

THE WOODLANDS  
FIREFIGHTERS' RETIREMENT SYSTEM

ACTUARIAL VALUATION  
AS OF JANUARY 1, 2017



May 24, 2017

Mr. Doug Adams, Chairman  
The Woodlands Firefighters'  
Retirement System  
P.O. Box 130388  
The Woodlands, TX 77393

Re: The Woodlands Firefighters' Retirement System

Dear Mr. Adams:

We are pleased to present to the Board this report of the annual actuarial valuation of The Woodlands Firefighters' Retirement System. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate preferred funding costs as outlined by the Texas Pension Review Board, as well as to determine the funding period required to amortize any existing Unfunded Actuarial Accrued Liability. Please note that this valuation may not be applicable for any other purposes.

The valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of the Texas Local Fire Fighters' Retirement Act (TLFFRA) and Vernon's Texas Civil Statutes, as well as applicable federal laws and regulations. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations.

In conducting the valuation, we have relied on personnel, plan design, financial reports, and asset information supplied by the retirement system staff, and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

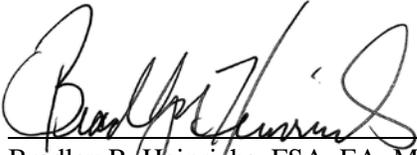
The undersigned is familiar with the immediate and long-term aspects of pension valuations, and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Foster & Foster Inc. working on valuations of the program has any direct financial interest or indirect material interest in The Woodlands Township, nor does anyone at Foster & Foster Inc. act as a member of the Board of Trustees of The Woodlands Firefighters' Retirement System. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

If there are any questions, concerns, or comments about any of the items contained in this report, please contact me at 239-433-5500.

Respectfully submitted,

Foster & Foster Inc.

By:   
Bradley R. Heinrichs, FSA, EA, MAAA  
Enrolled Actuary #17-6901

BRH/lke

Enclosures

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## SUMMARY OF REPORT

The annual actuarial valuation of The Woodlands Firefighters' Retirement System, performed as of January 1, 2017, has been completed and the results are presented in this Report. The pension costs, compared with those developed in the January 1, 2016 actuarial valuation, are illustrated below.

<u>Valuation Date</u>	<u>1/1/2017</u>	<u>1/1/2016</u>
Current Normal Cost Rate <sup>1</sup>		
% of Covered Payroll	22.67%	22.76%
<hr/>		
Actuarial Accrued Liability (AAL)	\$26,569,468	\$22,082,183
Actuarial Value of Assets (AVA)	\$26,198,326	\$22,184,111
Unfunded Actuarial Accrued Liability (UAAL = AAL - AVA)	\$371,142	\$(101,928)
Funded Ratio (AVA / AAL)	98.6%	100.5%
Amortization Period	2.7 years	0.0 years
<hr/>		
Expected Township Contribution Rate	12.00%	12.00%
Expected Member Contribution Rate	12.00%	12.00%
Total Expected Contribution Rate	24.00%	24.00%
<hr/>		
Total 20-Year Funding Cost <sup>2</sup>	22.97%	n/a
Total 30-Year Funding Cost <sup>3</sup>	22.93%	n/a
Total 40-Year Funding Cost <sup>2</sup>	22.91%	n/a

<sup>1</sup> Includes expected administrative expenses of \$100,000 annually.

<sup>2</sup> The Texas Pension Review Board Guidelines for Actuarial Soundness state that funding should be adequate to amortize the UAAL over a period not to exceed 40 years, with 15-25 years being a more preferable target.

<sup>3</sup> Per Section 802.101(a) of the Texas Government Code, the actuarial valuation must include a recommended contribution rate needed for the system to achieve and maintain an amortization period that does not exceed 30 years.

As shown above, the Total Normal Cost Rate determined as of January 1, 2017 is 22.67% of payroll. The current member contribution rate is 12.00% of payroll, leaving 10.67% of payroll required from the Township. Since the Township is currently scheduled to make annual contributions of 12.00% of payroll to the System, this means that there is a 1.33% of payroll annual contribution that is available to pay down the existing Unfunded Actuarial Accrued Liability (UAAL).

During the past year there was net unfavorable actuarial experience on the basis of the actuarial assumptions. The principal components of actuarial loss resulted from a 6.6% investment return which fell short of the 7.0% assumption and average individual salary increases that exceeded the assumed rate. There were no material sources of actuarial gain.

As shown on page 10, these actuarial losses resulted in the UAAL increasing from an expected credit of \$267,188 to a deficit of \$371,142. Based on the scheduled annual contribution rates into the fund, we have determined that the resulting funding period required to amortize the UAAL (the amortization period) is 2.7 years.

The balance of this Report presents additional details of the actuarial valuation and the general operation of the System. The undersigned would be pleased to meet with the Board of Trustees in order to discuss the Report and answer any pending questions concerning its contents.

Respectfully submitted,  
FOSTER & FOSTER INC.

By:   
Bradley R. Heinrichs, FSA, EA, MAAA

By:   
Drew D. Ballard, EA, MAAA

## CHANGES SINCE PRIOR VALUATION

### Benefit/Fund Changes

There have been no changes in benefits or contribution rates since the previous valuation.

### Actuarial Assumption/Method Changes

There have been no changes to the actuarial assumptions or methods since the previous valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	<u>1/1/2017</u>	<u>1/1/2016</u>
A. Participant Data		
Actives	136	136
Service Retirees	0	0
Beneficiaries	0	0
Disability Retirees	0	0
Terminated Vested	1	1
Total	<u>137</u>	<u>137</u>
Covered Payroll	11,383,983	10,625,420
Annual Rate of Payments to:		
Service Retirees	0	0
Beneficiaries	0	0
Disability Retirees	0	0
Terminated Vested	0	0
B. Assets		
Actuarial Value	26,198,326	22,184,111
Market Value	26,198,326	22,184,111
C. Liabilities		
Present Value of Benefits		
Active Members		
Retirement + Termination Benefits	52,963,384	48,396,363
Death Benefits	1,045,760	1,016,765
Disability Benefits	2,855,101	2,727,068
Service Retirees	0	0
Beneficiaries	0	0
Disability Retirees	0	0
Terminated Vested	28,170	4,040
Total	<u>56,892,415</u>	<u>52,144,236</u>

	<u>1/1/2017</u>	<u>1/1/2016</u>
C. Liabilities - (Continued)		
Present Value of Future Salaries	143,503,310	142,074,787
Normal Cost (Entry Age Normal)		
Retirement + Termination Benefits	2,174,322	2,030,734
Death Benefits	59,832	56,833
Disability Benefits	159,125	149,057
Total Normal Cost	<u>2,393,279</u>	<u>2,236,624</u>
Present Value of Future Normal Costs	30,322,947	30,062,053
Actuarial Accrued Liability		
Retirement + Termination Benefits	25,332,902	21,026,456
Death Benefits	300,200	264,725
Disability Benefits	908,196	786,962
Inactives	28,170	4,040
Total Actuarial Accrued Liability	<u>26,569,468</u>	<u>22,082,183</u>
Unfunded Actuarial Accrued Liability (UAAL)	371,142	(101,928)
Funded Ratio (AVA / AAL)	98.6%	100.5%
D. Actuarial Present Value of Accrued Benefits		
Inactives	28,170	4,040
Actives	22,762,746	21,516,455
Total Present Value Accrued Benefits	<u>22,790,916</u>	<u>21,520,495</u>
Funded Ratio (MVA / PVAB)	115.0%	103.1%

## GAIN/LOSS ANALYSIS

### a. Total Gain/(Loss)

1. Unfunded Actuarial Accrued Liability as of January 1, 2016	(101,928)
2. Normal Cost applicable for 2016	2,236,624
3. Expected Administrative Expenses applicable for 2016	100,000
4. Interest on (1), (2), and (3)	152,929
5. Contributions made during 2016	2,565,037
6. Interest on (5)	89,776
7. Expected UAAL as of January 1, 2017: (1)+(2)+(3)+(4)-(5)-(6)	(267,188)
8. Actual UAAL as of January 1, 2017	371,142
 Total Actuarial Gain/(Loss)	 (638,330)

### b. Gain/(Loss) on Assets

1. Market Value of Assets as of January 1, 2016	22,184,111
2. Contributions Less Benefit Payments and Administrative Expenses	2,475,294
3. Expected Investment Earnings	1,629,720
4. Expected MVA as of January 1, 2017: (1)+(2)+(3)	26,289,125
5. Actual Market Value of Assets as of January 1, 2017	26,198,326
 Gain/(Loss) on Assets	 (90,799)

### c. Gain/(Loss) on Liabilities

1. Expected Actuarial Accrued Liability: a(7)+b(4)	26,021,937
2. Actual Actuarial Accrued Liability	26,569,468
 Gain/(Loss) on Liabilities	 (547,531)

ACTUARIAL ASSUMPTIONS AND METHODS

Accrued Benefit Reduction

<u>Calendar Year</u>	<u>Reduction Percentage</u>
2017	20%
2018	10%
2019+	0%

Death and Disability benefits are not subject to the reduction amount.

Mortality

RP-2000 Combined Healthy Mortality Projected to Valuation Date using Scale AA. We feel this assumption sufficiently accommodates expected mortality improvements.

Disabled Retiree Mortality

RP-2000 Disabled Retiree Mortality.

Interest

7.00% annually, net of investment related expenses. This is supported by the target asset allocation of the trust and the expected long-term return by asset class.

Termination

Age-based. Sample rates shown below.

<u>Age</u>	<u>Probability</u>
20	9.8%
30	2.8%
40	0.4%
50	0.2%

We feel the assumed rates of termination are reasonable based on long-term expectations.

Disability

Age-based. Sample rates shown below.

<u>Age</u>	<u>Probability</u>
20	0.07%
30	0.09%
40	0.15%
50	0.50%

We feel the assumed rates of disablement are reasonable based on long-term expectations.

Retirement (2017-2019)

<u>Calendar Year</u>	<u>Probability</u>
2017	1%
2018	1%
2019	50%

Retirement (2020 and beyond)

<u>Age</u>	<u>Probability</u>
52	35%
53	20%
54	20%
55	20%
56	25%
57	25%
58	30%
59	30%
60	50%
61	50%
62	100%

We feel the assumed rates of retirement are reasonable based on long-term expectations.

Salary Increases

<u>Service *</u>	<u>Increase</u>
0-5	11.5%
6-10	6.3%
11-15	5.0%
16+	4.0%

\* Based on actual date of hire. We feel the assumed rates of salary increase are reasonable based on long-term expectations.

Payroll Growth

None (for purposes of amortizing the UAAL)

Cost-of-Living Adjustment

None

Administrative Expenses

\$100,000 annually, as previously approved by the Board of Trustees.

Marital Status

75% of active participants are assumed to be married. Males are assumed to be three years older than females.

Actuarial Cost Method

Individual Entry Age Normal, Level % of Pay.

Actuarial Asset Method

Fair Market Value.

## VALUATION NOTES

Covered Payroll is the projected annual rate of pay for the year beginning on the valuation date for all covered Members.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Entry Age Normal Cost Method - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation.

(a) The normal cost accrual rate equals

(i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by

(ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age .

(b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.

(c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.

(d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

Unfunded Actuarial Accrued Liability (UAAL) is the difference between the actuarial accrued liability (described above) and the actuarial value of assets. Under the Entry Age Normal Actuarial Cost Method, an actuarial gain or loss, based on actual versus expected UAAL, is determined in conjunction with each valuation of the plan.

## STATEMENT BY ENROLLED ACTUARY

This actuarial valuation 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 the Texas Local Fire Fighters' Retirement Act (TLFFRA), Vernon's Texas Civil Statutes, and adhere to the Actuarial Standards of Practice. 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.



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Bradley R. Heinrichs, FSA, EA, MAAA  
Enrolled Actuary #17-6901

STATEMENT OF FIDUCIARY NET POSITION  
DECEMBER 31, 2016

<u>ASSETS</u>	COST VALUE	MARKET VALUE
Cash and Cash Equivalents:		
Short Term Investments	362,505.87	362,505.87
Checking Account	(611.01)	(611.01)
Cash	98,131.14	98,131.14
Total Cash and Equivalents	460,026.00	460,026.00
Receivables:		
Member Contributions	639.71	639.71
Township Contributions	639.71	639.71
Total Receivable	1,279.42	1,279.42
Investments:		
Exchange Traded Funds	2,663,127.42	2,965,360.89
Fixed Income	6,878,868.94	6,854,979.25
Stocks	14,572,329.54	15,939,780.87
Total Investments	24,114,325.90	25,760,121.01
Total Assets	24,575,631.32	26,221,426.43
<u>LIABILITIES</u>		
Payables:		
Administrative Expenses	23,100.00	23,100.00
Total Liabilities	23,100.00	23,100.00
NET POSITION RESTRICTED FOR PENSIONS	24,552,531.32	26,198,326.43

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED DECEMBER 31, 2016  
Market Value Basis

ADDITIONS

Contributions:		
Member		1,282,518.35
Township		1,282,518.35
Total Contributions		2,565,036.70
Investment Income:		
Net Realized Gain (Loss)	(690,488.75)	
Unrealized Gain (Loss)	1,869,604.76	
Net Increase in Fair Value of Investments		1,179,116.01
Interest & Dividends		450,735.15
Less Investment Expense <sup>1</sup>		(90,929.16)
Net Investment Income		1,538,922.00
Total Additions		4,103,958.70

DEDUCTIONS

Distributions to Members:		
Benefit Payments		0.00
Refunds of Member Contributions		8,866.50
Total Distributions		8,866.50
Administrative Expense		80,876.29
Total Deductions		89,742.79
Net Increase in Net Position		4,014,215.91
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		22,184,110.52
End of the Year		26,198,326.43
Actuarial Asset Rate of Return		6.6%
Actuarial Gain/(Loss) due to Investment Return		(90,798.73)

<sup>1</sup>Investment related expenses include investment advisory, custodial and performance monitoring fees.

## STATISTICAL DATA

	<u>1/1/2016</u>	<u>1/1/2017</u>
Actives	136	136
Average Current Age	38.7	39.7
Average Age at Employment	27.7	27.7
Average Past Service	11.0	12.0
Average Annual Salary	\$78,128	\$83,706

## AGE AND SERVICE DISTRIBUTION

### PAST BENEFIT SERVICE

AGE	0-4	5-9	10-14	15-19	20	21	22	23	24	25-29	30+	Total
15 - 24	0	0	0	0	0	0	0	0	0	0	0	0
25 - 34	26	11	1	0	0	0	0	0	0	0	0	38
35 - 44	14	13	28	7	2	0	0	0	0	0	0	64
45 - 49	1	1	5	10	0	2	1	0	0	0	0	20
50	0	0	1	0	0	0	0	0	0	0	0	1
51	0	0	1	0	0	0	0	0	0	0	0	1
52	0	0	0	1	0	0	0	0	0	0	0	1
53	0	0	1	1	0	0	0	0	0	0	0	2
54	0	1	0	1	0	0	0	0	0	0	0	2
55 - 59	0	0	0	4	1	1	0	0	1	0	0	7
60+	0	0	0	0	0	0	0	0	0	0	0	0
Total	41	26	37	24	3	3	1	0	1	0	0	136

 Illustrates members who have attained Normal Retirement eligibility.

## SUMMARY OF BENEFIT PROVISIONS

<u>Credited Service</u>	Total years and months of years during which a Member makes contributions to the System, including years of prior service purchased.
<u>Earnings</u>	Base pay, including standard overtime pay.
<u>Average Final Compensation</u>	Average Earnings for the highest consecutive 36 months over the last 120 months of service.
<u>Member Contributions</u>	12.00% of Earnings.
<u>Township Contributions</u>	12.00% of annual payroll.
<u>Normal Retirement</u>	
Date	Attainment of age 52 and 20 years of Credited Service.
Benefit Accrual Rate	2.50% of Average Final Compensation times Credited Service for first 20 years, plus 3.00% of Average Final Compensation times Credited Service thereafter.
Normal Form of Benefit	10-Year Certain and Life Annuity.
<u>Vesting</u>	
Schedule	Not applicable -- Members will only be vested in an annuity benefit upon attaining Normal Retirement eligibility.
Benefit Amount	Non-vested Members are always entitled to a refund of their accumulated contributions (without interest).
<u>Disability</u>	
Eligibility	Total and permanent as determined by the Board.
Benefit	2.50% of Average Final Compensation times Credited Service, but not less than 50% of Average Final Compensation.
Form of Benefit	10-Year Certain and Life Annuity.

Pre-Retirement Death

Eligibility	Covered from the Member's participation date.
Benefit	75% of the Member's accrued benefit at date of death (utilizing at least 20 years of service).
Form of Benefit	Married: 10-Year Certain and Life Annuity to Surviving Spouse.  Single: 10-Year Certain Only Annuity.

STATEMENT OF FIDUCIARY NET POSITION  
DECEMBER 31, 2016

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Short Term Investments	362,506
Checking Account	(611)
Cash	98,131
Total Cash and Equivalents	460,026
Receivables:	
Member Contributions	640
Township Contributions	640
Total Receivable	1,280
Investments:	
Exchange Traded Funds	2,965,361
Fixed Income	6,854,979
Stocks	15,939,780
Total Investments	25,760,120
Total Assets	26,221,426
<u>LIABILITIES</u>	
Payables:	
Administrative Expenses	23,100
Total Liabilities	23,100
NET POSITION RESTRICTED FOR PENSIONS	26,198,326

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED DECEMBER 31, 2016  
Market Value Basis

ADDITIONS

## Contributions:

Member	1,282,518	
Township	1,282,518	
Total Contributions		2,565,036
Investment Income:		
Net Increase in Fair Value of Investments	1,179,116	
Interest & Dividends	450,735	
Less Investment Expense <sup>1</sup>	(90,929)	
Net Investment Income		1,538,922
Total Additions		4,103,958

DEDUCTIONS

## Distributions to Members:

Refunds of Member Contributions	8,867	
Total Distributions		8,867
Administrative Expense		80,876
Total Deductions		89,743
Net Increase in Net Position		4,014,215

## NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year		22,184,111
End of the Year		26,198,326

<sup>1</sup>Investment related expenses include investment advisory, custodial and performance monitoring fees.

NOTES TO THE FINANCIAL STATEMENTS  
(For the Year Ended December 31, 2016)

Plan Description

*Plan Administration*

The Plan is a single-employer defined benefit pension plan administered by the Plan's Board of Trustees comprised of:

- (1) The mayor of the municipality or the mayor's designated representative or the chief operating officer of the political subdivision or the chief operating officer's designated representative, as applicable;
- (2) The chief financial officer of the municipality or other political subdivision or, if there is no officer denominated as chief financial officer, the person who performs the duties of chief financial officer or a person designated by the chief financial officer or by the person performing the duties of chief financial officer.
- (3) Three members of the retirement system elected by participating members; and
- (4) Two persons who reside in this state in the municipality or other political subdivision or within the extraterritorial jurisdiction of the municipality, who are not officers or employees of the municipality or other political subdivision, and who are elected by a majority vote of the members of the board of trustees.

*Plan Membership as of January 1, 2017:*

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	-
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	1
Active Plan Members	136
	137

*Benefits Provided*

The Plan provides retirement, termination, disability and death benefits.

Normal Retirement:

Date: Attainment of age 52 and 20 years of Credited Service.

Benefit Accrual Rate: 2.50% of Average Final Compensation times Credited Service for first 20 years, plus 3.00% of Average Final Compensation times Credited Service thereafter.

Vesting:

Schedule: Not applicable. Members will only be vested in an annuity benefit upon attaining Normal Retirement eligibility.

Benefit Amount: Non-vested Members are always entitled to a refund of their accumulated contributions (without interest).

Disability:

Eligibility: Total and permanent as determined by the Board.

Benefit: 2.50% of Average Final Compensation times Credited Service, but not less than 50% of Average Final Compensation.

Pre-Retirement Death Benefits:

Eligibility: Covered from the Member's participation date.

Benefit: 75% of the Member's accrued benefit at date of death (utilizing at least 20 years of service).

*Contributions*

Member Contributions: 12.00% of Earnings.

Township Contributions: 12.00% of annual payroll.

## GASB 67

### Investments

#### *Investment Policy:*

The following was the Board's adopted asset allocation policy as of December 31, 2016:

<u>Asset Class</u>	<u>Target Allocation</u>
Equities	75%
Fixed Income	24%
Cash	1%
<u>Total</u>	<u>100%</u>

#### *Concentrations:*

The Plan did not hold investments in any one organization that represent 5 percent or more of the Pension Plan's Fiduciary Net Position.

#### *Rate of Return:*

For the year ended December 31, 2016, the annual money-weighted rate of return on Pension Plan investments, net of Pension Plan investment expense, was 6.61 percent.

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

NET PENSION LIABILITY OF THE SPONSOR

The components of the Net Pension Liability of the Sponsor on December 31, 2016 were as follows:

Total Pension Liability	\$ 26,446,391
Plan Fiduciary Net Position	\$ (26,198,326)
Sponsor's Net Pension Liability	<u>\$ 248,065</u>
Plan Fiduciary Net Position as a percentage of Total Pension Liability	<u>99.06%</u>

Actuarial Assumptions:

The Total Pension Liability was determined by an actuarial valuation as of January 1, 2017 using the following actuarial assumptions:

Inflation	2.50%
Salary Increases	4.00% - 11.50%
Discount Rate	7.00%
Investment Rate of Return	7.00%

Mortality Rate: RP-2000 Combined Healthy Mortality Projected to Valuation Date using Scale AA. We feel this assumption sufficiently accommodates expected mortality improvements.

The date of the most recent experience study for which significant assumptions are based upon is not available.

The Long-Term Expected Rate of Return on Pension Plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of Pension Plan investment expenses and inflation) are developed for each major asset class.

For 2016, the inflation rate assumption of the investment advisor was 3.00%.

These ranges are combined to produce the Long-Term Expected Rate of Return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2016 are summarized in the following table:

Asset Class	Long Term Expected Real Rate of Return
Equities	6.21%
Fixed Income	4.05%
Cash	0.00%

Discount Rate:

The Discount Rate used to measure the Total Pension Liability was 7.00 percent.

The projection of cash flows used to determine the Discount Rate assumed that Plan Member contributions will be made at the current contribution rate and that Sponsor contributions will be made at rates equal to the difference between actuarially determined contribution rates and the Member rate. Based on those assumptions, the Pension Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the Long-Term Expected Rate of Return on Pension Plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. For purpose of this valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.78% (based on the weekly rate closest to but not later than the measurement date of the Bond Buyer 20-Bond Index as published by the Bond Buyer); and the resulting single discount rate is 7.00%.

	Current Discount		
	1% Decrease 6.00%	Rate 7.00%	1% Increase 8.00%
Sponsor's Net Pension Liability	\$ 4,758,296	\$ 248,065	\$ (3,497,720)

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
Last 10 Years

	12/31/2016	12/31/2015
Total Pension Liability		
Service Cost	2,231,125	2,082,564
Interest	1,689,051	141,034
Changes of benefit terms	-	-
Differences between Expected and Actual Experience	632,469	(654,318)
Changes of assumptions	-	-
Contributions - Buy Back	-	20,468,906
Benefit Payments, including Refunds of Employee Contributions	(8,867)	(135,573)
Net Change in Total Pension Liability	4,543,778	21,902,613
Total Pension Liability - Beginning	21,902,613	-
Total Pension Liability - Ending (a)	<u>\$ 26,446,391</u>	<u>\$ 21,902,613</u>
Plan Fiduciary Net Position		
Contributions - Employer	1,282,518	1,184,257
Contributions - Employee	1,282,518	1,184,257
Contributions - Buy Back	-	20,468,906
Net Investment Income	1,538,922	(387,995)
Benefit Payments, including Refunds of Employee Contributions	(8,867)	(135,573)
Administrative Expense	(80,876)	(129,741)
Net Change in Plan Fiduciary Net Position	4,014,215	22,184,111
Plan Fiduciary Net Position - Beginning	22,184,111	-
Plan Fiduciary Net Position - Ending (b)	<u>\$ 26,198,326</u>	<u>\$ 22,184,111</u>
Net Pension Liability - Ending (a) - (b)	<u>\$ 248,065</u>	<u>\$ (281,498)</u>
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	99.06%	101.29%
Covered Employee Payroll	\$ 10,687,650	\$ 9,868,808
Net Pension Liability as a percentage of Covered Employee Payroll	2.32%	-2.85%

**Notes to Schedule:**

The Woodlands Firefighters' Retirement System became effective as of January 1, 2015.

SCHEDULE OF CONTRIBUTIONS

Last 10 Years

	<u>12/31/2016</u>	<u>12/31/2015</u>
Contractually Required Contribution	1,282,518	1,184,257
Contributions in relation to the		
Contractually Required Contributions	<u>1,282,518</u>	<u>1,184,257</u>
Contribution Deficiency (Excess)	<u>\$ -</u>	<u>\$ -</u>
Covered Employee Payroll	\$ 10,687,650	\$ 9,868,808
Contributions as a percentage of Covered		
Employee Payroll	12.00%	12.00%

Notes to Schedule

Methods and assumptions used to determine contribution rates:

Funding Method: Individual Entry Age Normal, Level % of Pay.

Accrued Benefit Reduction	<u>Calendar Year</u>	<u>Reduction Percentage</u>
	2017	20%
	2018	10%
	2019+	0%

Mortality Rate: Death and Disability benefits are not subject to the reduction amount. RP-2000 Combined Healthy Mortality Projected to Valuation Date using Scale AA. We feel this assumption sufficiently accommodates expected mortality improvements.

Disabled Retiree Mortality: RP-2000 Disabled Retiree Mortality.

Interest: 7.00% annually, net of investment related expenses. This is supported by the target asset allocation of the trust and the expected long-term return by asset class.

Termination: Age-based. Sample rates shown below.

<u>Age</u>	<u>Probability</u>
20	9.8%
30	2.8%
40	0.4%
50	0.2%

We feel the assumed rates of termination are reasonable based on long-term expectations.

Disability: Age-based. Sample rates shown below.

<u>Age</u>	<u>Probability</u>
20	0.07%
30	0.09%
40	0.15%
50	0.50%

We feel the assumed rates of disablement are reasonable based on long-term expectations.

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Retirement (2017-2019):	Calendar Year	Probability
	2017	1.00%
	2018	1.00%
	2019	50%

Retirement (2020 and beyond):	<u>Age</u>	<u>Probability</u>
	52	35%
	53	20%
	54	20%
	55	20%
	56	25%
	57	25%
	58	30%
	59	30%
	60	50%
	61	50%
62	100%	

We feel the assumed rates of retirement are reasonable based on long-term expectations.

Salary Increases:	<u>Service*</u>	<u>Increase</u>
	0-5	11.5%
	6-10	6.3%
	11-15	5.0%
	16+	4.0%

\* Based on actual date of hire. We feel the assumed rates of salary increase are reasonable based on long-term expectations.

Payroll Growth: None (for purposes of amortizing the UAAL).

Cost-of-Living Adjustment: None.

Marital Status: 75% of active participants are assumed to be married. Males are assumed to be three years older than females.

Actuarial Asset Method: Fair Market Value.

SCHEDULE OF INVESTMENT RETURNS  
Last 10 Years

	<u>12/31/2016</u>	<u>12/31/2015</u>
Annual Money-Weighted Rate of Return		
Net of Investment Expense	6.61%	-2.39%

NOTES TO THE FINANCIAL STATEMENTS  
(For the Year Ended December 31, 2016)

General Information about the Pension Plan

*Plan Description*

The Plan is a single-employer defined benefit pension plan administered by the Plan's Board of Trustees comprised of:

- (1) The mayor of the municipality or the mayor's designated representative or the chief operating officer of the political subdivision or the chief operating officer's designated representative, as applicable;
- (2) The chief financial officer of the municipality or other political subdivision or, if there is no officer denominated as chief financial officer, the person who performs the duties of chief financial officer or a person designated by the chief financial officer or by the person performing the duties of chief financial officer.
- (3) Three members of the retirement system elected by participating members; and
- (4) Two persons who reside in this state in the municipality or other political subdivision or within the extraterritorial jurisdiction of the municipality, who are not officers or employees of the municipality or other political subdivision, and who are elected by a majority vote of the members of the board of trustees.

An individual who was an Employee upon the Original Effective Date became a Member, unless such Employee was 36 years old or older and affirmatively made an irrevocable election in writing to not participate. An individual who is under the age of 36 and becomes an Employee after the Original Effective Date shall become a Member as a condition of employment upon the first date of Employee's employment with the Fire Department. An individual who is 36 years old or older and becomes an Employee after the Original Effective Date shall only become a Member pursuant to Section 9(f) of TLFFRA.

*Plan Membership as of January 1, 2017:*

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	-
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	1
Active Plan Members	136
	137
	137

*Benefits Provided*

The Plan provides retirement, termination, disability and death benefits.

Normal Retirement:

Date: Attainment of age 52 and 20 years of Credited Service.

Benefit Accrual Rate: 2.50% of Average Final Compensation times Credited Service for first 20 years, plus 3.00% of Average Final Compensation times Credited Service thereafter.

Vesting:

Schedule: Not applicable. Members will only be vested in an annuity benefit upon attaining Normal Retirement eligibility.

Benefit Amount: Non-vested Members are always entitled to a refund of their accumulated contributions (without interest).

Disability:

Eligibility: Total and permanent as determined by the Board.

Benefit: 2.50% of Average Final Compensation times Credited Service, but not less than 50% of Average Final Compensation.

Pre-Retirement Death Benefits:

Eligibility: Covered from the Member's participation date.

Benefit: 75% of the Member's accrued benefit at date of death (utilizing at least 20 years of service).

*Contributions*

Member Contributions: 12.00% of Earnings.

Township Contributions: 12.00% of annual payroll.

Net Pension Liability

The measurement date is December 31, 2016.

The measurement period for the pension expense was January 1, 2016 to December 31, 2016.

The reporting period is January 1, 2016 through December 31, 2016.

The Sponsor's Net Pension Liability was measured as of December 31, 2016.

The Total Pension Liability used to calculate the Net Pension Liability was determined as of that date.

*Actuarial Assumptions:*

The Total Pension Liability was determined by an actuarial valuation as of January 1, 2017 using the following actuarial assumptions:

Inflation	2.50%
Salary Increases	4.00% - 11.50%
Discount Rate	7.00%
Investment Rate of Return	7.00%

Mortality Rate: RP-2000 Combined Healthy Mortality Projected to Valuation Date using Scale AA. We feel this assumption sufficiently accommodates expected mortality improvements.

The date of the most recent experience study for which significant assumptions are based upon is not available.

The Long-Term Expected Rate of Return on Pension Plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, Net of Pension Plan investment expenses and inflation) are developed for each major asset class.

For 2016, the inflation rate assumption of the investment advisor was 3.00%.

These ranges are combined to produce the Long-Term Expected Rate of Return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Best estimates of arithmetic real rates of return for each major asset class included in the Pension Plan's target asset allocation as of December 31, 2016 are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
Equities	75%	6.21%
Fixed Income	24%	4.05%
Cash	1%	0.00%
Total	100%	

Discount Rate:

The Discount Rate used to measure the Total Pension Liability was 7.00 percent.

The projection of cash flows used to determine the Discount Rate assumed that Plan Member contributions will be made at the current contribution rate and that Sponsor contributions will be made at rates equal to the difference between actuarially determined contribution rates and the Member rate. Based on those assumptions, the Pension Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the Long-Term Expected Rate of Return on Pension Plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. For purpose of this valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.78% (based on the weekly rate closest to but not later than the measurement date of the Bond Buyer 20-Bond Index as published by the Bond Buyer); and the resulting single discount rate is 7.00%.

CHANGES IN NET PENSION LIABILITY

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a)-(b)
Balances as of January 1, 2016	\$ 21,902,613	\$ 22,184,111	\$ (281,498)
Changes for a Year:			
Service Cost	2,231,125	-	2,231,125
Interest	1,689,051	-	1,689,051
Differences between Expected and Actual Experience	632,469	-	632,469
Changes of assumptions	-	-	-
Changes of benefit terms	-	-	-
Contributions - Employer	-	1,282,518	(1,282,518)
Contributions - Employee	-	1,282,518	(1,282,518)
Net Investment Income	-	1,538,922	(1,538,922)
Benefit Payments, including Refunds of Employee Contributions	(8,867)	(8,867)	-
Administrative Expense	-	(80,876)	80,876
Net Changes	4,543,778	4,014,215	529,563
Balances as of December 31, 2016	\$ 26,446,391	\$ 26,198,326	\$ 248,065

*Sensitivity of the Net Pension Liability to changes in the Discount Rate.*

	Current Discount		
	1% Decrease	Rate	1% Increase
	6.00%	7.00%	8.00%
Sponsor's Net Pension Liability	\$ 4,758,296	\$ 248,065	\$ (3,497,720)

*Pension Plan Fiduciary Net Position.*

Detailed information about the pension Plan's Fiduciary Net Position is available in a separately issued Plan financial report.

**PENSION EXPENSE AND DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED  
INFLOWS OF RESOURCES RELATED TO PENSIONS**

For the year ended December 31, 2016, the Sponsor will recognize a Pension Expense of \$1,336,005.

On December 31, 2016, the Sponsor reported Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between Expected and Actual Experience	590,305	572,530
Changes of assumptions	-	-
Net difference between Projected and Actual Earnings on Pension Plan investments	787,293	-
Total	<u>\$ 1,377,598</u>	<u>\$ 572,530</u>

Amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to pensions will be recognized in Pension Expense as follows:

Year ended December 31:				
2017		\$		256,993
2018		\$		256,993
2019		\$		256,994
2020		\$		21,389
2021		\$		1,269
Thereafter		\$		11,430

**SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS**  
Last 10 Years

	<u>12/31/2016</u>	<u>12/31/2015</u>
Total Pension Liability		
Service Cost	2,231,125	2,082,564
Interest	1,689,051	141,034
Changes of benefit terms	-	-
Differences between Expected and Actual Experience	632,469	(654,318)
Changes of assumptions	-	-
Contributions - Buy Back	-	20,468,906
Benefit Payments, including Refunds of Employee Contributions	(8,867)	(135,573)
Net Change in Total Pension Liability	<u>4,543,778</u>	<u>21,902,613</u>
Total Pension Liability - Beginning	<u>21,902,613</u>	<u>-</u>
Total Pension Liability - Ending (a)	<u><u>\$ 26,446,391</u></u>	<u><u>\$ 21,902,613</u></u>
Plan Fiduciary Net Position		
Contributions - Employer	1,282,518	1,184,257
Contributions - Employee	1,282,518	1,184,257
Contributions - Buy Back	-	20,468,906
Net Investment Income	1,538,922	(387,995)
Benefit Payments, including Refunds of Employee Contributions	(8,867)	(135,573)
Administrative Expense	(80,876)	(129,741)
Net Change in Plan Fiduciary Net Position	<u>4,014,215</u>	<u>22,184,111</u>
Plan Fiduciary Net Position - Beginning	<u>22,184,111</u>	<u>-</u>
Plan Fiduciary Net Position - Ending (b)	<u><u>\$ 26,198,326</u></u>	<u><u>\$ 22,184,111</u></u>
Net Pension Liability - Ending (a) - (b)	<u><u>\$ 248,065</u></u>	<u><u>\$ (281,498)</u></u>
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	99.06%	101.29%
Covered Employee Payroll	\$ 10,687,650	\$ 9,868,808
Net Pension Liability as a percentage of Covered Employee Payroll	2.32%	-2.85%

**Notes to Schedule:**

The Woodlands Firefighters' Retirement System became effective as of January 1, 2015.

**SCHEDULE OF CONTRIBUTIONS**  
Last 10 Years

	12/31/2016	12/31/2015
Contractually Required Contribution	1,282,518	1,184,257
Contributions in relation to the		
Contractually Required Contributions	1,282,518	1,184,257
Contribution Deficiency (Excess)	\$ -	\$ -
Covered Employee Payroll	\$ 10,687,650	\$ 9,868,808
Contributions as a percentage of		
Covered Employee Payroll	12.00%	12.00%

Notes to Schedule

Methods and assumptions used to determine contribution rates:

Funding Method: Individual Entry Age Normal, Level % of Pay. □

Accrued Benefit Reduction	<u>Calendar Year</u>	<u>Reduction Percentage</u>
	2017	20%
	2018	10%
	2019+	0%

Mortality Rate: Death and Disability benefits are not subject to the reduction amount.  
RP-2000 Combined Healthy Mortality Projected to Valuation Date using Scale AA.  
We feel this assumption sufficiently accommodates expected mortality improvements.

Disabled Retiree Mortality: RP-2000 Disabled Retiree Mortality.  
Interest: 7.00% annually, net of investment related expenses. This is supported by the target asset allocation of the trust and the expected long-term return by asset class.

Termination: Age-based. Sample rates shown below.

Age	Probability
20	9.80%
30	2.80%
40	0.40%
50	0.20%

We feel the assumed rates of termination are reasonable based on long-term expectations.

Disability: Age-based. Sample rates shown below.

Age	Probability
20	0.07%
30	0.09%
40	0.15%
50	0.50%

We feel the assumed rates of disablement are reasonable based on long-term expectations.

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Retirement (2017-2019):	Calendar Year	Probability
	2017	1%
	2018	1%
	2019	50%
Retirement (2020 and beyond):	<u>Age</u>	<u>Probability</u>
	52	35%
	53	20%
	54	20%
	55	20%
	56	25%
	57	25%
	58	30%
	59	30%
	60	50%
	61	50%
	62	100%

We feel the assumed rates of retirement are reasonable based on long-term expectations.

Salary Increases:	<u>Service*</u>	<u>Increase</u>
	0-5	0.115
	6-10	0.063
	11-15	0.05
	16+	0.04

\* Based on actual date of hire. We feel the assumed rates of salary increase are reasonable based on long-term expectations.

Payroll Growth: None (for purposes of amortizing the UAAL).  
 Cost-of-Living Adjustment: None.  
 Marital Status: 75% of active participants are assumed to be married. Males are assumed to be three years older than females.  
 Actuarial Asset Method: Fair Market Value.

**COMPONENTS OF PENSION EXPENSE**  
**YEAR ENDING DECEMBER 31, 2016**

	Net Pension Liability	Deferred Inflows	Deferred Outflows	Pension Expense
Balances as of January 1, 2016	\$ (281,498)	\$ 613,424	\$ 942,416	\$ -
Total Pension Liability Factors:				
Service Cost	2,231,125	-	-	2,231,125
Interest	1,689,051	-	-	1,689,051
Changes in benefit terms	-	-	-	-
Differences between Expected and Actual Experience with regard to economic or demographic assumptions	632,469	-	632,469	-
Current year amortization of experience difference	-	(40,894)	(42,164)	1,270
Change in assumptions about future economic or demographic factors or other inputs	-	-	-	-
Current year amortization of change in assumptions	-	-	-	-
Benefit Payments	(8,867)	-	-	(8,867)
Net change	<u>4,543,778</u>	<u>(40,894)</u>	<u>590,305</u>	<u>3,912,579</u>
Plan Fiduciary Net Position:				
Contributions - Employer	1,282,518	-	-	-
Contributions - Employee	1,282,518	-	-	(1,282,518)
Projected Net Investment Income	1,639,523	-	-	(1,639,523)
Difference between projected and actual earnings on Pension Plan investments	(100,601)	-	100,601	-
Current year amortization	-	-	(255,724)	255,724
Benefit Payments	(8,867)	-	-	8,867
Administrative Expenses	(80,876)	-	-	80,876
Net change	<u>4,014,215</u>	<u>-</u>	<u>(155,123)</u>	<u>(2,576,574)</u>
Balances as of December 31, 2016	<u>\$ 248,065</u>	<u>\$ 572,530</u>	<u>\$ 1,377,598</u>	<u>\$ 1,336,005</u>

AMORTIZATION SCHEDULE - INVESTMENTS

Increase (Decrease) in Pension Expense Arising from the Recognition of the of Differences Between Projected and Actual Earnings on Pension Plan Investments

Plan Year Ending	Differences Between Expected and Actual Earnings	Recognition Period (Years)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2015	\$ 1,178,019	5	\$ 235,603	\$ 235,604	\$ 235,604	\$ 235,605	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ 100,601	5	\$ 20,121	\$ 20,120	\$ 20,120	\$ 20,120	\$ 20,120	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Increase (Decrease) in Pension Expense			\$ 255,724	\$ 255,724	\$ 255,724	\$ 255,725	\$ 20,120	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

AMORTIZATION SCHEDULE - EXPERIENCE

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience

Plan Year Ending	Differences Between Actual Experience	Recognition Period (Years)	Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience															
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
2015	\$ (654,318)	16	\$ (40,894)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)	\$ (40,895)
2016	\$ 632,469	15	\$ 42,164	\$ 42,164	\$ 42,164	\$ 42,164	\$ 42,164	\$ 42,164	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165	\$ 42,165
Net Increase (Decrease) in Pension Expense			\$ 1,270	\$ 1,269	\$ 1,269	\$ 1,269	\$ 1,269	\$ 1,269	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270	\$ 1,270