulative Excess Chapter 175 Contributions Reserve and Balance of Share Accounts (D. - E. - F.)</u>		\$ 123,922,522

¹ As reported by Plan's Auditors.**D**

Table VI

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Development of Value of Assets – Current Method**

	<u>10/1/2017 – 9/30/2018</u>	<u>10/1/2016 – 9/30/2017</u>	<u>10/1/2015 – 9/30/2016</u>	<u>10/1/2014 – 9/30/2015</u>
A. Market value of assets as of beginning of year (After deduction of DROP Account Balances; prior to deduction of Ch. 175 Reserve and Share Plan Account Balances)	\$ 122,692,639	\$ 104,636,269	\$ 93,455,250	\$ 90,829,812
B. Contributions	9,755,617	10,562,186	7,203,068	7,049,756
C. Benefit payments and expenses	7,748,974	7,327,533	5,256,226	4,462,612
D. Expected investment income (A. x i + (B. - C.) x $i/2$ where $i = 0.085$ through 09/30/2015, 0.0825 through 09/30/2016, and 0.0815 thereafter)	10,081,221	8,765,922	7,790,365	7,600,179
E. Expected assets at end of year (A. + B. - C. + D.)	134,780,503	116,636,844	103,192,457	101,017,135
F. Actual market value at end of year (After deduction of DROP Account Balances; prior to deduction of Ch. 175 Reserve and Share Plan Account Balances)	137,952,127	122,692,639	104,636,269	93,455,250
G. Excess/(shortfall) of actual over expected assets (F. - E.)				
1. From previous plan year	3,171,624	6,055,795	1,443,812	(7,561,885)
2. From two plan years ago	6,055,795	1,443,812	(7,561,885)	3,269,003
3. From three plan years ago	1,443,812	(7,561,885)	3,269,003	6,761,814
4. From four plan years ago	(7,561,885)	3,269,003	6,761,814	7,276,790
H. Deferred recognized amounts of excess/(shortfall)				
1. 80% from previous plan year	2,537,299	4,844,636	1,155,050	(6,049,508)
2. 60% from two plan years ago	3,633,477	866,287	(4,537,131)	1,961,402
3. 40% from three plan years ago	577,525	(3,024,754)	1,307,601	2,704,726
4. 20% from four plan years ago	<u>(1,512,377)</u>	<u>653,801</u>	<u>1,352,363</u>	<u>1,455,358</u>
5. Total	5,235,924	3,339,970	(722,117)	71,978
I. Preliminary actuarial value of assets at end of year (F. - H.5.)	\$ 132,716,203	\$ 119,352,669	\$ 105,358,386	\$ 93,383,272
J. State Ch. 175 Contribution Reserve and total Share Plan Account Balances	\$ 14,029,605	\$ 13,760,440	\$ 13,278,191	\$ 12,188,746
K. 80% of end of year market value of assets (0.8 x F.)	110,361,702	98,154,111	83,709,015	74,764,200
L. 120% of end of year market value of assets (1.2 x F.)	165,542,552	147,231,167	125,563,523	112,146,300
M. Actuarial value of assets (I. - J., but not less than K. and not more than L.)	\$118,686,598	\$ 105,592,229	\$ 92,080,195	\$ 81,194,526

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Table VII

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**History of Chapter 175 Contribution Usage**

Under the provisions of Florida Statutes Chapter 175, as amended by Chapter 99-1, increments in Chapter 175 contributions over the amount for 1997 must first be used to fund the cost of meeting minimum benefit requirements. After the minimum requirements are met, any additional Chapter 175 contributions received must be used to provide extra benefits. The following is an accounting of the contributions received and the amounts used for compliance since the 1997 plan year.

- A. 1997 Chapter 175 contributions received (Base Amount) \$ 206,327
- B. Benefit improvements needed to meet Ch. 175 minimum benefits: None
- C. History of Chapter 175 contribution usage:

Regular Chapter 175 Contributions

During Plan Year	<u>Adjusted Base Amount</u>			<u>Actual Amount Received</u>		
	Ch. 175 Contribution	Cost for New Benefits	Total Ch. 175 Contribution Used	Ch. 175 Contribution	Excess of Actual over Base Amount	Cumulative Excess of Actual over Base Amount*
1997/1998	\$ 206,327	\$ 0	\$ 206,327	\$ 206,327	\$ 0	\$ 0
1998/1999	\$ 206,327	\$ 0	\$ 206,327	\$ 218,750	\$ 12,423	\$ 12,423
1999/2000	\$ 206,327	\$ 0	\$ 206,327	\$ 209,293	\$ 2,966	\$ 15,389
2000/2001	\$ 206,327	\$ 0	\$ 206,327	\$ 219,859	\$ 13,532	\$ 28,921
2001/2002	\$ 206,327	\$ 0	\$ 206,327	\$ 285,288	\$ 78,961	\$ 107,882
2002/2003	\$ 206,327	\$ 0	\$ 206,327	\$ 413,808	\$ 207,481	\$ 315,363
2003/2004	\$ 206,327	\$ 0	\$ 206,327	\$ 502,095	\$ 295,768	\$ 611,131
2004/2005	\$ 206,327	\$ 0	\$ 206,327	\$ 629,981	\$ 423,654	\$ 1,034,785
2005/2006	\$ 206,327	\$ 0	\$ 206,327	\$ 699,269	\$ 492,942	\$ 1,617,339
2006/2007	\$ 206,327	\$ 0	\$ 206,327	\$ 707,356	\$ 501,029	\$ 2,258,440
2007/2008	\$ 206,327	\$ 0	\$ 206,327	\$ 837,692	\$ 631,365	\$ 3,085,386
2008/2009	\$ 206,327	\$ 0	\$ 206,327	\$ 827,554	\$ 621,227	\$ 0
2009/2010	\$ 206,327	\$ 0	\$ 206,327	\$ 953,389	\$ 747,062	\$ 0
2010/2011	\$ 206,327	\$ 0	\$ 206,327	\$ 1,008,175	\$ 801,848	\$ 0
2011/2012	\$ 206,327	\$ 0	\$ 206,327	\$ 849,607	\$ 643,280	\$ 0
2012/2013	\$ 206,327	\$ 0	\$ 206,327	\$ 1,103,116	\$ 896,789	\$ 0
2013/2014	\$ 206,327	\$ 0	\$ 206,327	\$ 1,124,210	\$ 917,883	\$ 0
2014/2015	\$ 206,327	\$ 0	\$ 206,327	\$ 981,731	\$ 775,404	\$ 0
2015/2016	\$ 206,327	\$ 0	\$ 206,327	\$ 990,464	\$ 784,137	\$ 0
2016/2017	\$ 206,327	\$ 0	\$ 206,327	\$ 966,694	\$ 760,367	\$ 0
2017/2018	\$ 206,327	\$ 0	\$ 206,327	\$ 989,693	\$ 783,366	\$ 0

* Interest accumulated on prior year's balance from 9/30/2005 and forward at 8.66% per annum through 9/30/2009, 8.50% through 9/30/2015, 8.25% through 9/30/2016, and 8.15% thereafter.

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Table VII
(continued two)

Supplemental Chapter 175 Contributions

During Plan Year	<u>Adjusted Supplemental Base Amount</u>			<u>Actual Supplemental Amount Received</u>		
	Ch. 175 Contribution	Cost for New Benefits	Total Ch. 175 Contribution Used	Ch. 175 Contribution	Excess of Actual over Base Amount	Cumulative Excess of Actual over Base Amount*
1997/1998	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
1998/1999	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
1999/2000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2000/2001	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2001/2002	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2002/2003	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2003/2004	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2004/2005	\$ 0	\$ 0	\$ 0	\$ 3,351	\$ 3,351	\$ 3,351
2005/2006	\$ 0	\$ 0	\$ 0	\$ 18,412	\$ 18,412	\$ 22,053
2006/2007	\$ 0	\$ 0	\$ 0	\$ 209,229	\$ 209,229	\$ 233,192
2007/2008	\$ 0	\$ 0	\$ 0	\$ 133,762	\$ 133,762	\$ 387,148
2008/2009	\$ 0	\$ 0	\$ 0	\$ 69,910	\$ 69,910	\$ 0
2009/2010	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2010/2011	\$ 0	\$ 0	\$ 0	\$ 15,996	\$ 15,996	\$ 0
2011/2012	\$ 0	\$ 0	\$ 0	\$ 123,420	\$ 123,420	\$ 0
2012/2013	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2013/2014	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2014/2015	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2015/2016	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2016/2017	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2017/2018	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

* Interest accumulated on prior year's balance from 9/30/2005 and forward at 8.66% per annum through 9/30/2009, 8.50% through 9/30/2015, 8.25% through 9/30/2016, and 8.15% thereafter.

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Table VII
(continued three)

Supplemental Chapter 175 Contributions

Total Chapter 175 Contributions (Regular Plus Supplemental)

During Plan Year	Adjusted Base Amount			Actual Amount Received		
	Total Ch. 175 Contributions	Cost for New Benefits	Total Ch. 175 Contributions Used	Total Ch. 175 Contributions	Excess of Actual over Base Amount	Cumulative Excess of Actual over Base Amount*
1997/1998	\$ 206,327	\$ 0	\$ 206,327	\$ 206,327	\$ 0	\$ 0
1998/1999	\$ 206,327	\$ 0	\$ 206,327	\$ 218,750	\$ 12,423	\$ 12,423
1999/2000	\$ 206,327	\$ 0	\$ 206,327	\$ 209,293	\$ 2,966	\$ 15,389
2000/2001	\$ 206,327	\$ 0	\$ 206,327	\$ 219,859	\$ 13,532	\$ 28,921
2001/2002	\$ 206,327	\$ 0	\$ 206,327	\$ 285,288	\$ 78,961	\$ 107,882
2002/2003	\$ 206,327	\$ 0	\$ 206,327	\$ 413,808	\$ 207,481	\$ 315,363
2003/2004	\$ 206,327	\$ 0	\$ 206,327	\$ 502,095	\$ 295,768	\$ 611,131
2004/2005	\$ 206,327	\$ 0	\$ 206,327	\$ 633,332	\$ 427,005	\$ 1,038,136
2005/2006	\$ 206,327	\$ 0	\$ 206,327	\$ 717,681	\$ 511,354	\$ 1,639,392
2006/2007	\$ 206,327	\$ 0	\$ 206,327	\$ 916,585	\$ 710,258	\$ 2,491,632
2007/2008	\$ 206,327	\$ 0	\$ 206,327	\$ 971,454	\$ 765,127	\$ 3,472,534
2008/2009	\$ 206,327	\$ 0	\$ 206,327	\$ 897,464	\$ 691,137	\$ 0
2009/2010	\$ 206,327	\$ 0	\$ 206,327	\$ 953,389	\$ 747,062	\$ 0
2010/2011	\$ 206,327	\$ 0	\$ 206,327	\$ 1,024,171	\$ 817,844	\$ 0
2011/2012	\$ 206,327	\$ 0	\$ 206,327	\$ 849,607	\$ 643,280	\$ 0
2012/2013	\$ 206,327	\$ 0	\$ 206,327	\$ 1,103,116	\$ 896,789	\$ 0
2013/2014	\$ 206,327	\$ 0	\$ 206,327	\$ 1,124,210	\$ 917,883	\$ 0
2014/2015	\$ 206,327	\$ 0	\$ 206,327	\$ 981,731	\$ 775,404	\$ 0
2015/2016	\$ 206,327	\$ 0	\$ 206,327	\$ 990,464	\$ 784,137	\$ 0
2016/2017	\$ 206,327	\$ 0	\$ 206,327	\$ 966,694	\$ 760,367	\$ 0
2017/2018	\$ 206,327	\$ 0	\$ 206,327	\$ 989,693	\$ 783,366	\$ 0

* Interest accumulated on prior year's balance from 9/30/2005 and forward at 8.66% per annum through 9/30/2009, 8.50% through 9/30/2015, 8.25% through 9/30/2016, and 8.15% thereafter.

Notes: During the 2008/2009 Plan Year, \$123,022 was transferred from the total cumulative excess reserve to fund for the improved COLA, and \$4,341,358 was transferred from the total excess reserve to fund for the initial allocations of the Share Plan. During the 2009/2010 plan year, \$747,062 was used to fund Share Plan allocations. During the 2010/2011 plan year, \$817,844 was used to fund Share Plan allocations. During the 2011/2012 plan year, \$766,700 was used to fund Share Plan allocations. During the 2012/2013 plan year, \$896,789 was used to fund Share Plan allocations. During the 2013/2014 plan year, \$917,883 was used to fund Share Plan allocations. During the 2014/2015 plan year, \$775,404 was used to fund Share Plan allocations. During the 2015/2016 plan year, \$784,137 was used to fund Share Plan allocations. During the 2016/2017 plan year, \$760,367 was used to fund Share Plan allocations. During the 2017/2018 plan year, \$783,366 was used to fund Share Plan allocations.

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Table VIII

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Reconciliation of Share Accounts Balance**

A. Share Accounts Balance as of September 30, 2017	\$ 13,760,440
B. Share Accounts Balance as of September 30, 2018	\$ 14,029,605

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Table IX

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLANActuarial Gains / (Losses) for Plan Year Ended September 30, 2018

A. <u>Derivation of Actuarial Gain / (Loss)</u>		
1.	City and State projected unit credit actuarial normal cost previous valuation	\$ 2,206,233
2.	Unfunded actuarial accrued liability previous valuation	\$ 38,194,863
3.	City and State contributions previous year (limited by 99-1)	\$ 6,888,087
4.	Interest on:	
	(a) Normal costs	\$ 179,808
	(b) Unfunded actuarial accrued liability	3,112,881
	(c) City and State contributions	<u>280,690</u>
	(d) Net total: (a) + (b) - (c)	\$ 3,011,999
5.	Increase (decrease) in unfunded actuarial accrued liability from plan amendment	\$ 0
6.	Increase (decrease) in unfunded actuarial accrued liability from assumption changes	\$ 17,857,062
7.	Expected unfunded actuarial accrued liability current year: 1. + 2. - 3. + 4. + 5. + 6.	\$ 54,382,070
8.	Actual unfunded actuarial accrued liability current year	\$ 56,506,506
9.	Actuarial gain / (loss): 7. - 8.	\$ (2,124,436)
B. <u>Approximate Portion of Gain / (Loss) Due to Investments</u>		
1.	Actuarial value of assets previous year	\$ 105,592,229
2.	Contributions during year (unlimited by 99-1)	\$ 9,755,617
3.	Disbursements during year (expenses & benefits)	\$ 7,748,974
4.	Expected appreciation for period	\$ 8,683,883
5.	Increase due to method changes	\$ 0
6.	Expected actuarial value of assets current year 1. + 2. - 3. + 4. + 5.	\$116,282,755
7.	Actual actuarial value of assets current year	\$118,686,598
8.	Approximate gain / (loss): 7. - 6.	\$ 2,403,843
C.	<u>Approximation Portion of Gain / (Loss) Due to Liabilities: A. - B.</u>	\$ (4,528,279)

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Table X

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLANAmortization of Unfunded Liability

<u>Date</u>	<u>Total Unfunded Liability</u>	<u>Amortization Payment</u>
10/01/2018	\$ 56,506,506	\$ 6,347,129
10/01/2019	\$ 53,921,330	\$ 6,423,929
10/01/2020	\$ 51,059,706	\$ 6,501,659
10/01/2021	\$ 47,899,901	\$ 6,580,329
10/01/2033	\$ 0	\$ 0

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Table XI

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLANAccounting Disclosure Exhibit

I. <u>Number of Plan Participants</u>	<u>10/01/2017</u>	<u>10/01/2018</u>
1. Retirees, disabled and beneficiaries receiving benefits	43	46
2. Terminated plan participants entitled to but not yet receiving benefits	4	3
3. DROP participants	16	27
4. Active plan participants	<u>130</u>	<u>120</u>
5. Total	193	196
II. <u>Financial Accounting Standards Board Information as of October 1, 2018</u>		
A. <u>Statement of Accumulated Plan Benefits*</u>		
1. Actuarial present value of accumulated vested plan benefits		
a. Participants currently receiving benefits		\$ 61,780,967
b. DROP participants		41,410,886
c. Other		<u>49,162,470</u>
d. Total		\$ 152,354,323
2. Actuarial present value of accumulated non-vested plan benefits		<u>9,300,616</u>
3. Total actuarial present value of accumulated plan benefits		\$ 161,654,939
B. <u>Statement of Change in Accumulated Plan Benefits*</u>		
1. Actuarial present value of accumulated plan benefits as of October 1, 2017		\$ 133,651,845
2. Increase (decrease) during year attributable to:		
a. Plan amendment	\$	0
b. Actuarial assumptions and method changes	13,607,928	
c. Benefits paid and contribution refunds	(4,396,218)	
d. DROP benefits credited	(2,631,846)	
e. Other, including benefits accumulated and increase for interest due to decrease in the discount period	<u>21,423,230</u>	
f. Net increase	\$	28,003,094
3. Actuarial present value of accumulated plan benefits as of October 1, 2018		\$ 161,654,939

* Includes present value of benefits for post retirement supplements.

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Table XI
(continued two)

C. Significant Matters Affecting Calculations

- | | |
|--|--------------------------|
| 1. Assumed rate of return used in determining actuarial present values | 7.50% |
| 2. Plan amendments | None. |
| 3. Change in actuarial assumptions | See Table XIII, Item 14. |

D. Required Disclosure of Accumulated Plan Benefits*
at Assumed Rate of Return Applied by the
Florida Retirement System, Currently 7.50%

	<u>10/01/2018</u>
1. Actuarial present value of accumulated vested plan benefits	
a. Participants currently receiving benefits	\$ 61,780,967
b. DROP participants	41,410,886
c. Others	<u>49,162,470</u>
d. Total	\$ 152,354,323
2. Actuarial present value of accumulated non-vested plan benefits	<u>9,300,616</u>
3. Total actuarial present value of accumulated plan benefits	\$ 161,654,939

* Includes present value of benefits for post retirement supplements.

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Table XI
(continued three)

III. Schedule of Funding Progress (As required by GASB #25)

(1) Valuation Date	(2) Actuarial Value of Assets (AVA)	(3) Actuarial Accrued Liability (AAL)	(4) Unfunded Actuarial Accrued Liability (UAAL)(3)-(2)	(5) Funded Ratio (2) / (3)	(6) Annual Covered Payroll	(7) UAAL as % of Payroll (4) / (6)
October 1, 1991	\$ 3,183	\$ 3,703	\$ 520	86%	\$ 2,161	24%
October 1, 1992	\$ 4,011	\$ 5,263	\$ 1,252	76%	\$ 2,281	55%
October 1, 1993	\$ 4,961	\$ 6,377	\$ 1,416	78%	\$ 2,378	60%
October 1, 1994	\$ 5,409	\$ 7,409	\$ 2,000	73%	\$ 2,574	78%
October 1, 1995	\$ 6,944	\$ 6,944	\$ 0	100%	\$ 3,370	0%
October 1, 1996	\$ 8,765	\$ 8,765	\$ 0	100%	\$ 3,958	0%
October 1, 1997	\$ 10,835	\$ 10,835	\$ 0	100%	\$ 4,041	0%
October 1, 1998	\$ 13,449	\$ 13,449	\$ 0	100%	\$ 4,222	0%
October 1, 1999	\$ 16,223	\$ 19,909	\$ 3,685	81%	\$ 4,649	79%
October 1, 2001 *	\$ 18,349	\$ 29,775	\$ 11,426	62%	\$ 6,400	179%
October 1, 2002	\$ 17,613	\$ 35,605	\$ 17,992	49%	\$ 7,729	233%
October 1, 2003	\$ 19,848	\$ 40,289	\$ 20,441	49%	\$ 8,216	249%
October 1, 2004	\$ 22,898	\$ 46,009	\$ 23,111	50%	\$ 8,798	263%
October 1, 2005	\$ 26,225	\$ 50,947	\$ 24,722	51%	\$ 8,905	278%
October 1, 2006	\$ 31,626	\$ 60,480	\$ 28,854	52%	\$ 9,663	299%
October 1, 2007	\$ 39,021	\$ 68,871	\$ 29,851	57%	\$ 9,763	306%
October 1, 2008	\$ 43,451	\$ 75,587	\$ 32,136	57%	\$ 9,784	328%
October 1, 2009	\$ 45,781	\$ 80,499	\$ 34,718	57%	\$ 9,830	353%
October 1, 2010	\$ 47,813	\$ 85,690	\$ 37,877	56%	\$ 9,695	391%
October 1, 2011	\$ 52,354	\$ 92,349	\$ 39,995	57%	\$ 10,127	395%
October 1, 2012	\$ 53,729	\$ 99,506	\$ 45,777	54%	\$ 10,325	443%
October 1, 2013	\$ 62,393	\$ 106,783	\$ 44,390	58%	\$ 10,934	406%
October 1, 2014	\$ 72,664	\$ 115,146	\$ 42,482	63%	\$ 11,184	380%
October 1, 2015	\$ 81,194	\$ 116,551	\$ 35,357	70%	\$ 11,227	315%
October 1, 2016	\$ 92,080	\$ 128,024	\$ 35,944	72%	\$ 11,444	314%
October 1, 2017	\$ 105,592	\$ 143,787	\$ 38,195	73%	\$ 11,649	328%
October 1, 2018	\$ 118,687	\$ 175,193	\$ 56,506	68%	\$ 11,034	512%

Note: Dollar amounts in thousands. Information prior to October 1, 2005 was prepared by the plan's former actuary. For 1995 through 1998, actuarial accrued liability was equal to actuarial value of assets under the Aggregate Cost Method used.

* No actuarial valuation was performed as of October 1, 2000.

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Table XI
(continued four)

IV. Schedule of Employer Contributions (As required by GASB #25)

Plan Year Ending	Annual Required Contribution ³	Percentage Contributed
(1)	(2)	(3)
9/30/1991	\$ 195,045	100%
9/30/1992	207,219	123%
9/30/1993	250,900	100%
9/30/1994	228,817	101%
9/30/1995	296,228	107%
9/30/1996	353,818	125%
9/30/1997	429,035	94%
9/30/1998	433,061	82%
9/30/1999	273,546	98%
9/30/2001	607,896	137%
9/30/2002	841,165	114%
9/30/2003	1,445,785	116%
9/30/2004	2,119,841	93%
9/30/2005	2,369,293	102%
9/30/2006	2,647,826	100%
9/30/2007	3,009,338	100%
9/30/2008	3,103,469	100%
9/30/2009	3,158,881	108%
9/30/2010	3,067,711	100%
9/30/2011	3,531,377	100%
9/30/2012	3,871,266	100%
9/30/2013	4,228,032	100%
9/30/2014	4,843,956	100%
9/30/2015	5,107,415	100%
9/30/2016	5,150,913	100%
9/30/2017	6,040,012 ⁴	100%
9/30/2018	6,575,065	100%

³ Determined by the prior plan year's actuarial valuation.

⁴ As shown in revised 10/1/15 actuarial valuation, from November 2018

Table XI
(continued five)

V. Notes to Required Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	October 1, 2018
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Percentage of Payroll
Remaining amortization period	15 years
Asset valuation method	Market value less the differences between actual and assumed investment gains and losses smoothed over 5 years
Actuarial assumptions:	
Investment rate of return	7.5%, includes 3.00% inflation
Projected salary increases	9.18% per year (6.00% merit increase compounded with 3.00% inflation) for the first six years of service and 4.03% (1.00% merit increase compounded with 3.00% inflation) per year thereafter
Cost-of-living adjustments	3.00%

Table XI
(continued six)

Accounting Disclosure Exhibit

VI. Revenues by Source and Expenses by Type

Plan Year	Revenues by Source				
	Employee Contributions	Employer Contributions	State Contributions	Investment Income	Total
2018	\$ 2,777,837	\$ 6,888,087	\$ 89,693	\$ 13,267,878	\$ 23,023,495
2017	\$ 3,724,060	\$ 5,871,432	\$ 966,694	\$ 13,055,252	\$ 23,617,438
2016	\$ 1,268,018	\$ 4,944,586	\$ 990,464	\$ 9,234,147	\$ 16,437,215
2015	\$ 1,158,659	\$ 4,909,366	\$ 981,731	\$ 38,294	\$ 7,088,050
2014	\$ 1,068,264	\$ 4,637,629	\$ 1,124,210	\$ 10,018,135	\$ 16,848,238
2013	\$ 935,634	\$ 4,021,705	\$ 1,103,116	\$ 11,890,277	\$ 17,950,732
2012	\$ 1,083,015	\$ 3,664,939	\$ 973,027	\$ 11,294,390	\$ 17,015,371
2011	\$ 803,394	\$ 3,325,050	\$ 1,024,172	\$ (881,153)	\$ 4,271,463
2010	\$ 814,789	\$ 2,861,384	\$ 953,389	\$ 4,197,089	\$ 8,826,651
2009	\$ 862,141	\$ 3,219,583	\$ 897,464	\$ (3,437,682)	\$ 1,541,506

Plan Year	Expenses by Type				
	Benefits	DROP Payments	Administrative Expenses	Refunds	Total
2018	\$4,396,218	\$ 2,631,846	\$ 174,259	\$ 0	\$ 7,202,323
2017	\$4,985,929	\$ 1,635,340	\$ 199,195	\$ 0	\$ 6,820,464
2016	\$3,101,871	\$ 1,482,670	\$ 191,933	\$ 0	\$ 4,776,474
2015	\$2,949,887	\$ 882,310	\$ 165,198	\$ 0	\$ 3,997,395
2014	\$2,761,925	\$ 668,229	\$ 151,048	\$ 0	\$ 3,581,202
2013	\$2,452,256	\$ 629,749	\$ 151,777	\$ 0	\$ 3,233,782
2012	\$2,304,617	\$ 767,163	\$ 142,813	\$ 0	\$ 3,214,593
2011	\$1,882,590	\$ 757,237	\$ 148,148	\$ 3,108	\$ 2,791,083
2010	\$1,719,030	\$ 756,775	\$ 120,119	\$ 5,818	\$ 2,601,742
2009	\$1,190,219	\$ 999,520	\$ 101,161	\$ 1,346	\$ 2,292,246

Contributions were made in accordance with actuarially determined contribution requirements.

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Table XII

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Outline of Principal Provisions of the Plan**1. Effective date:

The retirement plan was restated with an effective date of October 1, 1999 by Ordinance No. 00-47. The latest amendment recognized in this valuation was Ordinance No. 16-14, adopted August 17, 2016.

2. Eligibility Requirements:

Firefighters of the City of Miramar, Florida.

3. Pension Earnings:

Basic rate of pay from the City, excluding accrued benefits payable upon termination of employment, auto allowance, mileage reimbursement, overtime pay, bonuses, commissions and any other extraordinary compensation. Effective January 1, 2009 pension earnings shall include any differential wage payment from the City as the result of absence from employment while serving in qualified military service.

4. Member Contributions:

8.47% of pension earnings on a *pick-up* basis.

5. Credited Service:

Service computed in completed years and months from date of employment to actual retirement date (or date of termination, if earlier). Credited Service can be purchased for prior active military service (maximum 4 years) and prior firefighter service with the City of Miramar, or with another local, state, or federal agency at various costs.

6. Average Final Compensation:

The average monthly pension earnings during the highest three (3) consecutive years of service preceding date of retirement (or termination). Denoted as AFC.

7. Normal Retirement:

- a. Eligibility: Earlier of (i) or (ii), where
- (i) is the attainment of age 55 and completion of 10 years of Credited Service, and
 - (ii) is the completion of 25 years of Credited Service regardless of age
- b. Benefit: 3.0% (.03) of AFC times years of Credited Service, subject to a maximum of 80% of AFC.

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Table XII
(continued two)

8. Early Retirement:
- a. Eligibility: Attainment of age 50 and completion of 10 years of Credited Service.
 - b. Benefit: Benefit accrued to date of retirement, but reduced by 3.0% for each year by which benefit commencement precedes normal retirement date.
9. Delayed Retirement:
- Computed in the same manner as for normal retirement benefit but based upon AFC and Credited Service as of delayed retirement date.
10. Disability Retirement:
- Service Connected Disability:
- a. Eligibility: Total and permanent disability in line of duty prior to normal retirement date.
 - b. Benefit: The greater of accrued benefit or 66-2/3% of AFC as of date of exit due to disability with the annual cost of living adjustment and purchasing power protection. At the participant's normal retirement date, he or she can elect the service connected disability benefit or the would-be normal retirement benefit assuming continued service.
- Non-Service Connected Disability:
- a. Eligibility: Total and permanent disability not in line of duty after completion of 10 years of Credited Service but prior to normal retirement date.
 - b. Benefit: Greater of accrued benefit or 30% of AFC as of date of disability.

Table XII
(continued three)

11. Death Benefit:

Line of Duty: Benefit payable to surviving spouse equal to the greater of accrued benefit at date of death or 75% of AFC at date of death, adjusted as if the participant had retired on the date of death and had elected a joint and 100% survivor benefit. If there is no surviving spouse, then two-thirds of the full benefit will be paid without the survivor benefit adjustment to the surviving children under age 21 in equal parts.

Non Line of Duty: The designated beneficiary will receive the participant's contributions accumulated with 5.5% interest. However, if the participant was vested, the beneficiary benefit would be paid the participant's accrued benefit, adjusted as if the participant had retired on the date of death and had elected a joint and 100% survivor benefit.

12. Vested Benefit Upon Termination:

- a. Eligibility: Completion of 10 years of Credited Service at date of termination.
- b. Benefit: Either a refund of contributions with interest accumulated at 5.5%, or accrued benefit as of date of termination based upon AFC and Credited Service as of date of termination, payable at early (reduced amount) or normal retirement date.

13. Termination Benefit:

- a. Eligibility: Less than 10 years of Credited Service at date of termination.
- b. Benefit: Return of employee contributions with 5.5% interest.

14. Normal Form of Retirement Income:

10 years certain and life thereafter.

15. Deferred Retirement Option Plan (DROP):

The DROP was adopted in September, 2004. At that time, eligible participants were allowed to enter the DROP retroactively on October 1, 2003.

Participants who have met the eligibility for Normal Retirement are eligible to participate in the DROP for a maximum period of five (5) years, after which the participant shall be deemed separated from the City.

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Table XII
(continued four)

The maximum period of DROP participation shall decrease by one month for each month following the attainment of entry eligibility. However, for members who have attained age 55 and have completed 10 years of credited service, the maximum period of DROP participation would not be reduced as long as they enter the DROP prior to completion of 25 years of credited service.

The maximum period of DROP participation shall decrease by one month for each month following the attainment of 25 years of credited service. Total number of years of credited service and DROP participation may not exceed 30 years.

Upon entry into the DROP, a participant shall elect to have his or her DROP account be credited with either 7.00% (1.50% below the assumed fund asset rate of return of 8.50%) interest per year or at the actual rate of return the fund earns. In addition, the participant will continue to contribute 4.0% of his or her pension earnings into the fund, which will be matched by the fund. The DROP participant will also be eligible for applicable cost of living adjustments and be entitled to the annual post retirement supplements.

If the participant dies or becomes disabled during DROP participation, the participant will be assumed to have retired under normal retirement on the day prior to DROP participation.

No payment will be made from the DROP until the participant actually separates from service with the City.

16. Cost of Living Adjustment (COLA):

A cost of living adjustment of 3.0% per year is provided to participants retiring on or after October 1, 1999. Effective October 1, 2009, retirees and vested members who terminated employment prior to October 1, 1999 would be provided a cost of living adjustment of 3.0% per year on a prospective basis based upon the October 1, 2009 value of their pension benefits.

17. Purchasing Power Protection Provision:

A purchasing power protection provision of 75% of their original monthly pension benefits for participants and their beneficiaries.

18. Retiree Post Retirement Supplement:

A post retirement supplement for the purpose of offsetting medical insurance premium at \$150 per month, increasing 1.0% above the Consumer Price Index annually, payable for the life of the participants retiring on or after October 1, 1999. The current monthly post retirement supplement is \$255.16.

Table XII
(continued five)

19. Share Plan:

A Share Plan was established effective October 1, 2009. Members actively employed on October 1, 2009 were eligible for share allocations. Retirees and vested former members, who were employed for at least one (1) year on September 30, 1999 and thereafter, were eligible for share allocations, determined based on their service through their dates of termination. The available excess Chapter 175 money over the 1999 frozen amount plus any additional amounts used to meet minimum benefits accumulated since 1999 was allocated on a pro-rata basis as specified by the Collective Bargaining Agreement in effect at the time the Share Plan was established. After the initial allocation on September 30, 2009, future allocations are determined based on number of payroll periods a member was actively employed during a plan year. Share account balances for members who terminated employment prior to becoming vested revert back into the Share Plan (forfeitures) and are reallocated to eligible members.

The individual share accounts for non-vested members are credited or debited with the actual fund earnings / losses, net of investment expenses.

Vested participants have the option to select between two (2) methods to credit investment earnings to their share accounts. The method elected may be changed each year effective on October 1. The methods available are: i) actual fund earnings net of investment expenses, and ii) a fixed annual rate of return equal to the then actuarial funding assumption rate used minus one hundred and fifty (150) basis points.

Members will not receive distributions from their share accounts until they have terminated employment with the City and are eligible for normal, early, disability, or death benefits from the Plan.

Effective October 1, 2016, for all Chapter 175 money received beginning in calendar year 2017, and annually thereafter, all Chapter 175 Money received annually up to \$1,124,210.00 will be used to fund the Chapter 175 share accounts provided for in Section 15-93 of this Plan. Any Chapter 175 Money received in excess of \$1,124,210.00 in any calendar year will be divided equally with the City. The member's 50% of the excess will be used to fund the Chapter 175 share account in Section 15-93 and the City's 50% of the excess will be used to reduce the unfunded liability of the Plan. The City's excess Chapter 175 money will be added to the Fund in addition to the City's actuarially determined annual contribution.

20. Changes from Most Recent Actuarial Valuation:

None.

Table XIII

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN

Actuarial Assumptions and Actuarial Cost Method

1. Mortality:

Pre-Retirement:

Female Non-Disabled: RP2000 Generational, 100% Combined Healthy with White Collar Adjustment, Scale BB

Male Non-Disabled: RP2000 Generational, 10% Combined Healthy with White Collar Adjustment / 90% Combined Healthy with Blue Collar Adjustment, Scale BB

Post-Retirement:

Female Non-Disabled: RP2000 Generational, 100% Annuitant White Collar, Scale BB

Male Non-Disabled: RP2000 Generational, 50% Annuitant White Collar / 50% Annuitant Blue Collar, Scale BB

Pre-Retirement & Post-Retirement:

Female Disabled: 60% RP2000 Disabled Female set forward two years / 40% Annuitant White Collar with no setback, no projection scale

Male Disabled: 60% RP2000 Disabled Male setback four years / 40% Annuitant White Collar with no setback, no projection scale

2. Interest to be Earned by Fund:

7.50%, net of investment expenses, compounded annually.

3. Allowances for Expenses or Contingencies:

Administrative expenses estimated to be \$174,259 for the 2018/2019 plan year.

4. Employee Withdrawal Rates:

The following are illustrative withdrawal rates assumed:

<u>Age</u>	<u>Withdrawal Rates Per 1,000 Employees</u>
20	140.0
25	110.6
30	65.8
35	32.2
40	16.8
45	9.8
50	0.0

Table XIII
(continued two)

5. Disability Rates:

The assumed disability rates are illustrated by the following example rates:

<u>Age</u>	<u>Disability Rates Per 1,000 Employees</u>
20	2.0
25	2.0
30	3.6
35	4.6
40	6.0
45	10.2
50	20.0
55 & over	0.0

In addition, 80% of disabilities assumed to be service incurred and 20% assumed to be non-service incurred.

6. Salary Increase Factors:

Current salaries are assumed to increase due to merit and longevity at 6.00% per year for the first six (6) years of service and 1.00% per year thereafter. Furthermore, salaries are assumed to have an additional increase equal to the increase in the Consumer Price Index.

7. Rates of Retirement:

The following are the retirement rates assumed for the participants eligible for retirement / DROP:

<u>Participants with 10 – 24 years of service</u>		<u>Participants with at least 25 years of service</u>	
<u>Age</u>	<u>Percentage Retirement</u>	<u>Age</u>	<u>Percentage Retirement</u>
Less than 50	0%	Less than 50	100%
50	1%	50	100%
51 to 54	2%	51 to 54	100%
55 to 59	50%	55 to 59	100%
60 & over	100%	60 & over	100%

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Table XIII
(continued three)

8. Asset Valuation Method:
- The actuarial value of assets is determined by smoothing the differences between actual investment earnings and assumed investment return over five (5) years, and then subtracting the total smoothed difference from the market value of assets. This method was adopted effective October 1, 2011. The resulting value would then be limited to between 80% and 120% of market value.
9. Cost Methods:
- Entry Age Normal Method
10. Annual Payroll Growth:
- 1.21%
11. Marriage Assumptions:
- 85% of active participants are assumed married, with husbands three (3) years older than wives.
12. Deferred Retirement Option Plan (DROP) Elections Assumptions:
- 75% of those assumed to take normal retirement benefits are assumed to participate in the DROP, with the assumed length of participation of five (5) years.
13. Consumer Price Index Increase Assumption:
- The Consumer Price Index is assumed to increase by 3.00% annually.
14. Changes from Most Recent Actuarial Valuation:
1. The assumed interest to be earned by the Fund was changed from 8.15% to 7.50%, net of investment expenses, per annum.
 2. The assumed administrative expenses were changed from \$199,195 to \$174,259 for the plan/fiscal year.
 3. The annual payroll growth assumption was changed from 1.78% to 1.21%, to reflect actual experience for the prior ten (10) years.
 4. The actuarial cost method was changed to entry age normal cost method.

Table XIV

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN

Distribution of Active Participants by Age and Service Groups
as of October 1, 2018

Years of Credited Service

<u>Age</u>	<u>0 - 4</u>	<u>5 - 9</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>	<u>30 & Over</u>	<u>Total</u>
Under 20								
20 - 24	7	.	.	.	.	.	.	0
25 - 29	15	5	.	.	.	.	.	7
30 - 34	4	4	2	.	.	.	.	20
35 - 39	1	2	6	4	.	.	.	10
40 - 44	3	1	2	16	4	.	.	13
45 - 49	.	5	4	12	9	.	.	26
50 - 54	1	1	.	7	2	.	.	30
55 - 59	.	.	.	2	1	.	.	11
60 - 64	.	.	.	.	.	.	.	3
65 & Over	.	.	.	.	.	.	.	0
TOTAL	31	18	14	41	16	0	0	120

10/01/2017

10/01/2018

Average Attained Age
Average Hire Age
Average Pay

40.6 years
27.9 years
\$ 89,606

40.1 years
27.9 years
\$ 91,954



Table XV

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Reconciliation of Participant Data****A. Active Participants**

1. Active participants previous year	130
2. Retired during year	(0)
3. Entered DROP during year	(13)
4. Died during year	0
5. Disabled during year	0
6. Terminated vested during year	(0)
7. Terminated non-vested during period	(4)
8. New active participants	7
9. Active participants current year	<u>120</u>

B. Participants Receiving Benefits

1. Participants receiving benefits previous year	43
2. New retired participants	0
3. New terminated vested receiving benefits	0
4. New disabled receiving benefits	0
5. New beneficiaries receiving benefits	0
6. Exited DROP participants who retired	3
7. Died or ceased payment during year	(0)
8. Retired or terminated vested receiving benefits current year	<u>46</u>

C. Terminated Participants Entitled to Future Benefits

1. Terminated entitled to future benefits previous year	4
2. Died during year	0
3. Commenced receiving benefits during year	(1)
4. New terminated participants	0
5. Terminated participants entitled to future benefits current year	<u>3</u>

D. DROP Participants

1. DROP participants previous year	16
2. New entrants during year	14
3. Died during year	0
4. Exited and retired during year	(3)
5. DROP participants current year	<u>27</u>

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Table XVI

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLAN**Recent Investment, Salary Increase, and Turnover Experience****A. Investment Return**

Comparison of actual to assumed investment return for the last ten years:

<u>Year Ended</u>	<u>Rate of Return¹</u>		<u>Assumed</u>
	<u>Actuarial Value</u>	<u>Market Value</u>	
09/30/2018	10.4%	9.9%	8.15%
09/30/2017	11.0%	12.5%	8.25%
09/30/2016	10.9%	9.1%	8.25%
09/30/2015	8.0%	0.4%	8.25%
09/30/2014	11.7%	12.0%	8.50%
09/30/2013	12.2%	19.0%	8.50%
09/30/2012	(1.6%)	20.9%	8.50%
09/30/2011	0.0%	(1.8%)	8.50%
09/30/2010	2.0%	9.8%	8.50%
09/30/2009	1.1%	(7.8%)	8.66%
Last 3 Yrs.	10.8%	10.5%	8.22%
Last 5 Yrs.	10.4%	8.7%	8.28%
Last 10 Yrs.	6.4%	8.1%	8.41%

B. Recent Salary Increase and Turnover Experience

<u>Year Ended</u>	<u>% of Salary Increase</u>		<u>Ratio of Actual Turnover to Expected</u>
	<u>Actual</u>	<u>Assumed²</u>	
09/30/2018	5.1%	6.00%	1.1
09/30/2017	7.9%	6.00%	0.0
09/30/2016	7.4%	6.00%	0.0
09/30/2015	1.6%	6.00%	1.8
09/30/2014	2.2%	6.75%	0.0
Last 3 Yrs.	6.8%	6.0%	0.4
Last 5 Yrs.	4.8%	6.1%	0.6

¹ Computed as $2I / (A + B - I)$, where A is beginning value, B is ending value, and I is investment return.

² 6.00% per year for members with less than six (6) years of service, and 1.00% per year for members with at least six (6) years of service, plus inflation of 3.00% per year for all members, resulting in an overall average of roughly 4.50% per year.

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Table XVII

CITY OF MIRAMAR FIREFIGHTERS' RETIREMENT PLANState Required Exhibit

	<u>10/01/2017</u>	<u>10/01/2018</u>
A. <u>Participant Data</u>		
1. Active participants	130	120
2. Retired participants and beneficiaries receiving benefits	38	41
3. DROP participants	16	27
4. Disabled participants receiving benefits	5	5
5. Terminated vested participants	4	3
6. Annual payroll of active participants	\$ 11,648,795	\$ 11,034,456
7. Annual benefits payable to those currently receiving benefits	\$ 3,291,221	\$ 3,793,622
8. Annual benefits payable to DROP participants	\$ 1,367,965	\$ 2,235,786
B. <u>Value of Assets</u>		
1. Actuarial value	\$ 105,592,229	\$ 118,686,598
2. Market value	\$ 108,932,199	\$ 123,922,522
C. <u>Liabilities</u>		
1. Actuarial present value of future expected benefit payments for active members		
a. Age retirement benefit	\$ 75,680,023	\$ 78,936,443
b. Death benefit	951,184	1,006,326
c. Disability retirement benefit	7,129,985	7,360,591
d. Termination benefit	1,081,391	1,285,798
e. Post retirement supplement	3,346,613	3,537,792
f. Total	\$ 88,189,196	\$ 92,126,950
2. Actuarial present value of future expected benefit payments terminated vested members	\$ 1,559,359	\$ 1,042,238
3. Actuarial present value of future expected benefit payments for those receiving benefits		
a. Service retired	\$ 44,233,295	\$ 52,431,322
b. DROP participants	22,858,761	39,789,042
c. Disability retired	4,490,043	4,950,814
d. Beneficiaries	2,143,303	2,306,822
e. Post retirement supplement	2,401,690	3,887,113
f. Total	\$ 76,127,092	\$ 103,365,113

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Table XVII
(continued two)

	<u>10/01/2017</u>	<u>10/01/2018</u>
4. Total actuarial present value of future expected benefit payments	\$ 165,875,647	\$ 196,534,301
5. Actuarial accrued liabilities	\$ 143,787,092	\$ 175,193,104
6. Unfunded actuarial accrued liabilities	\$ 38,194,863	\$ 56,506,506
D. <u>Statement of Accumulated Plan Benefits*</u>		
1. Actuarial present value of accumulated vested plan benefits		
a. Participants currently receiving benefits	\$ 52,399,802	\$ 61,780,967
b. DROP participants	23,683,411	41,410,886
c. Other participants	<u>49,246,807</u>	<u>49,162,470</u>
d. Total	\$ 125,330,020	\$ 152,354,323
2. Actuarial present value of accumulated non-vested plan benefits	<u>8,321,825</u>	<u>9,300,616</u>
3. Total actuarial present value of accumulated plan benefits	\$ 133,651,845	\$ 161,654,939
E. <u>Statement of Change in Accumulated Plan Benefits*</u>		
1. Actuarial present value of accumulated plan benefits as of October 1, 2017		\$ 133,651,845
2. Increase (decrease) during year attributable to:		
a. Plan amendment		\$ 0
b. Actuarial assumptions and methods changes		13,607,928
c. Benefits paid and contribution refunds		(4,396,218)
d. DROP benefits credited		(2,631,846)
e. Other, including benefits accumulated and increase for interest due to decrease in the discount period		<u>21,423,230</u>
f. Net increase (decrease)		\$ 28,003,094
3. Actuarial present value of accumulated plan benefits as of October 1, 2018		\$ 161,654,939

* Includes present value of benefits for post retirement supplements.

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Table XVII
(continued three)

	<u>10/01/2017</u>	<u>10/01/2018</u>
F. <u>Pension Cost</u>		
1. Net normal cost	\$ 2,206,233	\$ 2,268,842
2. Item 1. as percentage of payroll	18.94%	20.56%
3. Administrative expenses	199,195	174,259
4. Payment required for amortization bases	<u>4,325,933</u>	<u>6,347,129</u>
5. Total employer required contribution (including interest)	\$ 7,063,958	\$ 9,176,563
6. Item 5. as a percentage of payroll	60.64%	83.16%
7. Estimated State contributions	\$ 0	\$ 0
8. Item 7. as a percentage of payroll	0.00%	0.00%
9. Net amount payable by City	\$ 7,063,958	\$ 9,176,563
10. Item 9. as a percentage of payroll	60.64%	83.16%
G. <u>Past Contributions</u>		
1. Total contribution required as determined by the prior year's actuarial valuation	\$ 6,575,065	\$ 7,063,958
2. Actual contributions made:		
a. City	\$ 6,888,087	N/A
b. State as limited by 99-1	<u>206,327</u>	N/A
c. Total	7,094,414	N/A
H. <u>Disclosure of Following Items:</u>		
1. Actuarial present value of future salaries - attained age	\$ 76,208,013	\$ 76,099,778
2. Actuarial present value of future employee contributions - attained age	\$ 6,454,819	\$ 6,445,651
3. Actuarial present value of future contributions from other sources	N/A	N/A
4. Amount of active members' accumulated contributions	\$ 14,378,527	\$ 12,432,156
5. Actuarial present value of future salaries and future benefits at entry age	Not provided by software	
6. Actuarial present value of future employee contributions at entry age	Not provided by software	

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Table XVII
(continued four)

Description and Amount of Original Liability	Remaining Amortization Period	Unamortized Amount as of Valuation Date	Amortization Payment
10/01/2015 Unfunded Liability*	11 years	\$ 38,349,138	\$ 4,628,318
10/01/2015 Funding Method Change	12 years	(7,347,295)	(834,830)
10/01/2015 Assumption Change	12 years	1,617,756	183,816
10/01/2016 Actuarial Gain	13 years	(1,285,009)	(138,381)
10/01/2016 Assumption Change	13 years	2,220,124	239,083
10/01/2017 Actuarial Loss	14 years	178,263	18,297
10/01/2017 Assumption Change	14 years	2,792,031	286,578
10/01/2018 Actuarial Loss	15 years	2,124,436	208,839
10/01/2018 Funding Method Change	15 years	3,128,888	307,580
10/01/2018 Assumption Change	15 years	<u>14,728,174</u>	<u>1,447,829</u>
	Total:	<u>\$ 56,506,506</u>	<u>\$ 6,347,129</u>

* Under prior funding method, the UAAL was \$41,536,619 with a remaining amortization period of 14 years as of 10/1/2015 (originally 30 years as of 10/1/1999).

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Table XVII
(continued five)

This actuarial valuation and/or cost determination was prepared and completed by me or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of Part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.



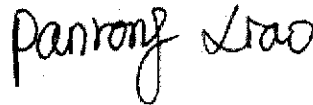
Donald A. DuLaney, Jr., E.A., A.S.A.
Senior Consulting Actuary

8/5/2019

Date

17-04191

Enrollment Number



Panrong Xiao, E.A., M.A.A.A.
Enrolled Actuary

8/5/2019

Date

17-07551

Enrollment Number

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