

**United States Army
Nonappropriated Fund
Employee Retirement Plan**

**Actuarial Valuation Report
as of October 1, 2019**

**Produced by Cheiron
February 2020**

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LETTER OF TRANSMITTAL

February 10, 2020

Ms. Anita Janssen
Chief, NAF Personnel Services Division
U.S. Army Family and MWR Command
P.O. Box 340309
Fort Sam Houston, TX 78234

Dear Ms. Janssen:

At your request, we have conducted our annual actuarial valuation of the United States Army Nonappropriated Fund Employee Retirement Plan as of October 1, 2019. The results of the valuation are contained in this report. The purpose of this report is to present the annual actuarial valuation of the United States Army Nonappropriated Fund Employee Retirement Plan. This report is for the use of the United States Army Nonappropriated Fund Employee Retirement Plan and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This actuarial report was prepared exclusively for the United States Army Nonappropriated Fund Employee Retirement Plan for the purpose described herein. Other users of this actuarial report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,



Kevin J. Woodrich, FSA, MAAA, EA
Principal Consulting Actuary



Alison Chafin, ASA, MAAA, EA
Associate Actuary

cc: Anne Bright
Justin Runkel, ASA, MAAA, EA (Cheiron)

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

FOREWORD

Cheiron has performed the actuarial valuation of the United States Army Nonappropriated Fund Employee Retirement Plan (Plan) as of October 1, 2019. The purpose of this report is to:

- 1) **Determine the contributions** to be paid to the Plan for the fiscal year beginning October 1, 2020.
- 2) **Measure and disclose**, as of the valuation date, the financial condition of the Plan.
- 3) **Indicate trends** in the financial progress of the Plan.
- 4) **Provide specific information** and documentation required by P.L. 95-595.

An actuarial valuation establishes and analyzes Plan assets and liabilities on a consistent basis and traces the progress of both from one year to the next. It includes measurement of the Plan's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings and discloses important trends experienced by the Plan in recent years, as well as a projection of the expected financial condition of the Plan in the future.

Section II is a new section that assesses and discloses various actuarial risk measures of the Plan. While much of this information had been disclosed in previous reports, it was combined in this new section with additional disclosures added to reflect a new Actuarial Standards of Practice (ASOP 51).

Section III contains various exhibits used in determining the financial condition of the Plan.

Section IV includes the required disclosures and specific information required by P.L. 95-595.

Within Section IV of this report is a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuation.

In preparing our report, we relied on information (some oral and some written) supplied by the Employee Benefits Office. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

The actuarial assumptions used in performing this valuation have been recommended by the actuary in the most recent review of the Plan's experience completed concurrently with the October 1, 2014 actuarial valuation. Future valuation results may differ significantly from the current valuation due to such factors as the following: plan experience differing from that anticipated by the assumptions, changes in assumptions, and changes in plan provisions or applicable law.

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SECTION I – SUMMARY

Comments

Despite the primary focus given each year on the most recently computed valuation results, it is important to remember that each valuation is merely a snapshot of the long-term progress of the Plan. It is more important to judge a current year's valuation results relative to historical trends and trends expected into the future.

In this section, we first discuss the current year's results in relation to trends of the Plan over the past fifteen years. For the fiscal year ending September 30, 2020, employers are contributing to the Plan at the rate of 7.60% of payroll. For the fiscal year ending September 30, 2021, the underlying value of benefits being accumulated (the Normal Cost) plus administrative expenses are 7.33% of payroll (net of the 2.00% employee contribution). The actuarial employer contribution rate, which includes a 15-year level amortization of the Unfunded Actuarial Liability (UAL), is 6.69% of payroll for fiscal year 2020-21. Since the Plan is over 100% funded, the actuarial contribution rate includes a credit for the surplus.

The amounts and rates on the tables found in Exhibit IV-8 Tables 2A and 2B, respectively, reflect a 40-year amortization of the UAL. These results are not indicative of the Plan's funding goals but rather our understanding of the information required to be disclosed under P.L. 95-595. If this understanding is incorrect, please let us know and we will modify these tables accordingly.

We subsequently show projections of the contribution rate and funding status. Please remember that these projections make certain assumptions about future investment returns, future salary increases, future inflation, future contribution levels, and future behavior of Plan participants. We cannot know what will actually happen, but these projections should provide a better understanding of the Plan's dynamics. Future experience of the Plan, particularly the financial market performance, will greatly impact what future contributions are necessary.

Our long-term funding projections show that the current employer contribution rate of 7.60% is anticipated to slowly increase the funded ratio over time if all actuarial assumptions are exactly realized, including earning 7.50% on the Actuarial Value of Assets each year. We have also included projections that illustrate the impact of varying investment returns. This shows the impact investment returns have on the fund. We show assumed investment returns of 5.50% per year, 9.50% per year, and varying returns over a period of time under both a bull market and a bear market scenario.

Recent Experience

The financial markets underperformed the assumed 7.50% rate of return during the fiscal year ending September 30, 2019. The actual return net of investment expenses on a Market Value basis was approximately 4.35%. The return on an Actuarial Value basis, which smooths recent market fluctuations, was approximately 8.19%. This return equated to an investment gain of \$12.1 million on an actuarial basis.

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On the liability side, the Plan's experience resulted in an actuarial loss of \$6.3 million (approximately 0.34% of the total Actuarial Liability). This liability loss was attributable to a) salaries for actives increasing less than expected (\$9.5 million gain), b) favorable experience on inactive participants (\$2.4 million gain) including the 2.8% cost of living adjustment awarded April 1, 2019, that was lower than the assumed 3.0%, and c) benefit payments and administrative expenses costing less than expected (\$3.2 million gain), offset by losses for d) unfavorable experience for participants due an account balance (\$0.6 million loss), e) unfavorable experience for active participants (\$8.6 million loss), f) new entrants entering the Plan (\$8.5 million loss), g) participants returning to work (\$0.5 million loss), and h) improvements in the data provided to us (\$3.2 million loss).

Due to the collective gain on liability and investment experience over the last year, combined with continued recognition of past investment gains and contributions made to the Plan, the Plan's funding ratio (Actuarial Value of Assets divided by Actuarial Liability) increased from 101.4% at October 1, 2018 to 102.3% at October 1, 2019. On a Market Value basis, the funded status decreased from 107.8% to 104.9% during this period primarily due to unfavorable investment performance.

Several types of liabilities are calculated and presented in this report. Note that these liabilities are not appropriate for settlement purposes, including the purchase of annuities and the payment of lump sums.

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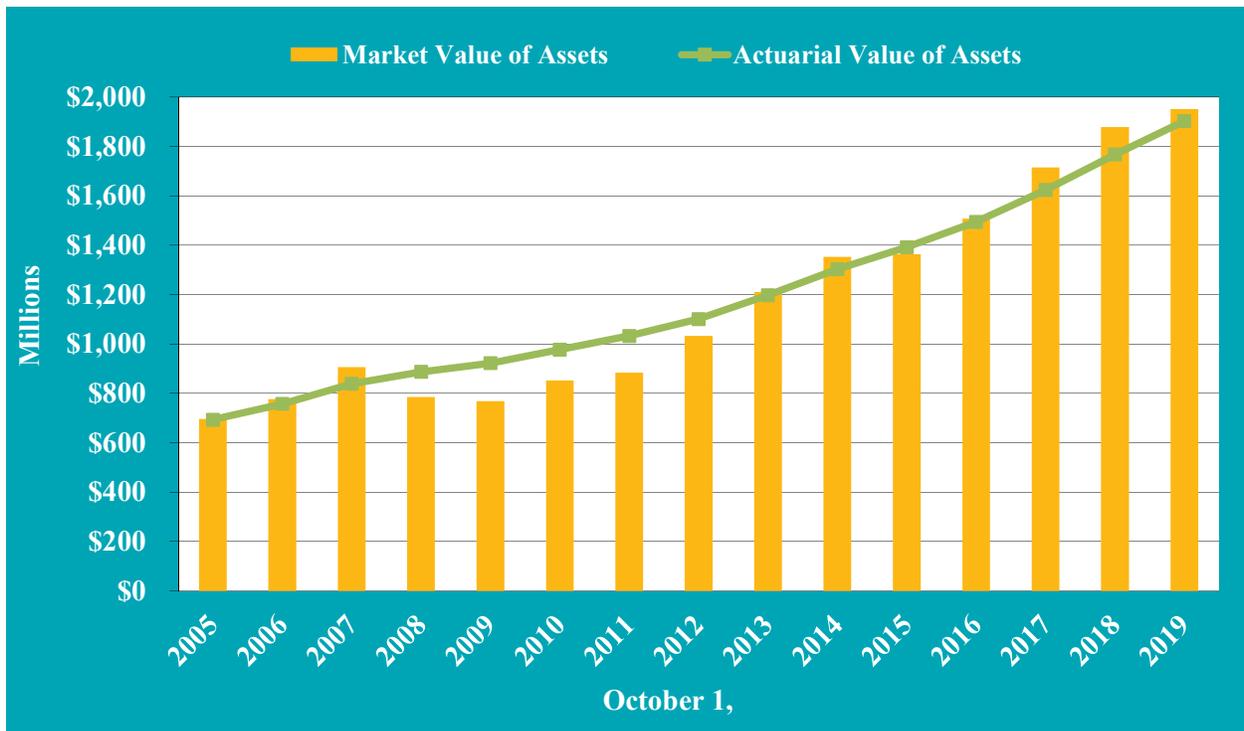
SECTION I – SUMMARY

Trends

It is important to take a step back from these latest results and view them in the context of the Plan’s recent history. In the following pages, we present a series of charts that display key factors of the valuations in previous years.

Growth in Assets

This chart compares the Market Value of Assets (MVA) and the Actuarial Value of Assets (AVA). The AVA represents market values that have been “smoothed” based on actuarial methods to mitigate the effects of the volatility exhibited by the capital markets. The AVA is used to evaluate the Plan’s ongoing unfunded liability (or surplus). Note how this actuarial technique has provided a smoother progression of assets over the last 15 years.



The Market Value continued to increase up until the poor investment return in 2008 and 2009. Since 2009, it has increased in each of the past ten years. The Actuarial Value of Assets of \$1,904 million as of September 30, 2019, is less than the Market Value of \$1,952 million as of the same date. This difference of \$48 million represents the net deferred investment gain that will be recognized in the Actuarial Value of Asset over the next few years.

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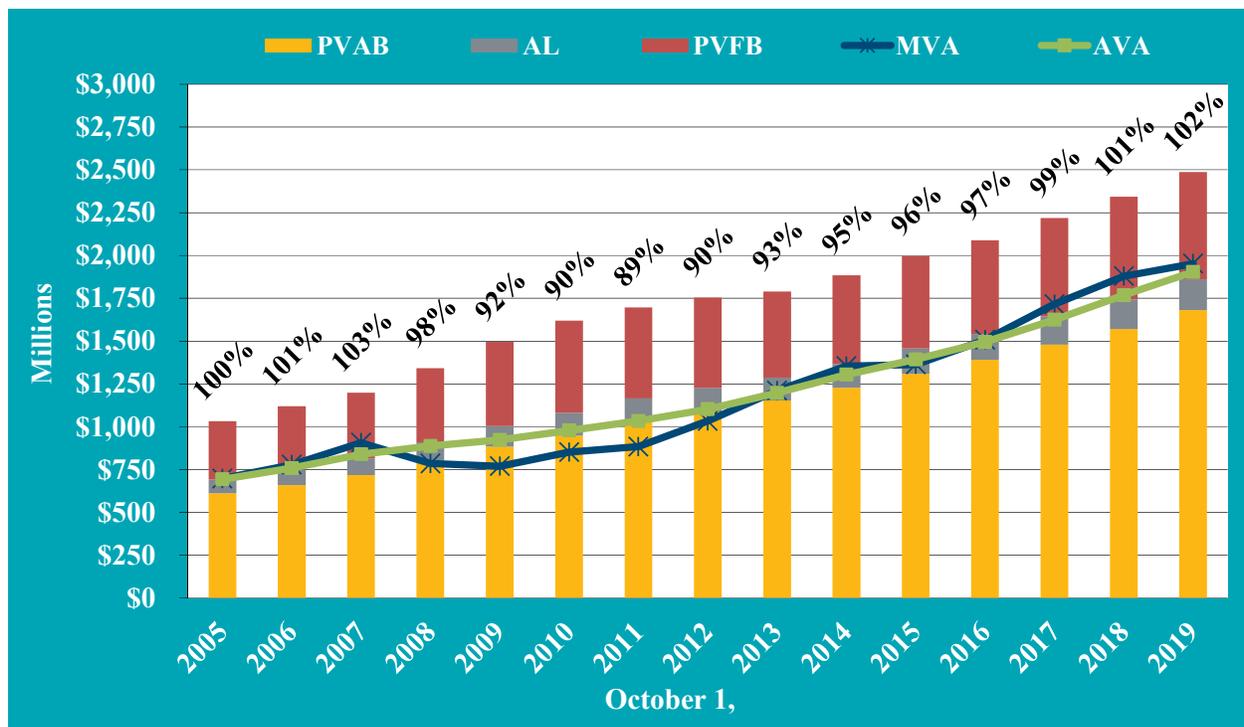
Assets and Liabilities

The three colored bars represent the three different measures of liability mentioned in this report. The amount represented by the top of the maroon bars, the Present Value of Future Benefits (PVFB), is the amount needed to provide all benefits for the current participants and their beneficiaries. If the Plan had assets equal to the PVFB, then no future contributions (neither from the employer nor from members) would be needed for the current members if all the assumptions were realized. However, since contributions will continue to be made on a participant’s behalf over their working career, it is not necessary to have assets near the PVFB.

Instead, the Actuarial Liability (AL), represented by the top of the gray bar, is the liability measure used for funding purposes. The AL is the portion of the PVFB which will not be paid by future Normal Costs.

Then, the top of the yellow bar represents the present value of benefits that participants have accrued as of that date. This measure of liability is often referred to as the Present Value of Accumulated Benefits (PVAB.)

For funding purposes, we compare the Actuarial Value of Assets (AVA), which is represented by the green line, to the Actuarial Liability in developing the funded percent. These are the percentages shown in the graph labels. Finally, the Market Value of Assets (MVA) is represented by the blue line.



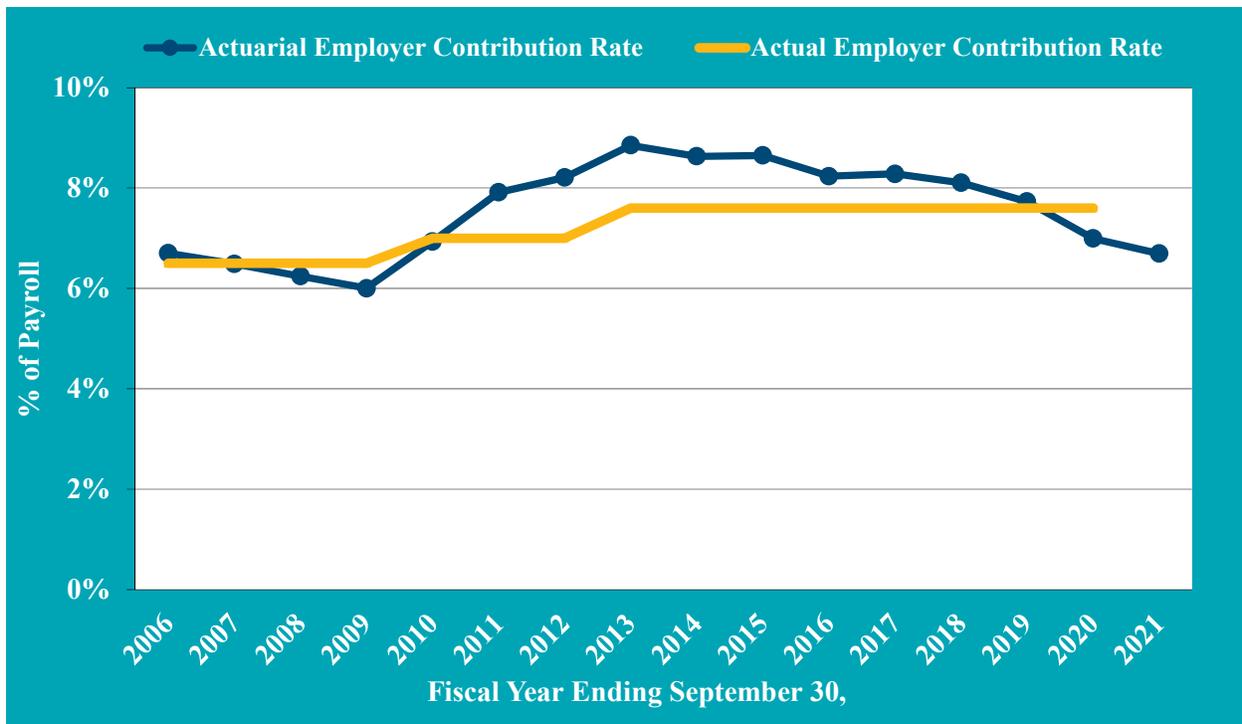
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Employer Contribution Rates

This graph shows the actual employer contribution rate (yellow line) compared to the actuarially calculated employer contribution rate (blue line), denominated as a percent of payroll. The actuarially calculated employer rate represents the employer Normal Cost including assumed administrative expenses plus a 15-year level amortization of any unfunded liability (or surplus). This 15-year level amortization is a rolling amortization. However, this actuarially calculated employer contribution rate should not necessarily be construed as a recommended contribution level as this will not fully amortize the unfunded (or surplus) Actuarial Liability.

As of the previous valuation, the underlying employer actuarial rate was 6.99% for fiscal year 2019-20 and was expected to decrease to 6.58% for the fiscal year 2020-21 if all the assumptions had been realized, including a 7.50% investment return. However, an asset return of 4.35% and unfavorable liability experience resulted in an actuarial rate of 6.69% for fiscal year 2020-21. It is important to note that the current employer contribution policy of 7.60% is still more than the actuarial rate.



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Valuation Results

The following table provides a summary of the results from the October 1, 2019 actuarial valuation. Presented alongside the current year results are results from the prior valuation at October 1, 2018.

Exhibit I-1 Summary of Principal Results (\$ in millions)				
	<u>October 1, 2019</u>	<u>October 1, 2018</u>	<u>% Change</u>	
<u>Participant Data</u>				
(a) Retired Members and Beneficiaries*	8,963	8,681	3.2%	
(b) Vested Deferred Members	3,689	3,532	4.4%	
(c) Non-Vested Participants Due Account Balance	26,141	23,916	9.3%	
(d) Active Members	<u>17,562</u>	<u>17,336</u>	1.3%	
(e) Total Participants [(a) + (b) + (c) + (d)]	56,355	53,465	5.4%	
(f) Annual Salaries of Active Members	\$ 722.9	\$ 688.1	5.1%	
(g) Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 83.0	\$ 76.8	8.1%	
<u>Assets and Liabilities</u>				
(h) Present Value of Future Benefits	\$ 2,487.3	\$ 2,342.2	6.2%	
(i) Actuarial Liability	\$ 1,860.9	\$ 1,743.1	6.8%	
(j) Actuarial Value of Assets	\$ 1,903.6	\$ 1,767.6	7.7%	
(k) Unfunded Actuarial Liability [(i) - (j)]	\$ (42.7)	\$ (24.5)		
(l) Funding Ratio on Actuarial Basis [(j) ÷ (i)]	102.3%	101.4%	0.9%	
(m) Market Value of Assets	\$ 1,952.2	\$ 1,879.0	3.9%	
(n) Funding Ratio on Market Basis [(m) ÷ (i)]	104.9%	107.8%	(2.9%)	
(o) Present Value of Accumulated Plan Benefits	\$ 1,680.6	\$ 1,570.6	7.0%	
<u>Contribution Results</u>				
	<u>Fiscal Year End</u>	<u>Fiscal Year End</u>		
	<u>September 30, 2021</u>	<u>September 30, 2020</u>		
(p) Total Annual Normal Cost with Expenses	\$ 65.1	\$ 62.3	4.5%	
(q) Expected Employee Contributions	(14.5)	(13.8)	5.1%	
(r) UAL Amortization	(4.5)	(2.6)	73.1%	
(s) Interest to Middle of Year	<u>2.2</u>	<u>2.2</u>	0.0%	
(t) Actuarial Contribution [(p) + (q) + (r) + (s)]	\$ 48.3	\$ 48.1	0.4%	
(u) As a % of Payroll	6.69%	6.99%	(0.30%)	

* Includes 23 participants receiving benefits from Ameritas Life Insurance Corporation as of 10/1/2018 and 21 as of 10/1/2019. Cost of living increases granted after 1980 for these 21 participants total \$77,078 per year with an Actuarial Liability of \$288,190 as of 10/1/2019. The Actuarial Liability for these increases is included above.

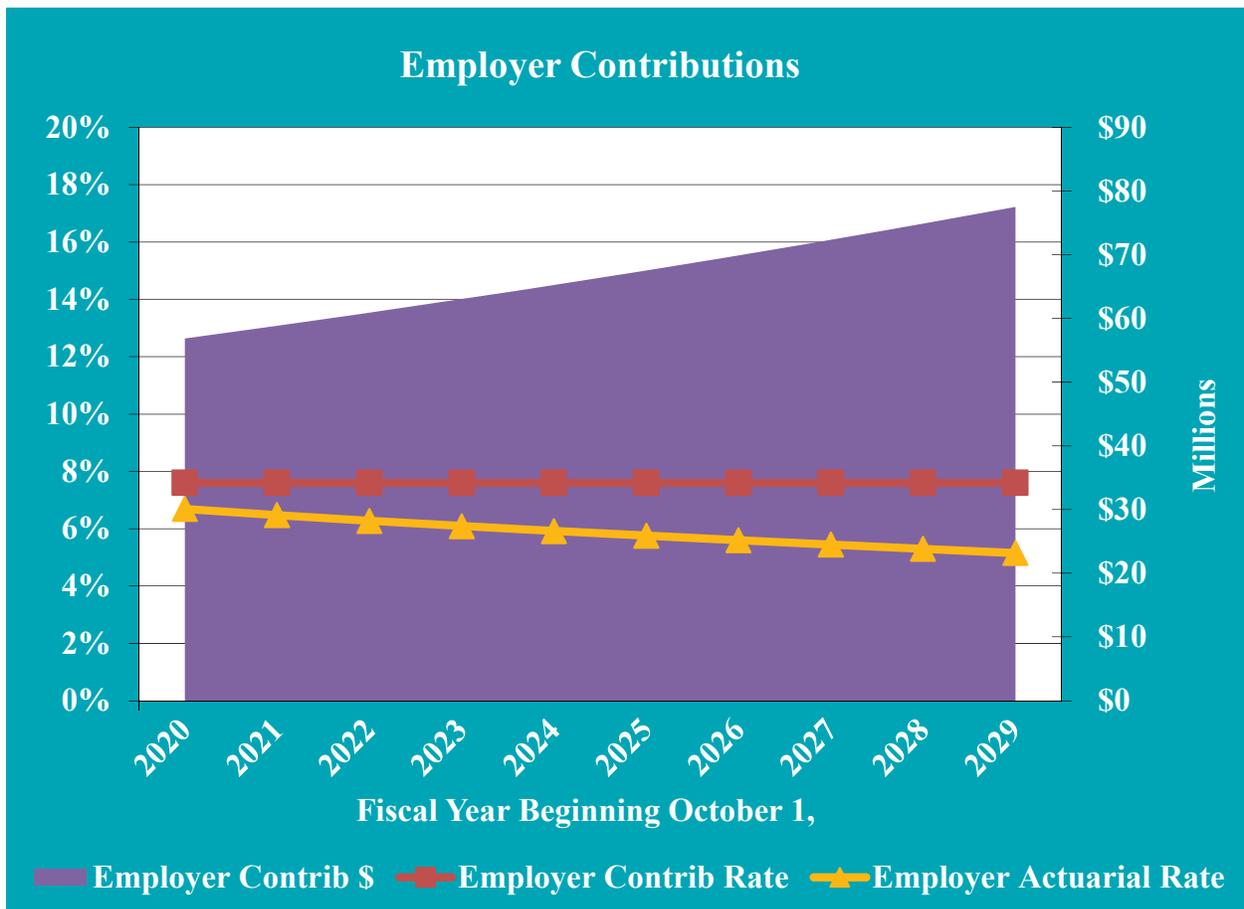
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SECTION I – SUMMARY

Future Outlook

The two charts that follow show the expected progress of the Plan over the next ten years assuming that the Plan’s assets earn 7.50% on their *market value*.

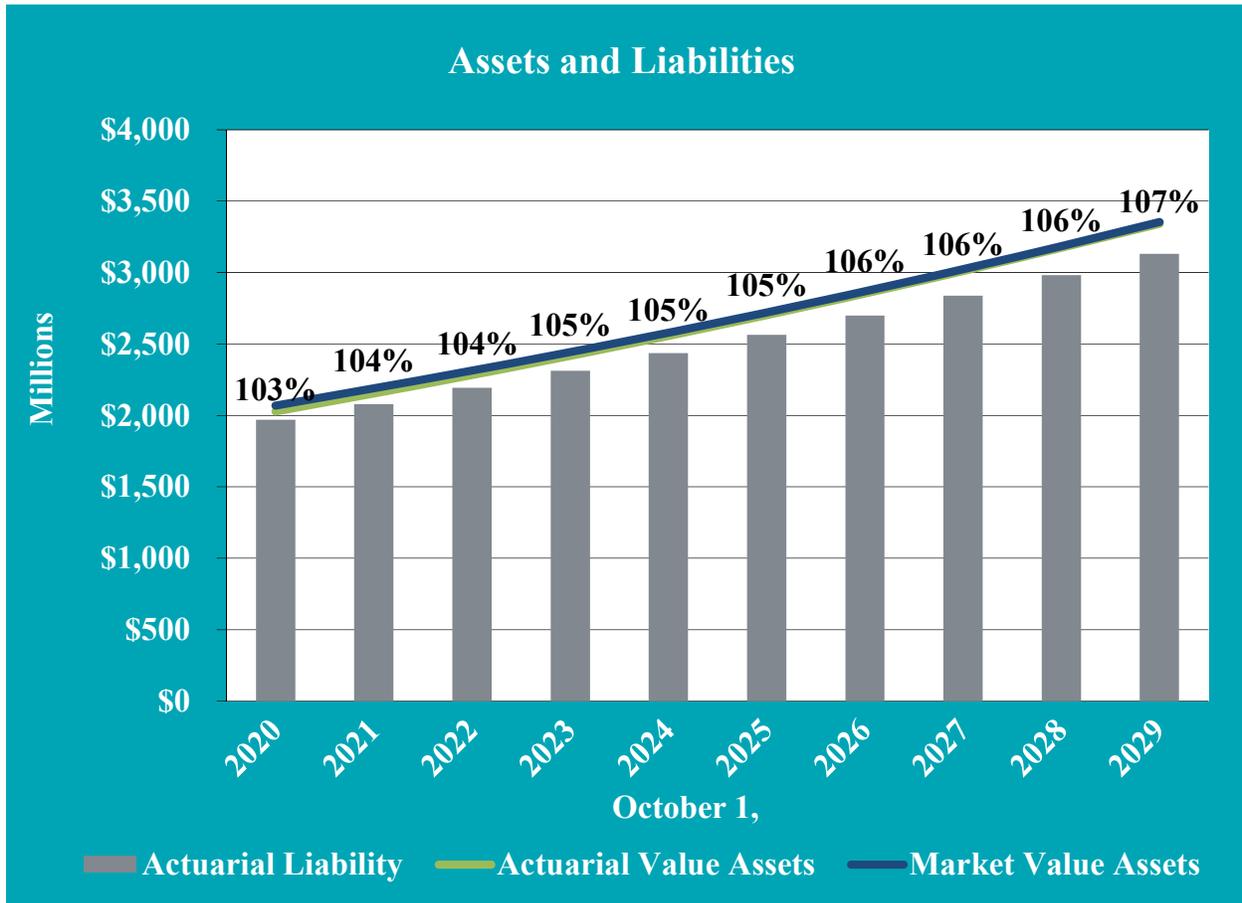
In the chart below, the purple shaded area represents the anticipated dollar amount (aligned with the amounts on the right axis) contributed by the employer at 7.60% of payroll. The employer contribution rate is shown by the red line, and the employer actuarial rate is shown by the yellow line (aligned with the percentages on the left axis). If all actuarial assumptions are met, the actuarial rate is expected to remain less than the actual 7.60% rate being contributed and will steadily decrease from 6.69% for FY 2020-21 to 5.15% for FY 2029-30 as the actuarial assets continue to recognize past net investment gains and the employers continue to contribute at the 7.60% level.



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The following chart entitled Assets and Liabilities shows the projected funding status over the next decade. The Plan is projected to gradually increase from 103% funded to 107% funded over the period shown. This is based on continued employer and employee contributions at 7.60% and 2.0% of payroll, respectively.



However, it is very important to note that these projections, while valid as baseline projections, **are not going to occur** as experience never conforms exactly to assumptions from year to year. As a result, in Section II of this report, *Disclosures Related to Risk*, we present stress testing projections that illustrate the impact of varying investment returns. This shows the impact investment returns have on the fund. We show assumed investment returns of 5.50% per year, 9.50% per year, and varying returns over a period of time under both a bull market and a bear market scenario.

SECTION II – DISCLOSURES RELATED TO RISK

Introduction

Actuarial Standard of Practice (ASOP) No. 51 was recently published by the Actuarial Standards Board to provide guidance to actuaries on the assessment and disclosure of risks related to the possibility that future pension plan experience will deviate from assumptions. This standard does not introduce new concepts to actuarial work; it simply attempts to provide some codification of the practice. Our reports have routinely included stress testing of the valuation results showing the impact of future experience deviating from the underlying assumptions. However, with this ASOP becoming effective for this October 1, 2019 Actuarial Valuation Report, we have taken this as an opportunity to consolidate the information regarding assessment and disclosure of the pension plan's risks in this Section II as well as add a number of additional items helping to communicate and demonstrate these risks.

The pension plan's actuarial valuation results are dependent on assumptions about future economic and demographic experience. Based on actuarial standards of practice, the assumptions represent a reasonable estimate for future experience. However, actual experience will never conform exactly to the assumptions and may differ significantly from the assumptions. This deviation is the risk that pension plan sponsors undertake in relying on a pension plan's actuarial valuation results.

This section of this report is intended to identify the primary drivers of these risks, provide background information and assessments about these identified risks and communicate the significance of these risks to this Plan.

Identification of Risks

For pension plans, the three primary valuation results that can significantly differ from those expected are in the assets, liabilities, and contributions. While there are several factors that could lead to these results being different, we believe the primary risks to this Plan are:

- Investment risk,
- Longevity and other demographic risks,
- Plan change risk,
- Contribution risk, and
- Assumption change risk,

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to deviate from what is expected. When actual investment returns are lower than the investment assumption used in the actuarial valuation (currently assume 7.50% per year), the unfunded liability will increase and the period of time over which the unfunded liability is expected to be paid will increase. But, when actual returns exceed the assumption, the resulting unfunded liability measurements and resulting amortization period will be lower than anticipated.

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Longevity and Other Demographic Risk is the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time as the actual experience deviates from expected. In addition, the extensive number of assumptions related to longevity and demographic experience often result in offsetting factors contributing to the Plan's overall liability experience. For this Plan, salary experience, or actual salary increases compared to those assumed, has driven the liability gain/(loss) in the most recent years.

Plan Change Risk is the potential for the provisions of the Plan to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the Plan being changed, future valuation measurements can also be impacted, with plan changes leading to deviations between actual future measurements and those expected by the current valuation.

Contribution Risk is the potential for actual future contributions to deviate from expected future contributions, or that the anticipated contributions will be inadequate to fund the plan benefits. There are different sources of contribution risk ranging from the sponsor choosing a contribution level that does not adequately fund the Plan to material changes in the contribution base (e.g., covered employees, covered payroll, sponsor revenue) that affect the amount of contributions the Plan can collect.

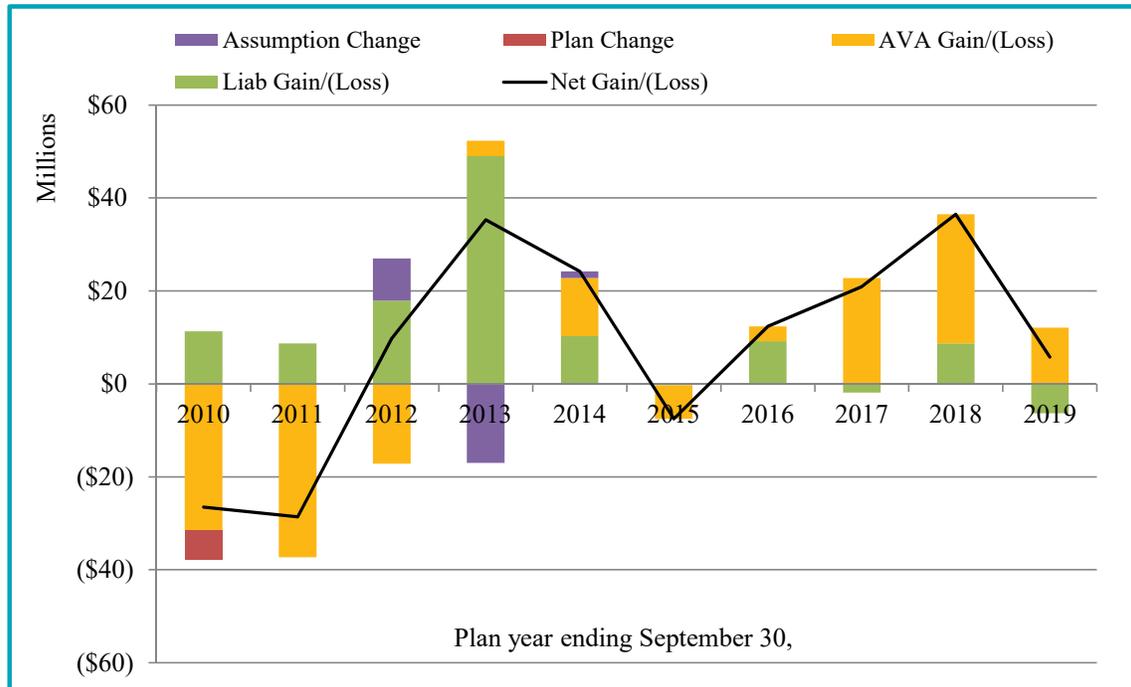
Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. Assumption change risk is an extension of the risks previously identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in the environment when the current assumption is no longer reasonable. The historical review section shown on the following page illustrates the impact of the Plan's assumption changes over the past ten valuations.

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SECTION II – DISCLOSURES RELATED TO RISK

Historical Review

In understanding the impact of some of these risks, it is useful to look at past experience deviations. These deviations are commonly referred to as actuarial gains and losses. The following graph shows the gains/(losses) at each valuation date between the actual and expected experience broken down by cause.



As described previously and evident in this chart, asset gains/(losses), liability gains/(losses), and assumption changes have been the most significant risks for the Plan. Asset gains/(losses) are apparent in each year, and they have been relative in magnitude to the liability gains/(losses). The assumption changes in 2013 included the incorporation of future mortality improvement. In 2014, the Board adopted assumption changes based on a demographic and economic experience study. These assumption changes included lowering the discount rate from 8.0% to 7.5%, the general wage inflation from 4.0% to 3.5%, and the assumed cost of living adjustments from 3.5% to 3.0%. There was a loss of \$7 million due to the economic assumption changes and a gain of \$8 million due to the demographic assumption changes, which illustrates how changes in assumptions can offset one another.

SECTION II – DISCLOSURES RELATED TO RISK

Plan Maturity Measures

As pension plans become more mature, the identified risks become of more significant concern. As a result, it has become increasingly important to examine measures that indicate a pension plan's maturity level. With shrinking workforces, aging Baby Boomers, and retirees living longer, plans pay out more in benefits than they receive in contributions – leading to negative cash flows, excluding investment income.

When plans with negative cash flows suffer investment losses, they need to liquidate enough assets to pay for benefits in excess of contributions. That means these plans will need to earn higher returns to rebuild their assets to the previous levels. Plans with negative cash flows exceeding five percent of assets are especially vulnerable to asset losses.

The balance of this section discloses and examines three maturity measures: the asset leverage ratio, the support ratio, and the net cash flow ratio.

Asset Leverage Ratio

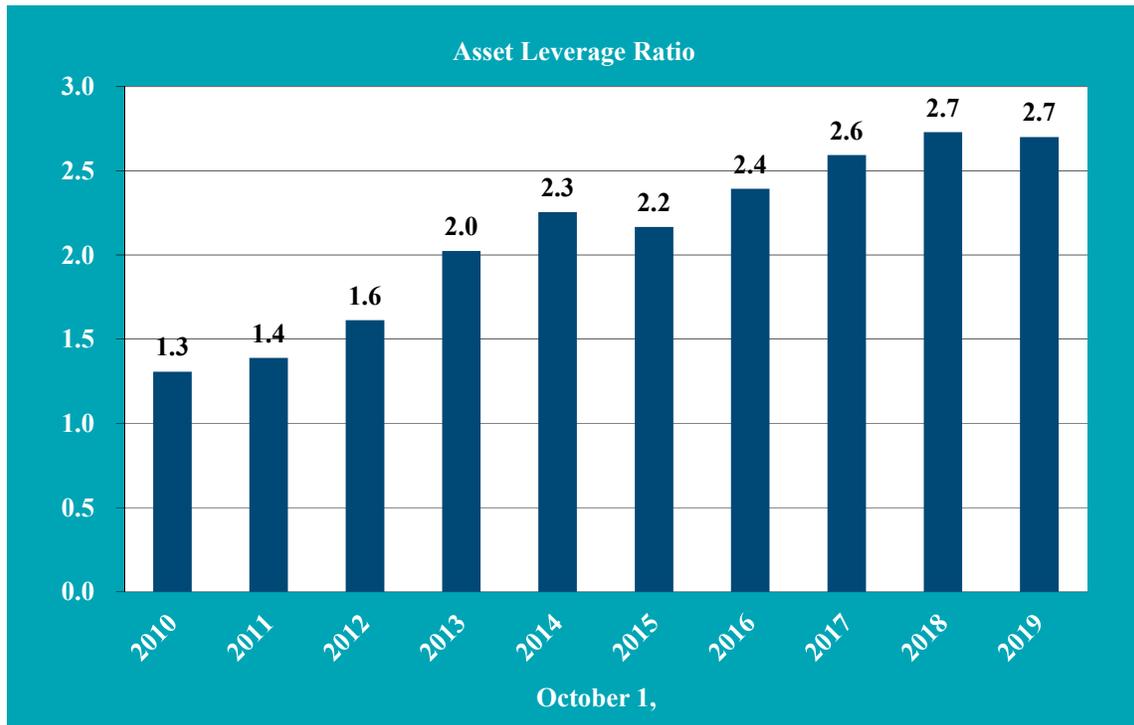
Typically one of the most important pension plan maturity measures is the asset leverage ratio — the Market Value of Assets divided by the Plan's payroll. The greater the plan's assets are relative to payroll, the more vulnerable the plan is to investment volatility. The following example demonstrates this.

(\$ in millions)		
	Plan A	Plan B
Plan Assets	\$ 5,000	\$ 5,000
Payroll	\$ 500	\$ 1,000
Asset Leverage Ratio	10.0	5.0
10% Investment Loss	\$ 500	\$ 500

This example shows two plans that both experience a 10% investment loss equaling \$500 million. Although their assets are the same, because the size of payroll for Plan A is half of that of Plan B, its asset leverage ratio is 10 and Plan B's ratio is 5. This means that Plan A has to make up (i.e., amortize) that loss over a payroll that is half as large as Plan B's.

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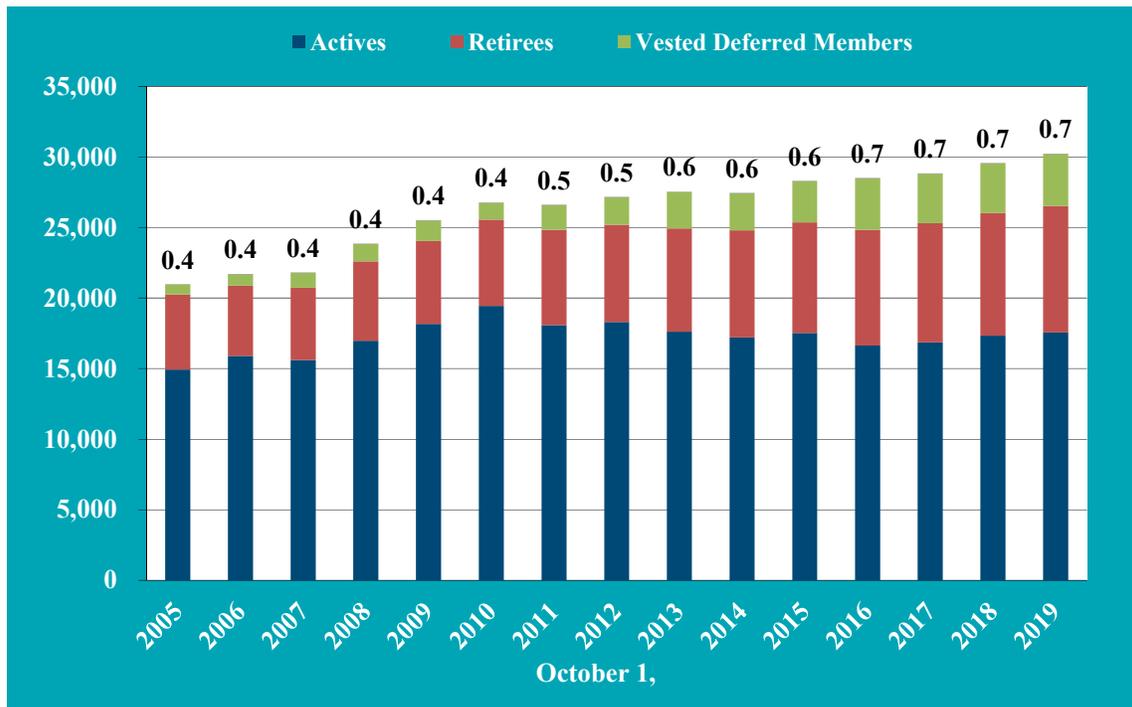
The chart above shows that the Plan’s Asset Leverage ratio has more than doubled since 2010, growing from a ratio of 1.3 to a ratio of 2.7. This means that the impact of another market turndown like the Great Recession of 2008/2009 would be more than double the impact it was then when trying to make up the lost investment income through additional contributions.

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Support Ratio

A commonly used measure of plan maturity is the Support Ratio, the ratio of retired and inactive members (or those receiving benefits or entitled to a deferred benefit) to the number of active members (or those currently accruing benefits in the Plan). The greater this ratio, the more likely that the Plan will develop negative cash flows. This is an indicator of how leveraged future investment gains and losses are on potential future contributions, which are only made on behalf of actives. We continue to monitor the support ratio as a means of reflecting the relative risks the Plan has to investment volatility.



The numbers above the bars in the preceding chart show the historical support ratio for the Plan has increased gradually over the period shown but is still less than 1.0. A support ratio of less than 1.0 means there are still more active participants than inactive participants. As the Plan continues to mature, the higher this ratio will become.

The Boston College’s Center for Retirement Research, NASRA and the Center for State and Local Government Excellence maintain the Public Plan Database that contains the majority of state plans as well as many large municipal plans. The median support ratio for the plans within this database has been 1.0 in recent years. Therefore, the Plan’s support ratio of 0.7 suggests that this Plan is less mature than most plans in the database.

In addition to the participants shown in this chart, there are 26,141 participants who are no longer working but are entitled to a refund of their employee contribution account balance. These balances represent about \$18.8 million, or just 1.0% of the Actuarial Liability.

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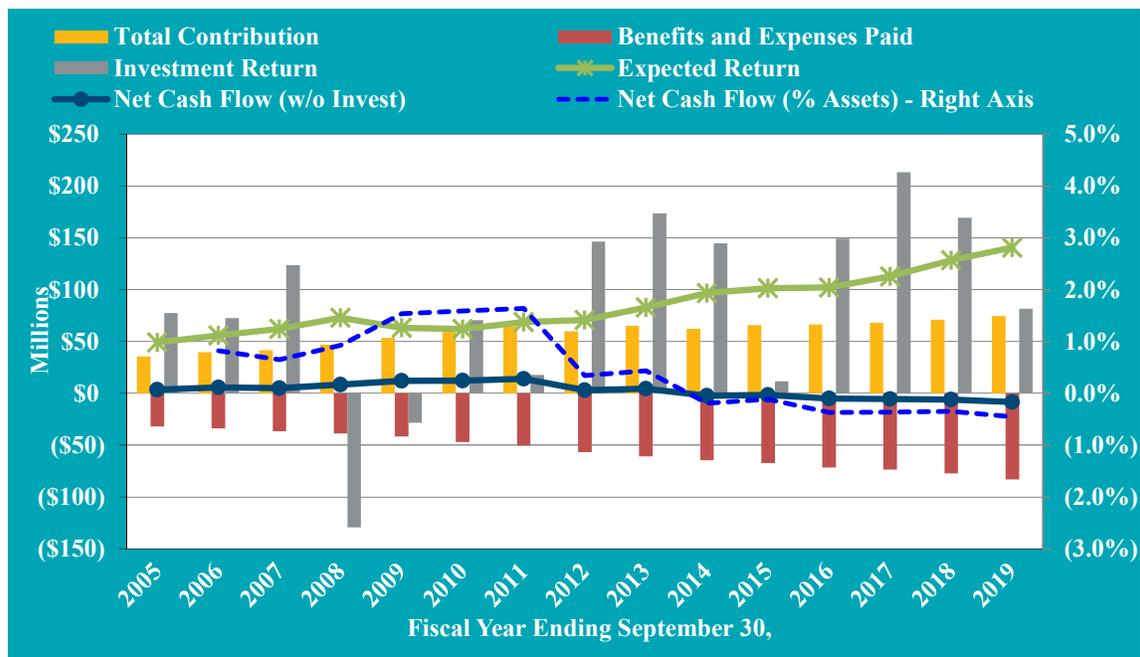
SECTION II – DISCLOSURES RELATED TO RISK

Net Cash Flow Ratio

Another and more important measure of plan maturity is the ratio of the net cash flow out of the plan (benefits and expenses less contributions), divided by the market value of plans assets. With shrinking workforces, aging Baby Boomers, and retirees living longer, plans pay out more in benefits than they receive in contributions, leading to negative net cash flows, excluding investment income.

When plans with negative net cash flows suffer investment losses, they need to liquidate enough assets to pay for benefits in excess of contributions. That means these plans will need to earn higher returns to rebuild their assets to the previous levels. Plans with significant negative cash flows are more vulnerable to market declines. However, negative cash flows are expected with maturing plans and a plan’s asset allocation may be adjusted to minimize sensitivity to investment risk.

This graph shows the Plan’s historical cash flows – employer and member contributions compared to the benefit payments and administrative expenses from the Plan. The Plan experienced a positive cash flow (contributions exceeded benefit payments and administrative expenses) prior to 2014. However, the past six fiscal years have reverted to a negative cash flow (benefit payments and administrative expenses have exceeded contributions.) A negative cash flow is indicative of a maturing pension plan. A plan that is in a negative cash flow position must rely on investment returns at least as much as the negative cash flow in order for the assets to increase. However, the negative cash flow of \$8.4 million for the period ending September 30, 2019 amounted to just 0.4% of the assets. The 4.35% market value investment return well exceeded this threshold, causing the market value of assets to grow from last year.



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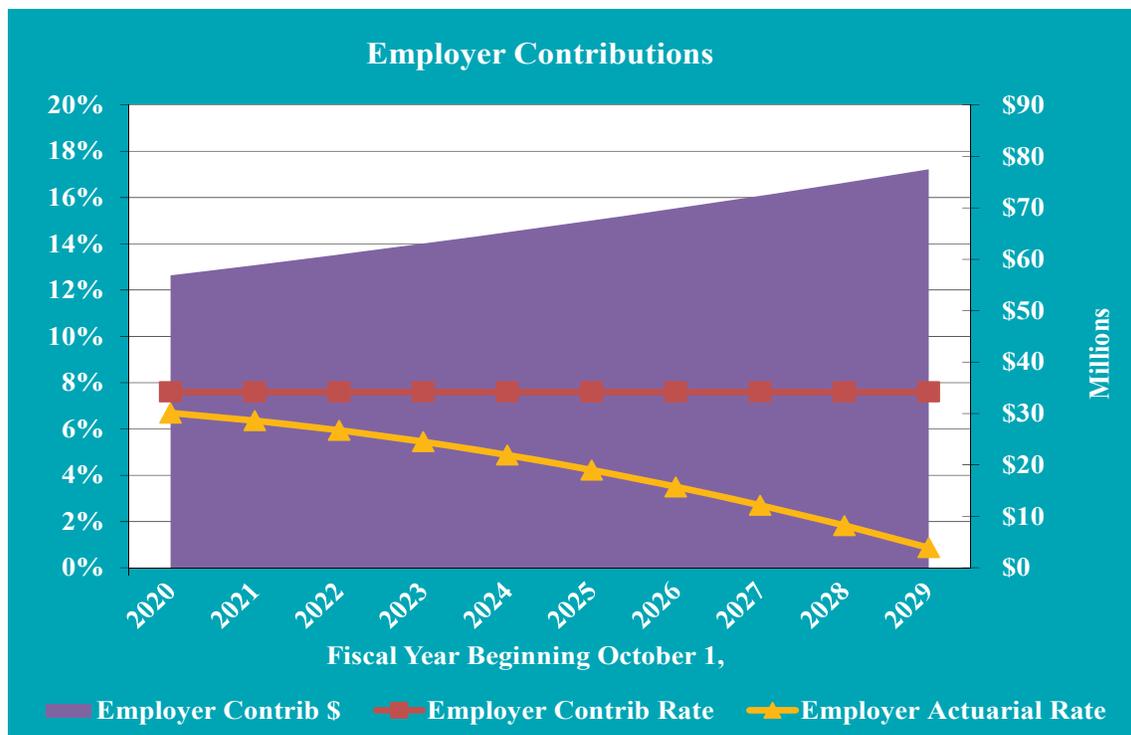
Assessment of Future Risks

The fundamental risk to the Plan is that contributions will not adequately fund plan benefits. In assessing this risk, we performed stress tests on the Plan’s funded status and contribution level assuming varying returns in the future which over the entire projection period average the long-term assumed investment return of 7.5%. Detail on this baseline projection is provided in Section I – Summary – *Future Outlook*.

It is very important to note that the baseline projections, while valid as an illustration of the Plan’s sensitivity to future investment returns, **will not occur** as experience never conforms exactly to assumptions from year to year. As a demonstration of this, the following projections vary returns in the future. We show assumed investment returns of 9.5% per year (2% more than assumed) or 5.5% per year (2% less than assumed), as well as varying returns over a period of time under both a bull market and a bear market scenario.

Projection with Asset Returns of 9.50%

The next two charts show what the coming decade would look like with a 9.50% annual return in lieu of the 7.50% assumption, and employer contributions of 7.60% and employee contributions of 2.00% of payroll each year.



As one may expect, the higher 9.50% annual investment return results in a more rapid decrease in the actuarial rate than a similar projection shown assuming 7.50% annual investment returns.

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION II – DISCLOSURES RELATED TO RISK

The Plan’s funded status, with these assumed investment returns of 9.50% per year, is projected to steadily increase to 122% by the end of the period instead of 107% if investment returns were 7.50% per year.

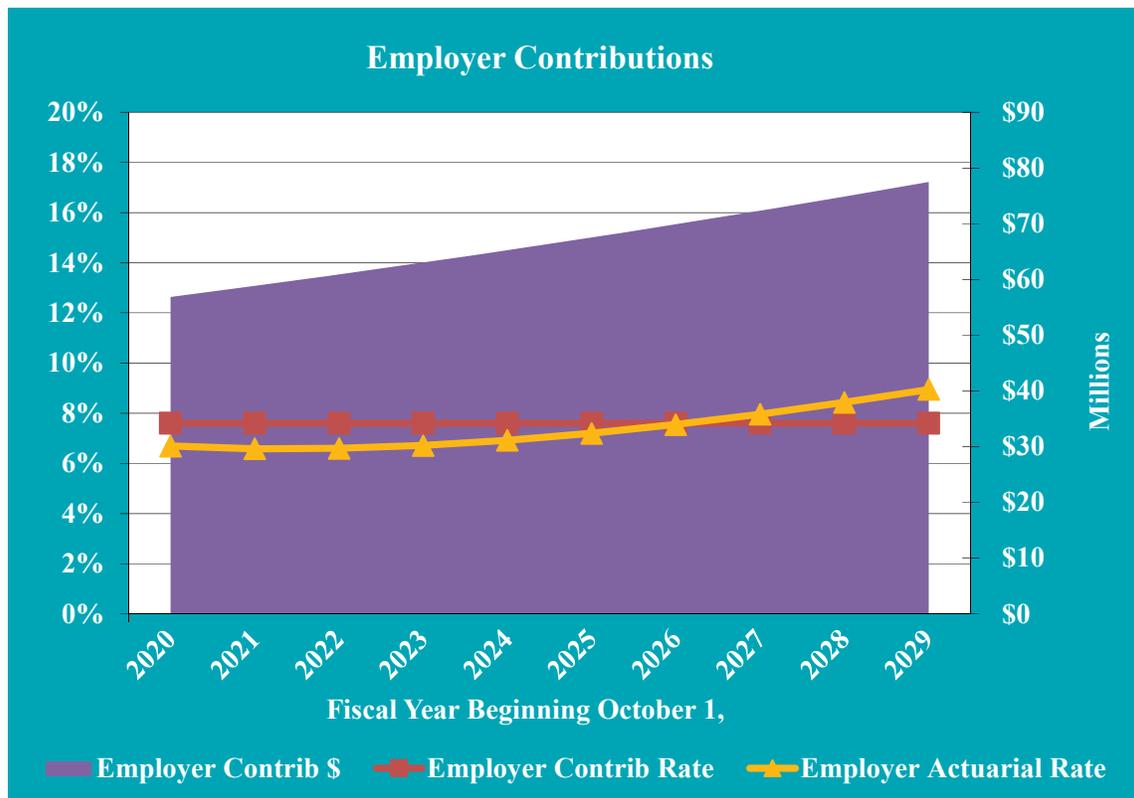


**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION II – DISCLOSURES RELATED TO RISK

Projection with Asset Returns of 5.50%

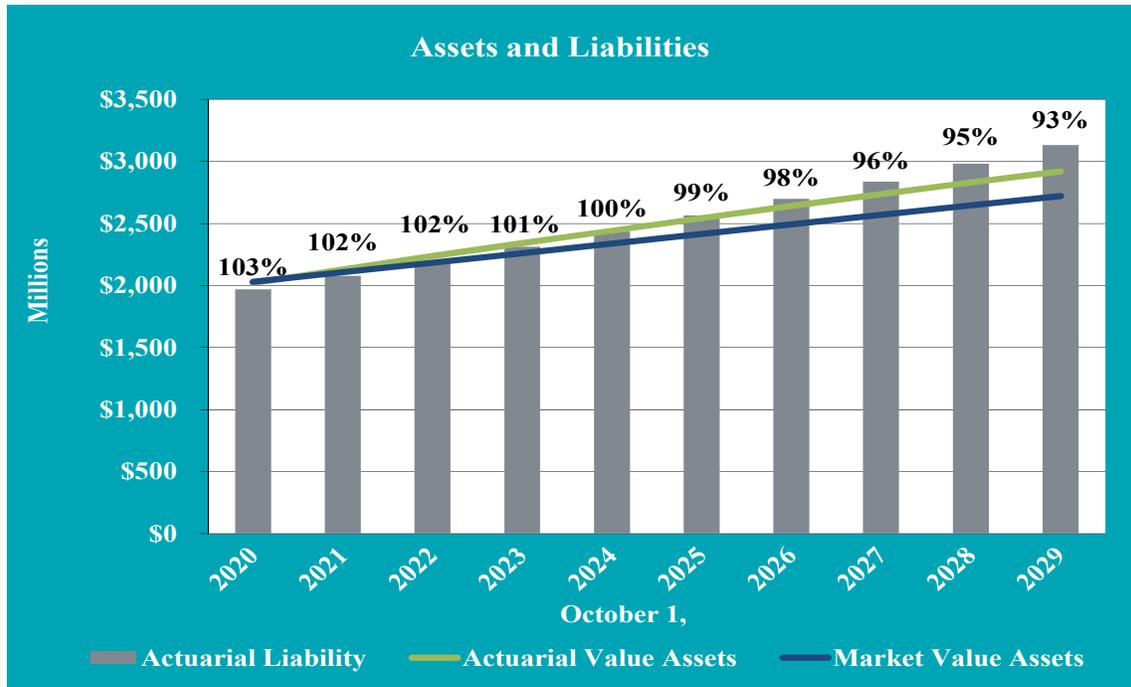
The next two charts show what the coming decade would look like with a 5.50% annual return in lieu of 7.50% assumption. Under this scenario, the current employer contribution rate of 7.60% and the employee contribution rate of 2.00% would not be sufficient to maintain or improve the funded status of the Plan through the end of the 10-year period. The unfavorable investment returns result in the actuarial rate being higher than the actual rate being contributed by the end of the period.



**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION II – DISCLOSURES RELATED TO RISK

The Plan’s funded status, with the assumed investment returns of 5.50% per year, is projected to drop from the current level of 103% down to 93% by the end of the projection period unless contributions are increased or benefits are adjusted.



Sample Investment Returns

It is very important to note that the baseline projections, the 9.5% projections, and the 5.5% projections, while valid as an illustration of the fund’s sensitivity to future investment returns, **will not occur** as experience never conforms exactly to assumptions from year to year. To show how the timing of investment returns affects the Plan, we present the following additional stress testing projections based on assuming varying returns over the future period shown.

The next two charts show what the coming decade would look like if the Plan’s investment returns for the next ten years were to mirror two different periods in history – one period associated with a bull market and the other reflecting a bear market. The first chart assumes 2020 – 2029 follows the period from 1950 – 1959 (a bull market), while the second chart follows the period from 2000 – 2009 (a bear market). The investment returns for the two periods are shown and an average 12.4% and 2.9% respectively.

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

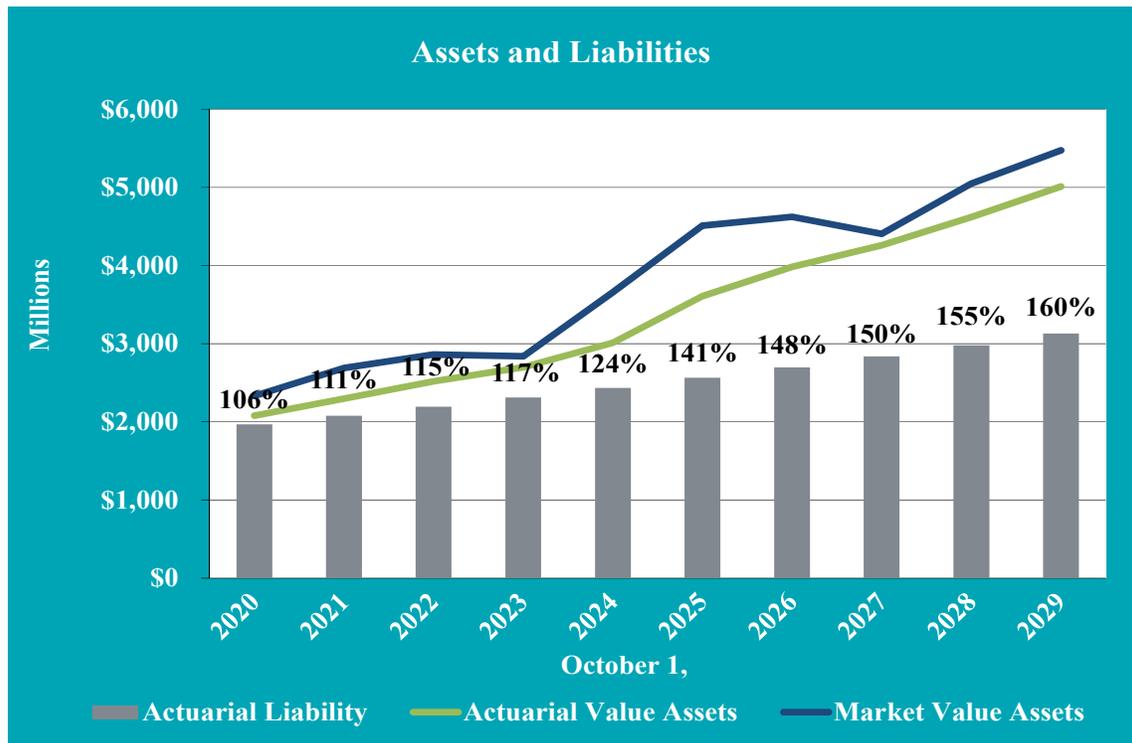
SECTION II – DISCLOSURES RELATED TO RISK

Assuming Investment Returns for Next 10 Years Follows 1950 – 1959 (Bull Market)

The chart below demonstrates how the funded status could change if investment returns were to mirror 1950 – 1959 based on a portfolio invested 60% in equities and 40% in fixed income. This period was chosen since it represents a period of a bull market. The returns during this period would be as follows:

PYE 9/30	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
As If	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Return	21.1%	16.9%	7.8%	0.7%	30.8%	24.7%	3.7%	-3.5%	16.2%	9.8%

Under this scenario, the favorable investment returns and the continued employer contribution rate of 7.60% would result in the Plan’s projected funded status increasing to 160% by the end of the period shown.



**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

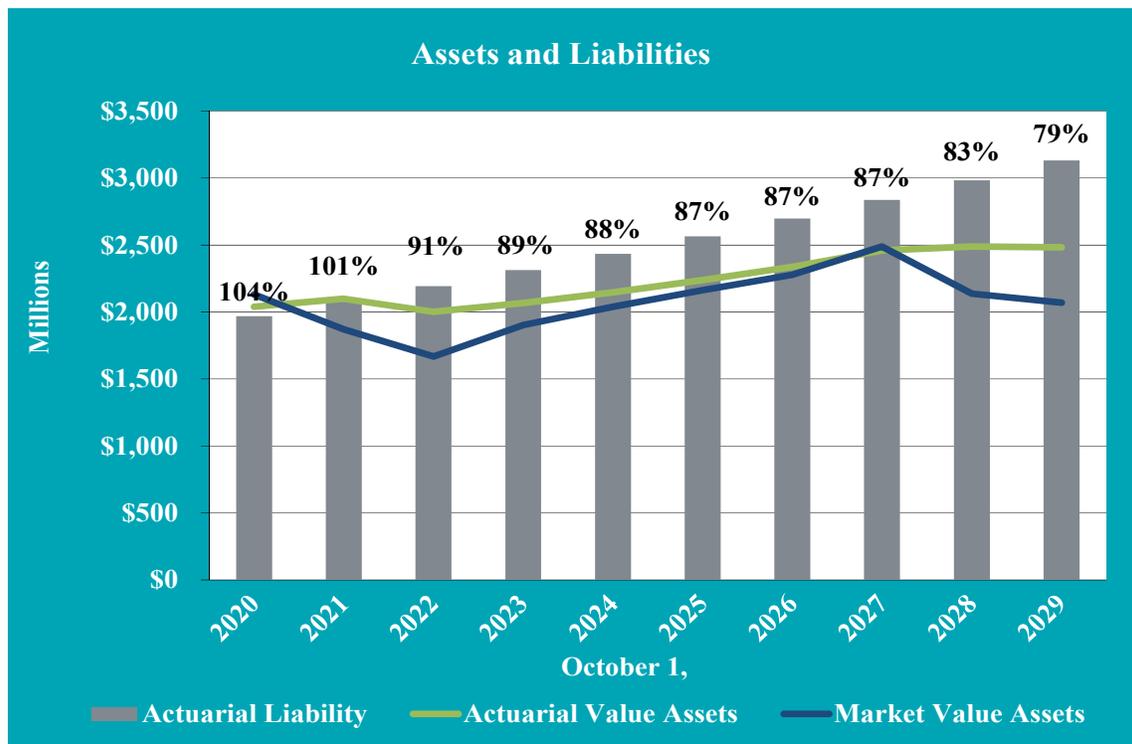
SECTION II – DISCLOSURES RELATED TO RISK

Assuming Investment Returns for Next 10 Years Follows 2000 – 2009 (Bear Market)

The chart below demonstrates how the funded status could change if investment returns were to mirror 2000 - 2009 based on a portfolio invested 60% in equities and 40% in fixed income. This period was chosen since it represents a period of a bear market. The returns during this period would be as follows:

PYE 9/30	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
As If	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Return	10.8%	-10.8%	-8.8%	16.8%	9.8%	8.5%	7.9%	11.9%	-11.7%	0.1%

Under this scenario, the unfavorable investment returns along with the continued employer contribution rate of 7.60% would result in the Plan’s projected funded status decreasing to 79% by the end of the period shown.



**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
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SECTION II – DISCLOSURES RELATED TO RISK

The Plan, by order of the Commanding General, may increase the employee contribution rate of 2.0% if the funded status is projected to fall below 90% within the following 20 years. If the employee contribution were to increase, the employer contribution would increase as well. This bear market scenario projects the funded status to fall below the 90% threshold. Since these projections are provided for illustrative purposes only, we have assumed that the employee and employer contribution rates remain at 2.0% and 7.60%, respectively. However, if the Commanding General were to order contribution rate increases in this scenario, the funded percentage would be higher than shown above.

To reiterate, the two previous scenarios illustrate not only the importance of the investment returns themselves but also the timing of the returns over the period.

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION III – STATUTORY VALUATION EXHIBITS

Exhibit III-1

Development of Actuarial Value of Assets

1. Actuarial Value of Assets as of October 1, 2018	\$ 1,767,621,370
2. Amount in (1) with interest of 7.5% to September 30, 2019	1,900,192,973
3. Employer and Employee Contributions for Plan Year ended September 30, 2019	74,627,561
4. Interest on Contributions assuming payments made uniformly throughout the year to September 30, 2019	2,747,941
5. Disbursements from Trust except investment expenses, October 1, 2018 through September 30, 2019	83,047,549
6. Interest on disbursements made uniformly throughout the year to September 30, 2019 at 7.50% per year	<u>3,057,982</u>
7. Expected Actuarial Value of Assets as of September 30, 2019 = (2) + (3) + (4) - (5) - (6)	\$ 1,891,462,944
8. Actual Market Value of Assets at September 30, 2019	\$ 1,952,211,628
9. Excess of (8) over (7)	\$ 60,748,684
10. Pro-forma Actuarial Value of Assets at September 30, 2019 = (7) + 20% of (9)	\$ 1,903,612,681
11. Maximum value = 1.20 x (8)	\$ 2,342,653,954
12. Minimum value = 0.80 x (8)	\$ 1,561,769,302
13. Actuarial Value of Assets as of September 30, 2019 = (10), but not more than (11) nor less than (12)	\$ 1,903,612,681

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION III – STATUTORY VALUATION EXHIBITS

Exhibit III-2 Employer Actuarial Rate	
1. Actuarial Liability	\$ 1,860,942,885
2. Actuarial Value of Assets	<u>1,903,612,681</u>
3. Unfunded Actuarial Liability [(1) - (2)]	\$ (42,669,796)
4. Normal Cost plus Administrative Expenses	65,057,630
5. 15-Year Amortization of Unfunded Actuarial Liability	(4,496,691)
6. Estimated Employee Contribution	14,457,215
7. Interest on (4) and (5) for Half Year *	<u>2,229,979</u>
8. Net Employer Actuarial Contribution: (4) + (5) - (6) + (7)	\$ 48,333,703
9. Active Member Payroll	\$ 722,860,731
10. Employer Actuarial Rate as a Percentage of Active Member Payroll: (8) / (9)	6.69%

* Contributions are assumed to be made uniformly throughout the year.

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION III – STATUTORY VALUATION EXHIBITS

Exhibit III-3 Ten-Year Projection of Retirees					
Plan Year Ending 9/30	Current Retirees*	From Deferreds	From Actives	Total Retirees	Annual Benefits**
2020	8,752	446	561	9,759	\$ 96,704,472
2021	8,531	520	1,271	10,322	103,353,499
2022	8,304	608	1,892	10,804	110,035,637
2023	8,069	699	2,493	11,261	117,340,228
2024	7,829	797	3,048	11,674	124,741,326
2025	7,585	885	3,556	12,026	128,742,376
2026	7,336	982	3,965	12,283	136,719,905
2027	7,083	1,082	4,303	12,468	144,829,619
2028	6,825	1,190	4,579	12,594	152,902,312
2029	6,564	1,289	4,844	12,697	161,087,431

* Includes number of participants and their cost of living benefits to be paid from Ameritas Life Insurance Corporation.

** Assumes that the \$18.8 million in account balances for the 26,141 non-vested participants due a refund of their employee contributions are paid uniformly over next five years.

The projection above is based on the October 1, 2019 census data provided and does not reflect any employees expected to be hired after that date.

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION III – STATUTORY VALUATION EXHIBITS

Exhibit III-4 Summary of Census Data as of October 1, 2019		
<u>A. ACTIVE PARTICIPANTS</u>		
1.	Number	17,562
2.	Total Annual Valuation Payroll (as reported)	\$ 722,860,731
3.	Average Age	44.1
4.	Average Credited Service	8.2
5.	Average Annual Pay [2. ÷ 1.]	\$ 41,161
6.	Average Accumulated Employee Contributions with Interest	\$ 7,610
<u>B. INACTIVE PARTICIPANTS</u>		
7.	Terminated Vested Participants:	
a.	Number	3,689
b.	Total Monthly Benefit	\$ 1,059,186
c.	Average Monthly Benefit [7b. ÷ 7a.]	\$ 287
8.	Currently Retired Participants, Disableds and Beneficiaries:	
a.	Number	8,942
b.	Total Monthly Benefit	\$ 6,913,500
c.	Average Monthly Benefit [8b. ÷ 8a.]	\$ 773
9.	Participants receiving cost-of-living benefits from Ameritas Life Insurance Corporation:	
a.	Number	21
b.	Total Monthly Benefit	\$ 6,423
c.	Average Monthly Benefit [9b. ÷ 9a.]	\$ 306
10.	Non-Vested Participants due an Account Balance	
a.	Number	26,141
b.	Balance	\$ 18,814,892

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION III – STATUTORY VALUATION EXHIBITS

Exhibit III-5

Data Reconciliation from the Prior to the Current Valuation*

	<u>Active</u> <u>Participants</u>	<u>Vested</u> <u>Deferred</u> <u>Members</u>	<u>Disability</u> <u>Retirements</u>	<u>Retirees</u>	<u>Beneficiaries</u>	<u>Total</u>
October 1, 2018	17,336	3,532	164	7,465	1,052	29,549
New Hires	3,158	N/A	N/A	N/A	N/A	3,158
Terminated without a Vested Benefit or Died without a Survivor Benefit	(2,240)	(56)	(5)	(203)	(54)	(2,558)
Vested Termination	(378)	378	0	0	0	0
Died with a Survivor Benefit	(3)	(3)	(1)	(69)	76	0
Rehired Inactives	102	(97)	0	(5)	0	0
Disablements	(7)	(2)	10	(1)	0	0
Retirements	(406)	(99)	0	505	0	0
Inactives not in Valuation Data Last Year	<u>0</u>	<u>36</u>	<u>0</u>	<u>15</u>	<u>14</u>	<u>65</u>
October 1, 2019	17,562	3,689	168	7,707	1,088	30,214

* A reconciliation was not performed for non-vested participants due a refund of their account balance.

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Report for Plan Year Ending
September 30, 2019

Exhibit IV-1

General Information Sheet

1. Name of Plan: U.S. Army Nonappropriated Fund Employee Retirement Plan
2. Name and address of Plan Sponsor:

U.S. Army Community and Family Support Center
NAF Employee Benefits Office
P.O. Box 340309
Fort Sam Houston, Texas 78234
3. Name and phone number of Plan Administrator (or other responsible Plan official):

Anita Janssen
Chief, NAF Personnel Services Division
(210) 466-1620
4. Type of plan entity: Single-employer plan
5. Date plan established: January 1, 1966
6. Information on plan participants at the beginning of plan year:

Participant data was collected as of October 1, 2019

Active participants	17,562
Separated employees entitled to deferred benefits	3,689
Retired, disabled and beneficiaries	8,963
Former non-vested participants due an account balance	<u>26,141</u>
Total Participants	56,355
7. Type of plan: Defined benefit pension plan
8. Administrative cost: See Note 4.
9. During the current plan year, the Plan was not merged into nor consolidated with another plan nor were assets or liabilities transferred to another plan.
10. The Plan is funded through BGI U.S. Debt, John Hancock Mutual Life Insurance Co., Janus Midcap, Adams Street Partners, Inc. (formerly Brinson Partners, Inc.), Newfleet Mgmt., Ameritas (formerly Bankers Life of Nebraska), Baille Gifford EAFE, Wells Capital Management Small Cap, RREEF America REIT II, UBS - RESA, Artisan

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

International Value, Dodge & Cox International Stock Fund, Lazard Asset Mgmt., Angelo Gordon Core + Realty, UBS Trumbull TPG Value Fund, Prisma Hedge FOF, Blackstone Hedge, SSGA Real Assets Non-Lend Fund, SSGA S&P 500 Flagship, Harding Loevner, U.S. Army N.A.F. Retirement Trust (SSGA STIF), and Prudential Core Plus.

11. The October 1, 2019 valuation was performed based on active, retiree and vested terminated data as of October 1, 2019, which was provided to us.
12. The Projected Unit Credit actuarial cost method was used in completing Tables 1 and 2. A summary of the actuarial methods is attached.
13. Actuarial assumptions:

1. Economic:

- (1) Rate of return on plan investments: 7.5% per annum.
- (2) Ratio of salary expected at normal retirement age (62) to salary for a new entrant at:

	<u>Men</u>	<u>Women</u>
Age 25	6.35	6.35
Age 40	3.78	3.78
Age 55	1.86	1.86

- (3) Inflation Rate (in relation to plan provisions for post-retirement benefit adjustments): 3.0% per annum.

2. Decrements:

- (1) Basis of mortality assumptions:

RP-2000 Combined Mortality with generational mortality improvements using Scale AA for active, terminated vested, healthy annuitants, and beneficiaries.

RP-2000 Disabled Mortality with generational mortality improvements using Scale AA for disabled annuitants.

- (2) (a) Normal retirement age: 62 and 5 years of service.
- (b) Lowest age at which employee may voluntarily retire with full benefits: age 55 with 30 years of service or age 60 with 20 years of service.

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

- (3) Basis of withdrawal assumptions:
Table based on turnover adjusted to reflect the Plan's experience.

A summary of the assumptions and changes made since the prior report is attached.

14. A summary of the Plan provisions and changes made since the prior report is attached.

I declare that I have examined this report, including accompanying tables and statements, and to the best of my knowledge and belief it is true, correct, and complete.

Signature of Plan Administrator:

Anita Janssen
Chief, NAF Personnel Services Division

Date:

UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-2

Statement of Enrolled Actuary

This report has been prepared pursuant to P.L. 95-595 for the year ending September 30, 2019. To the best of my knowledge, the report is complete and accurate. It should be noted, however, that the asset information shown has not been audited by Cheiron, Inc. In addition, the liabilities shown in this report are from the United States Army Nonappropriated Retirement Plan Valuation Report as of October 1, 2019, as prepared by Cheiron, Inc. In my opinion, the actuarial assumptions appear to be individually reasonable related to the experience of the Plan and to reasonable expectations and represent my best estimate of anticipated experience under the Plan.

Signature:



Kevin Woodrich, FSA, MAAA, EA
Enrolled Actuary
#17-07086
Cheiron, Inc.
9115 Harris Corners Parkway, Suite 380
Charlotte, NC 28269

Date: February 10, 2020

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-3		
Statement of Net Assets Available for Benefits		
	<u>September 30, 2019</u>	<u>September 30, 2018</u>
<u>Assets</u>		
Investments and Deposit administration contracts		
John Hancock Mutual Life Insurance Co.	\$ 16,611,862	\$ 18,082,570
BGI U.S. Debt	69,869,724	63,322,522
Janus Midcap	123,842,050	111,294,994
Ameritas (Bankers Life of Nebraska)	42,427	46,463
Adams Street Partners (formerly Brinson)	246,530,500	216,974,232
Wells Capital Management Small Cap	106,265,700	117,946,582
RREEF America REIT II	51,936,013	48,730,096
UBS - RESA	56,420,680	57,125,746
Artisan International Value	112,929,395	111,210,821
Dodge & Cox Intl. Stock Fund	87,634,027	90,110,246
Angelo Gordon Core + Realty	10,957,496	9,114,956
UBS Trumbull TPG Value Fund	49,173,988	44,723,972
Prisma Hedge FOF	0	608,910
Blackstone Hedge	100,990,435	97,352,753
SSGA Real Assets Non-Lend Fund	0	43,299,682
SSGA S&P 500 Flagship	553,927,808	531,214,774
Harding Loevnier	41,864,775	41,490,670
Newfleet Mgmt	123,292	120,245
Bailie Gifford EAFE	70,544,020	71,561,213
Lazard Asset Mgmt	79,914,078	79,025,833
U.S. Army N.A.F. Ret. Trust (SSGA STIF)	44,365,941	2,510,907
Prudential Core Plus	99,859,110	89,108,450
Total Investments	\$ 1,923,803,321	\$ 1,844,976,637
Receivables		
Employer and employee contributions	\$ 3,701,176	\$ 4,392,754
Interest Receivable	64,275	68,063
Accounts Receivable	558,326	550,123
Total	\$ 4,323,777	\$ 5,010,940
Cash on deposit with U.S. Army Banking and Investment Fund	\$ 26,185,609	\$ 30,808,241
Total Assets	\$ 1,954,312,707	\$ 1,880,795,818
<u>Liabilities</u>		
Accounts payable and accrued liabilities	2,101,079	1,795,536
Net Assets Available for Benefits	\$ 1,952,211,628	\$ 1,879,000,282

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-4		
Statement of Changes in Net Assets Available for Benefits		
	Fiscal Year Ending <u>September 30, 2019</u>	Fiscal Year Ending <u>September 30, 2018</u>
1. Net assets available for benefits at beginning of Plan year	\$ 1,879,000,282	\$ 1,715,479,514
2. Investment Income:		
(a) Net appreciation (depreciation) in fair value of investments	\$ 46,997,929	\$ 140,545,481
(b) Interest	14,120,927	14,010,471
(c) Other income	31,432,961	25,986,208
(d) Less: Investment expenses	<u>10,920,483</u>	<u>11,021,224</u>
(e) Total	\$ 81,631,334	\$ 169,520,936
3. Contributions: (Note 5)		
(a) Employer	\$ 61,765,604	\$ 58,864,396
(b) Employee	<u>12,861,957</u>	<u>12,342,518</u>
(c) Total	\$ 74,627,561	\$ 71,206,914
4. Total additions (2) + (3)	\$ 156,258,895	\$ 240,727,850
5. Benefits paid directly to participants		
(a) Refunds	\$ 2,184,960	\$ 1,729,059
(b) Annuities	<u>79,625,877</u>	<u>74,357,463</u>
(c) Total	\$ 81,810,837	\$ 76,086,522
6. Administrative Expenses	\$ 1,236,712	\$ 1,120,560
7. Total deductions (5) + (6)	\$ 83,047,549	\$ 77,207,082
8. Net additions (deductions): (4) - (7)	\$ 73,211,346	\$ 163,520,768
9. Net assets available for benefits at end of Plan year: (1) + (8)	\$ 1,952,211,628	\$ 1,879,000,282

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-5		
Statement of Present Value of Accumulated Plan Benefits		
	<u>October 1, 2019</u>	<u>October 1, 2018</u>
<u>Present Value of Accumulated Plan Benefits</u>		
Vested Benefits		
Participants Currently Receiving Payment*	\$ 931,606,647	\$ 859,240,454
Other Participants	<u>698,832,534</u>	<u>664,329,232</u>
Total Vested Benefits	\$ 1,630,439,181	\$ 1,523,569,686
Non-vested Benefits	\$ 50,113,467	\$ 47,031,459
Total Present Value of Accumulated Plan Benefits	\$ 1,680,552,648	\$ 1,570,601,145
Interest Rate Used	7.5%	7.5%

* Includes remaining liability under the Plan for participants receiving benefits from Ameritas Life Insurance Corporation.

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-6		
Statement of Changes in Present Value of Accumulated Plan Benefits		
	<u>Fiscal Year Ending September 30, 2019</u>	<u>Fiscal Year Ending September 30, 2018</u>
1. Present Value of Accumulated Plan Benefits at beginning of Plan year	\$ 1,570,601,145	\$ 1,479,616,680
2. Increase (decrease) during the year attributable to:		
(a) Benefits accumulated and actuarial (gain) or loss	\$ 76,979,698	\$ 58,901,399
(b) Interest due to decrease in discount period	114,782,642	108,169,588
(c) Plan amendment(s)	0	0
(d) Changes in actuarial assumptions	0	0
(e) Benefit Payments	<u>(81,810,837)</u>	<u>(76,086,522)</u>
3. Net increase (decrease):	\$ 109,951,503	\$ 90,984,465
4. Present value of Accumulated Plan Benefits at end of Plan year	\$ 1,680,552,648	\$ 1,570,601,145

**UNITED STATES ARMY NONAPPROPRIATED FUND EMPLOYEE RETIREMENT PLAN
ACTUARIAL VALUATION AS OF OCTOBER 1, 2019**

SECTION IV – ANNUAL REPORT PRESCRIBED BY P.L. 95-595

Exhibit IV-7

Table 1

Actuarial Status Information

	<u>October 1, 2019</u>	<u>October 1, 2018</u>
1. Present Value of Future Benefits:		
(a) Annuitants now on roll *	\$ 931,606,647	\$ 859,240,454
(b) Separated employees	77,959,091	74,568,998
(c) Participants due an account balance	18,814,892	16,895,189
(d) Active participants	<u>1,458,940,396</u>	<u>1,391,459,809</u>
(e) Total	\$ 2,487,321,026	\$ 2,342,164,450
2. Less: Present Value of Future Normal Cost Contributions	<u>626,378,141</u>	<u>599,087,135</u>
3. Actuarial Liability [(1e) - (2)]	\$ 1,860,942,885	\$ 1,743,077,315
4. Less: Actuarial Value of Assets	<u>1,903,612,681</u>	<u>1,767,621,370</u>
5. Unfunded Actuarial Liability [(3) - (4)]	\$ (42,669,796)	\$ (24,544,055)
6. Normal cost as a percentage of covered payroll (mid-year) **		
(a) Employee	2.00%	2.00%
(b) Employer	<u>7.33%</u>	<u>7.38%</u>
(c) Total	9.33%	9.38%
7. Ratio of Assets in fund to Present Value of Future Benefits for Annuitants now on Roll		
(a) Line 1(a) plus accumulated employee contributions	\$ 1,065,261,475	\$ 986,263,272
(b) Actuarial Value of Assets divided by (a)	1.79	1.79
(c) Ratio in (b) last year	1.79	1.75
(d) Ratio in (b) two years ago	1.75	1.70

* Includes remaining liability under the Plan for participants receiving benefits from Ameritas Life Insurance Corporation.

** Includes assumed administrative expenses.

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Exhibit IV-8

Table 2A

**Comparison of Actuarial Funding with Actual Contributions
(in dollars)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Plan Year	Total Normal Cost*	40-Year Amortization of Unfunded Liability*	Total (Col. 2 plus Col. 3)	Actual Contributions To Plan From All Sources	Difference (Col. 5 less Col. 4)	Col. 5 divided by Col.4
2019-20	\$ 67,453,186	\$ (3,267,673)	\$ 64,185,513	N/A	N/A	N/A
2018-19	64,566,732	(1,879,595)	62,687,137	\$ 74,627,561	\$ 11,940,424	1.19
2017-18	62,150,810	1,520,910	63,671,720	71,206,914	7,535,194	1.12
2016-17	58,494,078	3,617,517	62,111,595	68,148,275	6,036,680	1.10
2015-16	57,667,269	4,905,747	62,573,016	66,534,445	3,961,429	1.06
2014-15	54,514,642	4,853,237	59,367,879	65,711,312	6,343,433	1.11
2013-14	53,673,556	7,215,422	60,888,978	62,325,623	1,436,645	1.02
2012-13	53,829,936	10,217,157	64,047,093	65,313,651	1,266,558	1.02
2011-12	54,141,214	10,635,437	64,776,651	59,846,992	(4,929,659)	0.92
2010-11	54,736,827	8,457,840	63,194,667	64,449,655	1,254,988	1.02
2009-10	50,902,344	6,495,113	57,397,457	59,150,588	1,753,131	1.03
2008-09	45,326,221	1,789,591	47,115,812	53,667,209	6,551,397	1.14
2007-08	40,733,684	(2,030,452)	38,703,232	47,032,806	8,329,574	1.22
2006-07	38,457,296	(711,664)	37,745,632	41,621,364	3,875,732	1.10
2005-06	35,387,224	(100,202)	35,287,022	39,596,220	4,309,198	1.12
2004-05	31,724,981	1,209,066	32,934,047	35,435,693	2,501,646	1.08
2003-04	27,016,602	(752,297)	26,264,305	30,115,404	3,851,099	1.15
2002-03	20,651,255	(971,529)	19,679,726	24,486,375	4,806,649	1.24
2001-02	19,120,495	(3,961,885)	15,158,610	22,674,448	7,515,838	1.50
2000-01	17,889,965	(6,198,677)	11,691,288	19,171,038	7,479,750	1.64

* Amounts as of mid-year. Beginning in 2005, \$1.4 million added as administrative expense assumption. Beginning in 2014, \$1.8 million added as administrative expense assumption.

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Exhibit IV-8 cont.
Table 2B

Comparison of Actuarial Funding with Actual Contributions
(as percentage of estimated active member payroll for the year)

(1)	(2)	(3)	(4)	(5)	(6)
Plan Year	Total Normal Cost*	40-Year Amortization of Unfunded Liability*	Total (Col. 2 plus Col. 3)	Actual Contributions To Plan From All Sources	Difference (Col. 5 less Col. 4)
2019-20	9.33%	(0.45%)	8.88%	N/A	N/A
2018-19	9.38	(0.27)	9.11	10.85%	1.74%
2017-18	9.40	0.23	9.63	10.77	1.14
2016-17	9.29	0.57	9.86	10.82	0.96
2015-16	9.17	0.78	9.95	10.58	0.63
2014-15	9.08	0.81	9.89	10.95	1.06
2013-14	8.97	1.21	10.18	10.42	0.24
2012-13	8.41	1.60	10.01	10.20	0.19
2011-12	8.52	1.67	10.19	9.41	(0.78)
2010-11	8.40	1.30	9.70	9.89	0.19
2009-10	8.42	1.07	9.49	9.78	0.29
2008-09	8.47	0.33	8.80	10.03	1.23
2007-08	8.60	(0.43)	8.17	9.93	1.76
2006-07	8.46	(0.16)	8.30	9.16	0.86
2005-06	8.52	(0.02)	8.50	9.54	1.04
2004-05	8.26	0.31	8.57	9.23	0.66
2003-04	8.37	(0.23)	8.14	9.33	1.19
2002-03	7.58	(0.36)	7.22	8.99	1.77
2001-02	8.04	(1.67)	6.37	9.53	3.16
2000-01	8.42	(2.92)	5.50	9.02	3.52

* Amounts as of mid-year. Beginning in 2005, \$1.4 million added as administrative expense assumption. Beginning in 2014, \$1.8 million added as administrative expense assumption.

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Exhibit IV-8 (continued)

Table 3-3a

Past and Projected Flow of Plan Assets

The Market Value of Assets and historical cash flows over the last fifteen years are shown in the Trends discussion of Section I – Summary and Section II – Disclosures Related to Risk.

The table on the next page projects the Plan's expected contributions (both employer and employee), benefit payments, and administrative expenses over the next ten years. The expected employer contributions assume that the employers will continue to contribute a fixed 7.60% of pay and do not reflect the amount based on the actuarially determined contribution rate. Expected employee contributions are assumed to remain at 2.0% of payroll. Expected benefit payments are projected for the closed group valued as of October 1, 2019. Projecting any further than ten years using a closed group would not yield reliable projections due to the omission of new hires. Administrative expenses are assumed to increase by 3.00% a year.

The projections reflect that all the assumptions, including an investment return of 7.50% per year and payroll growth of 3.50% per year, are realized. Future projections may differ significantly from the current valuation report presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions, changes in assumptions, and changes in plan provisions or applicable law.

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**Exhibit IV-9
Ten-Year Projection of Cash Flows**

Plan Year Ending 9/30	Market Value of Assets (BOY)	Estimated Employer Contributions at 7.6%	Estimated Employee Contributions at 2%	Estimated Benefit Payments*	Estimated Administrative Expenses	Market Value of Assets (EOY)
2020	\$ 1,952,211,628	\$ 54,937,416	\$ 14,457,215	\$ 96,704,472	\$ 1,800,000	\$ 2,068,445,775
2021	2,068,445,775	56,860,226	14,963,218	103,353,499	1,854,000	2,188,965,883
2022	2,188,965,883	58,850,334	15,486,931	110,035,637	1,909,620	2,314,145,528
2023	2,314,145,528	60,910,096	16,028,974	117,340,228	1,966,909	2,443,778,296
2024	2,443,778,296	63,041,949	16,589,988	124,741,326	2,025,916	2,578,190,744
2025	2,578,190,744	65,248,417	17,170,638	128,742,376	2,086,693	2,721,362,479
2026	2,721,362,479	67,532,112	17,771,610	136,719,905	2,149,294	2,869,926,796
2027	2,869,926,796	69,895,736	18,393,616	144,829,619	2,213,773	3,024,253,820
2028	3,024,253,820	72,342,087	19,037,393	152,902,312	2,280,186	3,184,920,479
2029	3,184,920,479	74,874,060	19,703,702	161,087,431	2,348,592	3,352,395,750

* Assumes that the \$18.8 million in account balances for the 26,141 non-vested participants due a refund of their employee contributions are paid uniformly over next five years.

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Exhibit IV-9

NOTE 1 – VALUATION OF INVESTMENTS

Investments are stated at market value. The Plan's deposits with insurance carriers are valued at contract value. Contract value represents contributions made under the contract, plus interest income, plus realized security gains net of losses, plus unrealized security gains net of losses, less transfers of funds back to the U.S. Army Central Retirement Fund (ACRF), less funds used to meet ACRF obligations, less administrative expenses.

NOTE 2 – CONTRACTS WITH INSURANCE COMPANIES AND INVESTMENT MANAGEMENT AGREEMENT

The Plan has deposit administration contracts with two insurance companies as described below:

(a) *John Hancock Mutual Life Insurance Company*

The John Hancock Mutual Life Insurance Company (John Hancock) serves as the paying service for all participants receiving benefits since the termination agreement with Ameritas (formerly Bankers Life of Nebraska).

John Hancock also administered funds totaling \$16,611,862 under the following contract at September 30, 2019.

Type: General account (primarily long-term bonds)

Yield: Based upon overall fund performance

Term: Cancellable at any time

Amount: \$16,611,862 at September 30, 2019

(b) *Ameritas (Formerly Bankers Life of Nebraska)*

On March 1, 1983, the Plan terminated its deposit administration contract with Ameritas. Under the terms of the termination agreement, Ameritas paid the Plan \$5,179,098 on September 1, 1987.

The Plan's only future obligation with respect to Ameritas is to pay the annual cost-of-living adjustments for the retirees for whom annuity contracts were purchased in 1983 when the agreement with Ameritas was terminated. The amount held on deposit with Ameritas at September 30, 2019, was \$42,427.

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Investment Management Agreement

The Plan also has investment management agreements with various companies. The agreements provide that the companies have sole responsibility for investing the funds under their management within certain pre-described guidelines, and those earnings on the funds are based solely on the performance of the investments with a performance goal expressed as a total rate of return as defined in the agreement. The fair value of investments under management agreements at September 30, 2019 was:

BGI U.S. Debt	\$ 69,869,724
Janus Midcap	123,842,050
Adams Street Partners, Inc. (formerly Brinson Partners, Inc.)	246,530,500
Wells Capital Management Small Cap	106,265,700
RREEF America REIT II	51,936,013
UBS - RESA	56,420,680
Artisan International Value	112,929,395
Dodge & Cox Intl. Stock Fund	87,634,027
Angelo Gordon Core + Realty	10,957,496
UBS Trumbull TPG Value Fund	49,173,988
Blackstone Hedge	100,990,435
SSGA S&P 500 Flagship	553,927,808
Harding Loevnier	41,864,775
Newfleet Mgmt.	123,292
Baillie Gifford EAFE	70,544,020
Lazard Asset Mgmt.	79,914,078
U.S. Army N.A.F. Ret. Trust (SSGA STIF)	44,365,941
Prudential Core Plus	99,859,110

NOTE 3 – CASH WITH ARMY BANKING AND INVESTMENT FUND

The Plan had \$26,185,609 invested in the United States Army Banking and Investment Fund (ABIF) at September 30, 2019. The ABIF acts as a pooling agent for all Army Nonappropriated activities and invests principally in U.S. Treasury securities, U.S. government agency securities, and certificates of deposit. The rate of interest paid to depositors is determined periodically by ABIF management.

NOTE 4 – RELATED PARTY TRANSACTION

Appropriated funds of the United States Army provide certain general administrative support, including office space, communication, and certain supplies to the U.S. Army Command which administers the Plan. The value of some of these contributed series and supplies is not currently available and thus, is not reflected in the accompanying financial statements.

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The Plan, the United States Army Medical/Life Fund (AMLF), and the 401(k) plan share common offices and administrative personnel. Common expenses are paid by the Plan and the AMLF and 401(k) plan allocated portions are reimbursed to the Plan. The balance due to the Retirement Plan as of September 30, 2019, for expenses allocated to the Army Medical/Life Fund and the 401(k) Saving Plan is \$910,491 and \$336,760, respectively.

The NAF Financial Services deducted employer and employee contributions from the various payroll cycles and remitted the funds to the Plan at a cost of \$1,287 in the year ended September 30, 2019. The accounting charges for the NAF Financial Services totaled \$15,187.

NOTE 5 – CONTRIBUTIONS

As a condition of participation, employees are required to contribute 2% of their salary to the Plan. Prior to January 1, 1991, employees were required to contribute 3% of their salary.

Effective January 1, 2001, new hires, rehires, and newly eligible employees may elect to stop contributing to the Plan after six months. The employee's past contribution will be refunded upon termination only if the employee elects a refund in lieu of future retirement benefits when vested.

Although they have not expressed any intention to do so, the United States Army Nonappropriated Fund has the right under the Plan to discontinue their contributions at any time and to terminate the Plan.

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Summary of Methods and Assumptions as of October 1, 2019

A. Actuarial Methods

Exhibit IV-10

1. Calculation of Normal Cost and Actuarial Liability: The actuarial method used to determine the Normal Cost and Actuarial Liability was the Projected Unit Credit actuarial cost method described below.

Projected Unit Credit Actuarial Cost Method

The objective under this method is to allocate the total pension benefit to which each participant is expected to become entitled at retirement to the participant's past and future service. The allocation is accomplished by applying the Plan's accrual formula to the projected final salary at retirement.

An Actuarial Liability is calculated at the valuation date as the Present Value of Benefits allocated to service prior to that date.

The Unfunded Actuarial Liability at the valuation date is the excess of the Actuarial Liability over the Actuarial Value of Assets of the Plan.

The Normal Cost is the present value of those benefits which are expected to be allocated to service during the year beginning on the valuation date.

Under this method, differences between the actual experience and that assumed in the determination of costs and liabilities will emerge as adjustments in the Unfunded Actuarial Liability, subject to amortization.

2. Calculation of Actuarial Value of Assets: Market Value of Assets is the amount certified by outside auditors as available net assets. This includes funds on deposit with insurance companies, funds on deposit with the U.S. Army Banking and Investment Fund, cash and accrued items.

As of October 1, 1997, the Actuarial Value of Assets was set equal to the Market Value of Assets. For each subsequent year, the Actuarial Value of Assets is calculated as follows:

(a) The prior year's Actuarial Value of Assets is

- Increased by actual contributions, interest at the assumed rate of return on prior year's actuarial value of assets for a full year and interest at an assumed rate of return on contributions for one-half year.

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- Decreased by actual benefit payments, administrative expenses and other payments and interest at the assumed rate of return on these payments for one-half year.
 - (b) The amount from (a) above is the expected value.
 - (c) 20% of the difference between Market Value and expected value is added to “expected” value.
 - (d) The result from (c) is the Actuarial Value of Assets adjusted, if necessary, to be not less than 20% below and not more than 20% above the Market Value of Assets.
3. Calculation of the Employer Actuarial Contribution Rate: The method for determining the employer actuarial contribution rate is as follows:
- (a) The Normal Cost as described on the previous page plus assumed administrative expenses; *plus*
 - (b) A level dollar amount such that the Unfunded Actuarial Liability would be paid off in 15 years; *less*
 - (c) Estimated employee contributions of 2% of payroll.

The amount calculated is adjusted with interest to the middle of the year and then divided by valuation earnings to convert to a percent of pay.

The Unfunded Actuarial Liability is calculated based upon a 15-year level dollar rolling amortization. This rate should not necessarily be construed as a recommended contribution level as this will not fully amortize the unfunded actuarial liability.

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Summary of Methods and Assumptions as of October 1, 2019

B. Actuarial Assumptions

Exhibit IV-10 (continued)

Rationale for Economic and Demographic Assumptions

Assumptions were adopted by the Board on the basis of the recommendations made by Cheiron as a result of an experience study covering the period October 1, 2008 through September 30, 2013, and presented in September 2014. This presentation is incorporated by reference as the rationale to the demographic assumptions. The demographic assumptions analyzed were termination, retirement, disability, mortality, and merit/longevity salary increases.

1. Investment Return: 7.5%, net of investment expenses

At the time of the last experience study, the Plan's investment manager expected a 10-year annual return of 7.4% based on the current asset allocation. This includes an underlying inflation assumption of 2.25%. The difference, referred to as the real rate of return, is equal to 4.95%. The Plan currently assumes an annual investment return of 7.5% with an inflation assumption of 3.0%. Therefore, the resulting assumed real rate of return of 4.5% is reasonable.

2. General Inflation: 3.0% (based on historical information and expectations for the future)
3. Annual Rate of General Wage Increase: 3.5%

The annual general wage increase of 3.5% consists of an inflation assumption of 3.0% and an additional 0.5% for productivity.

4. Annual Rate of Merit/Seniority Wage Increase (in addition to 2., applied multiplicatively):
See Rates in Exhibit A
5. Social Security Wage Base Increase: 3.5%

6. Mortality:

RP-2000 Combined Mortality with generational mortality improvements using Scale AA for actives, terminated vesteds, healthy annuitants, and beneficiaries.

RP-2000 Disabled Mortality with generational mortality improvements using Scale AA for disabled annuitants.

7. Termination: Rates set forth in Exhibit A.

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8. Disability: Rates from disability set forth in Exhibit B.

9. Retirement Age: See Exhibit B.

10. Form of payment and proportion of participants with eligible beneficiaries for survivor:

Participants are assumed to elect the Normal Benefit. 88% of participants are assumed to be married with wives three-years-younger than their husbands. For current in-pay participants, actual spouse date of birth is used if available as well as an actual form of payment elected.

11. Administrative Expenses:

\$1,800,000 assumed payable as of the middle of the year.

12. Noncontributing active participants:

Non-vested participants entitled to a refund of the employee contributions are included in the valuation and are assumed to be paid out within five years. Vested participants are assumed to remain in service but continue in a noncontributory status.

13. Covered payroll:

Gross annual earnings for the prior plan year ending on the valuation date, increased by the salary assumption to reflect estimated payroll for the year following the valuation date.

14. Maximum benefit:

The maximum benefit payable under IRC Section 415, effective at valuation date (\$225,000 for 2019 and \$230,000 for 2020) increased by 3.0% per year thereafter.

15. Maximum pensionable pay:

IRC Section 401(a)(17) limit effective at valuation date (\$280,000 for 2019 and \$285,000 for 2020) increased 3.0% per year thereafter.

16. Post-retirement cost-of-living adjustments: 3.0% per year.

17. Assumption for inactive participants due an account balance:

100% are assumed to still be due a refund of their account balances.

18. Changes since prior year: None

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Exhibit A

<u>Service</u>	<u>Merit/Seniority Wage Increase</u>	Termination	
		<i>Number of terminations per 1,000 members</i>	
		<u>Male</u>	<u>Female</u>
0	9.00%	250.0	300.0
1	8.00%	200.0	250.0
2	6.50%	150.0	200.0
3	5.25%	125.0	150.0
4	4.25%	125.0	135.0
5	3.50%	100.0	120.0
6	2.50%	75.0	90.8
7	2.25%	50.0	82.5
8	2.13%	50.0	75.0
9	1.99%	50.0	62.5
10	1.86%	50.0	50.0
11	1.72%	47.5	47.5
12	1.58%	45.0	45.0
13	1.45%	42.5	42.5
14	1.31%	40.0	40.0
15	1.17%	37.5	40.0
16	1.04%	35.0	40.0
17	0.90%	32.5	40.0
18	0.76%	30.0	40.0
19	0.63%	30.0	40.0
20	0.49%	30.0	40.0
21	0.35%	30.0	40.0
22	0.22%	30.0	40.0
23	0.08%	30.0	40.0
24	0.00%	30.0	40.0
25+	0.00%	30.0	40.0

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Exhibit B

Retirement Rates¹ <i>Number of retirements per 1,000 members</i>			Disability <i>Number of Disablements per 1,000 members (sample rates)</i>	
<u>Age</u>	<u>Reduced</u>	<u>Unreduced</u>	<u>Age</u>	<u>Rate</u>
50 - 51	50	N/A	<35	0.14
52 - 54	75	N/A	35	0.16
55	75	250	40	0.38
56 - 58	75	100	45	0.80
59	100	100	50	1.39
60	100	200	55	2.38
61	150	200	60	4.31
62-69	N/A	200	62+	0.00
70+	N/A	1,000		

100% of terminated vested participants are assumed to retire at age 62.

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SUMMARY OF PLAN PROVISION AS OF OCTOBER 1, 2019

Exhibit IV-11

1. Effective Date of Plan:

January 1, 1966. Most recent amendment and reinstatement as of January 1, 2014.

2. Employees Eligible for Participation:

All employees of covered U.S. Army-NAF activities working at least 20 hours per week are eligible to become Participants on their date of employment. Effective January 1, 2001, new hires, re-hires, and newly eligibles are required to participate in the Plan for the first six months. Employee contributions are required for participation.

3. Definitions:

- (a) Earnings: Gross annual compensation as reported on Form W-2, plus the Participant's pre-tax contributions to the Employer's 401(k) plan or for health benefits, capped by the \$285,000 limit as indexed under the Code.
- (b) Final Average Earnings: The average of the highest 36 consecutive months of Earnings.
- (c) Credited Service: All service including unused sick leave from the date of employment to retirement, death or termination, except that service on and after April 1, 1981, is counted only if the employee makes contributions to the Plan.
- (d) Covered Compensation: The amount specified in Table 1 of Attachment 1, as amended from time to time, of Internal Revenue Service Notice 89-70 for the Plan Year in which the Participant attains his Social Security Retirement Age.

4. Retirement Dates:

- (a) Normal Retirement Date: The first day of the month following the later of Participant's 62nd birthday and completion of 5 years of Credited Service.
- (b) Early Retirement Date: A Participant may retire on the first day of a month before age 62 provided:
 - (i) He has attained age 50 and has completed 20 years of Credited Service, or
 - (ii) He has attained age 52 and has completed 5 years of Credited Service, or
 - (iii) Attainment of age 50 and completion of 20 years of Credited Service on or after August 1, 1993 and prior to December 31, 1994, or on or after January 1, 1997, and is involuntarily separated from service or if the Employer shall have obtained a voluntary early retirement authority from the Assistant Secretary of the Army (Manpower and Reserve Affairs), or

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- (iv) Attainment of any age and completion of 25 years of Credited Service on or after August 1, 1993, and prior to December 31, 1994, or on or after January 1, 1997, and is involuntarily separated due to loss of position under a business-based action, per authority of the installation commander.
- (c) Disability Retirement Date: A Participant who becomes permanently disabled and unable to perform his duties may retire, provided that he:
 - (i) Has attained age 52 with 1 year of Credited Service or has completed 5 years of Credited Service if hired before January 1, 2009, or
 - (ii) Has completed 5 years of Credited Service if hired on or after January 1, 2009.
- (d) Deferred Retirement Date: A Participant may remain in employment beyond his Normal Retirement Date.

5. Pension Benefit at Normal Retirement:

- (a) Participants Eligible: All Participants who retire on their Normal Retirement Date.
- (b) Annual Benefit: The sum of (i), (ii), and (iii).
 - (i) 1.2% of Final Average Earnings plus 0.3% of Final Average Earnings in excess of Covered Compensation times Years of Credited Service not in excess of fifteen (15) years.
 - (ii) 1.6% of Final Average Earnings plus 0.3% of Final Average Earnings in excess of Covered Compensation times Years of Credited Service in excess of fifteen (15) years up to thirty (30) years.
 - (iii) 1.6% of Final Average Earnings times Years of Credited Service in excess of thirty (30) years.

But not less than the Participant's accrued benefit as of June 30, 1990 under the prior formula.

6. Pension Benefit at Early Retirement:

- (a) Participants Eligible: All Participants who retire on an Early Retirement Date.
- (b) Annual Benefit: Calculated as in item (5) based on Final Average Earnings and Credited Service at the time of early retirement, reduced by 4% for each year that early retirement precedes Normal Retirement Date. For retirement after attainment of age 55 and completion of 30 years of Credited Service, or after attainment of age 60 and completion of 20 years of Credited Service, no reduction in benefit is applicable.

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- (c) A Participant who retires on an Early Retirement Date shall receive an annual early retirement supplement payable until the Participant attains his Normal Retirement Date. This benefit continues to the surviving spouse if the participant elected a married form of payment and dies. The amount of the annual supplement shall be (i) \$192 or (ii) one-half percent (0.5%) of the Participant's Final Average Earnings whichever is less, times Years of Credited Service up to twenty-five (25) but shall not exceed \$4,800 per year. This annual supplement is increased by any Cost-of-Living Adjustments thereafter.
- (d) A Participant who retires on an Early Retirement Date as described in item 4(b)(iii) and (iv) above shall receive a benefit calculated as in item (5) based on Final Average Earning and Credited Service at the time of early retirement, reduced by 2% for each year that early retirement precedes age 55.

7. Pension Benefit at Disability Retirement:

- (a) Participants Eligible: All Participants who retire on a Disability Retirement Date.
- (b) Annual Benefit: The sum of (i) and (ii)
 - (i) 1.2% of Final Average Earnings times Years of Credited Service up to fifteen (15).
 - (ii) 1.6% of Final Average Earnings time Years of Credited Service in excess of fifteen (15).

The annual benefit shall not exceed 90% of Final Average Earnings when combined with Workers' Compensation.

8. Pension Benefit at Deferred Retirement:

- (a) Participants Eligible: All Participants who retire on a Deferred Retirement Date.
- (b) Annual Benefit: Calculated as in item (5) based on Final Average Earnings, Covered Compensation, and Credited Service at the time of actual retirement.

9. Vested Benefits:

- (a) Participants Eligible: All Participants who complete 5 years of Credited Service.
- (b) Annual Benefit: Calculated as in item (5) based on Final Average Earnings, covered Compensation, and Credited Service at the time of termination of employment if Participant does not elect to have his contributions with interest returned to him.

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10. Survivor Benefits:

- (a) Participants Eligible: Any Participant who was retired on account of disability or who completed 5 years of Credited Service, and at the time of death, either:
- (i) Was actively employed,
 - (ii) Was separated from active service entitled to a deferred benefit, but had not yet begun to receive retirement benefits, or
 - (iii) Retired under a disability benefit.

(b) Annual Benefit:

The eligible spouse survivor will receive the amount of benefit, including the early retirement supplement unreduced for early commencement that would have been paid had the Participant retired on the date of death and elected the normal form of payment for married participants.

If a Participant has retired on account of disability, his Spouse shall receive a benefit equal to the retirement benefit that would have been payable had the Participant retired at the time his disability commenced, and elected the normal form of payment for married participants.

11. Employee Contribution:

- (a) Annual Contribution: 2% of Earnings, which may be increased by 0.40% for the first year, and 0.25% each succeeding year, to a maximum rate of 3.40% if the actuarial value of the Trust assets is trending below 90% of the Trust liabilities. The trend is defined as twenty years from the date of the Actuary report.
- (b) Interest Credited: 3% per annum.
- (c) Benefit: Employees, or their beneficiaries if they are deceased, are eligible to receive a refund of their contributions plus interest in the form of a lump sum.

12. Forms of Benefit Payment:

- (a) Normal Form: Reduced 55% joint and survivor annuity for married participants; life annuity for single participants. (For single participants, the excess of the retired Participant's contributions with interest over the sum of benefits paid is returned at his death in a lump sum payment to the retired Participant's beneficiary or estate).

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13. Optional Forms: Actuarially Equivalent 5 or 10-years Certain and Continuous, Life Annuity, or a 100% Contingent Annuitant option.

14. Cost of Living Adjustments:

Effective April 1, 1987, benefits paid to pensioners and beneficiaries as of April 1, 1987 were increased 0.25% for each month from the later of benefit commencement date or April 1, 1985 through December 1, 1986. Pensioners' benefits were previously increased in 1981, 1983, and 1985.

Effective April 1, 1988, and each April 1 thereafter, each participant and beneficiary receiving retirement or survivor benefits from the Plan shall be entitled to have the benefit he or she is then receiving increased by the same percentage as the increase in the average Consumer Price Index – Urban Wage Earners and Clerical Workers (CPI-W) for the third quarter of the preceding year, or by four percent (4%), whichever is the lesser figure. For those years when the Consumer Price Index exceeds 4%, the Benefits Program Manager and the Trustees, upon review of the financial conditions of the Plan, may recommend to the Commander increases of more than 4%.

14. Changes in Plan Provisions since Prior Valuation:

None