Exhibit No.: _____
Issue(s): Rate of Return
Witness/Type of Exhibit: Burdette/Direct
Sponsoring Party: Public Counsel
Case Nos.: WR-2000-281 and SR-2000-282

DIRECT TESTIMONY

OF

MARK BURDETTE

Submitted on Behalf of
the Office of the Public Counsel

MISSOURI-AMERICAN WATER COMPANY

Case Nos. WR-2000-281 and SR-2000-282

April 3, 2000

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MISSOURI-AMERICAN WATER COMPANY

Case Nos. WR-2000-281 and SR-2000-282

April 3, 2000

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri-American Water Company's tariff sheets designed to Implement general rate increases for water And sewer service provided to customers In the Missouri area of the company.	)))))	Case Nos. WR-2000-281 and SR-2000-282

AFFIDAVIT OF MARK BURDETTE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Mark Burdette, of lawful age and being first duly sworn, deposes and states:

1. My name is Mark Burdette. I am the Public Utility Financial Analyst for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my direct testimony consisting of pages 1 through 40 and Schedules MB-1 through MB-11.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Mark Burdette

Subscribed and sworn to me this 3rd day of April, 2000.

Bonnie S. Howard, Notary Public

My Commission expires May 3, 2001.

DIRECT TESTIMONY

OF

MARK BURDETTE

MISSOURI AMERICAN WATER COMPANY

CASE NO. WR-2000-281 / SR-2000-282

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DIRECT TESTIMONY

OF

MARK BURDETTE

MISSOURI AMERICAN WATER COMPANY

CASE NO. WR-2000-281 / SR-2000-282

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Mark Burdette, P.O. Box 7800, Jefferson City, Missouri 65102-7800.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by the Office of the Public Counsel of the State of Missouri (OPC or Public Counsel) as a Public Utility Financial Analyst.

A. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

Q. I earned a Bachelor of Science in Electrical Engineering from the University of Iowa in May 1988. I earned a Master's in Business Administration with emphases in Finance and Investments from the University of Iowa Graduate School of Management in December 1994.

Q. PLEASE DESCRIBE YOUR CONTINUING EDUCATION.

A. I have attended various regulatory seminars presented by the Financial Research Institute, University of Missouri-Columbia and the National Association of State Utility Consumer Advocates. Also, I attended The Basics of Regulation: Practical Skills for a Changing Environment presented by the Center for Public Utilities, New Mexico State University.

Q. DO YOU HAVE ANY PROFESSIONAL AFFILIATIONS?

A. Yes. I am a member of the Society of Utility and Regulatory Financial Analysts (SURFA).

Q. DO YOU HOLD ANY PROFESSIONAL DESIGNATIONS?

A. Yes. I have been awarded the professional designation Certified Rate of Return Analyst (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is awarded based upon work experience and successful completion of a written examination.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION (MPSC OR THE COMMISSION)?

A. Yes.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. I will present a cost-of-capital analysis for the Missouri-American Water Company (Missouri-American, MAWC, the Company). I will recommend and testify to the capital structure, embedded costs of preferred stock and long-term debt, fair return on common equity, and weighted average cost of capital that should be allowed in this proceeding.

Q. HAVE YOU PREPARED SCHEDULES IN SUPPORT OF YOUR TESTIMONY?

A. Yes. I have prepared an analysis consisting of eleven Schedules that is attached to this testimony (MB-1 through MB-11). This analysis was prepared by me and is correct to the best of my knowledge and belief. Schedule MB-1 shows historical financial information for Missouri-American Water Company for the past 5 years as well as return on equity for American Water Works, Inc. for the past 5 years.

ANALYSIS

Q. IS MISSOURI-AMERICAN WATER COMPANY AN INDEPENDENT, PUBLICLY TRADED COMPANY?

A. No. Missouri-American Water Company is a wholly owned subsidiary of American Water Works, Inc. (AWK). MAWC does issue its own preferred stock and long-term debt. However, MAWC does not issue its own publicly traded common stock. American Water Works is the sole owner of MAWC common equity and receives all common equity dividend distributions by MAWC. The common stock of AWK is publicly traded and trades on the New York Stock Exchange under the ticker symbol AWK.

Q. WHAT IS THE CURRENT STATE OF THE WATER INDUSTRY IN THE UNITED STATES?

A. According to Value Line:

> Because of the high costs of maintaining and upgrading the nation's water-distribution systems, many smaller companies in the Water Utility Industry have welcomed merger overtures from the larger, better-financed water providers.
>
> A few foreign utility companies have begun purchasing their American counterparts in an effort to obtain cost efficiencies and geographic diversity. Accordingly, potential takeover targets have seen their share prices rise.
>
> Although Water Utility stocks are ranked to underperform the year-ahead market, many offer conservative investors attractive, risk-adjusted, total return potential. (Value Line Investment Survey, page 1400, February 4, 2000)

Q. HOW DOES THE MERGER ACTIVITY IN THE WATER INDUSTRY AFFECT YOUR FINANCIAL ANALYSIS?

A. A major impact is the diminished number of companies to draw from for a comparable group, especially relatively small, low-risk companies (like MAWC), because they have been merged into larger companies. For example, one of the comparable companies used by Company witness Walker, The Aquarion Company, was taken over by Kelda Group PLC in January and is therefore no longer available for use as a comparable. Even rumors

of a merger can greatly effect a company's stock price, essentially making that company's financial information tainted in terms of market-based analysis tools such as the discounted cash flow. For these reasons, my DCF comparable group consists of four companies.

I included an additional five companies in my capital asset pricing model (CAPM) analysis to provide a broader view of companies in the water industry.

Q. WHAT IS AMERICAN WATER WORKS' POSITION WITHIN THE WATER UTILITY INDUSTRY?

A. According to Value Line:

> BUSINESS: American Water Works is the largest investor-owned water utility in the U.S. Has 23 regulated subs. Serving 10 million people 23 states. Primary service areas: New England, Mid-Atlantic, Midwest, Southeast, and Calif., NJ and PA make up 50% of '98 water and sewer revs. (Value Line, February 4, 2000)

The water utility industry favors large, geographically diverse companies. AWK stands as a large (this country's largest), geographically diverse water utility holding company and is well situated in the industry in which it operates. American's acquisition activity has occurred in Missouri as well, most recently with the MPSC's approval of MAWC's acquisition of United Water Missouri (WM-2000-222).

Q. HOW DID YOU CALCULATE A FAIR RETURN ON COMMON EQUITY FOR MAWC?

A. I utilized the standard Discounted Cash Flow (DCF) methodology applied to AWK's common stock. However, AWK is a very large, geographically diverse water utility holding company - the stock does not represent MAWC only. Therefore, I also applied the standard DCF to the stocks of a group of publicly traded water utilities to gain further insight as to the appropriate return on common equity for MAWC. I substantiated the results of this analysis using a CAPM analysis on AWK, my group of comparison companies and an additional group of five companies.

SUMMARY OF FINDINGS

Q. PLEASE SUMMARIZE YOUR FINDINGS CONCERNING THE OVERALL COST OF CAPITAL FOR THE MISSOURI-AMERICAN WATER COMPANY.

A. MAWC should be allowed an overall return of 8.24% on its net original cost rate base. This return has been determined using MAWC's capital structure at 30 September 1999, a 9.92% cost of common equity, an 9.08% embedded cost of preferred stock and a 6.92% embedded cost of long-term debt. The capital structure and weighted average cost of capital are shown on Schedule MB-11.

CAPITAL STRUCTURE

Q. HOW IS MAWC CURRENTLY CAPITALIZED?

A. At 30 September 1999 (the test year date in this case), MAWC's capital structure consisted of 42.31% common equity, 2.41% preferred stock and 55.28% long-term debt. This capital structure was utilized for my calculation of overall rate of return (ROR) and is shown on Schedule MB-2.

Q. PLEASE SHOW THE CAPITAL STRUCTURE THAT YOU RECOMMEND.

A. I recommend the following capital structure be used in this proceeding:

	Percent
Common equity	42.31%
Preferred stock	2.41%
Long-term debt	55.28%

Q. IS THE CURRENT CAPITAL STRUCTURE CONSISTENT WITH HOW MAWC HAS BEEN CAPITALIZED IN THE PAST?

A. Generally, yes. MAWC's capital structure has been relatively steady over the past four years, varying from a low of approximately 39% to a high of approximately 42%. MAWC's historical capital structures are shown on Schedule MB-1.

Q. HOW DOES MAWC'S CURRENT CAPITAL STRUCTURE COMPARE WITH OTHER WATER UTILITIES?

A. MAWC generally has a lower common equity ratio than the comparison group, but a higher common equity ratio than AWK. MAWC's capital structure and common equity ratio generally are in line with other water utilities as represented by the Value Line industry-composite statistics for water utilities. According to Value Line Composite Statistics (pg. 1400, February 4, 2000), the common equity ratio for Water Utilities has averaged 40.6% for the years 1995 through 1999 (see Schedule MB-4). MAWC's common equity ratio averaged 41.1% from 1996 through 1999. The eleven Water Companies covered by C.A. Turner Utility Reports have an average common equity ratio of 47%.

Q. DO THE LEVELS OF COMMON EQUITY FOR MAWC AND THE COMPARISON GROUP IMPLY SIMILAR LEVELS OF RISK?

A. In terms of risk due to capital structure, AWK's and MAWC's level of common equity would imply lower risk than the group of comparison companies. Overall, I believe MAWC's own capital structure is in line with the water utility industry and is appropriate to use in this proceeding, without adjustments.

A comparison of various risk measures for AWK and the group of four comparison companies is shown on Schedule MB-3.

Q. COULD YOU DEFINE RISK?

A. Yes. Risk can be defined as the possibility that actual earnings from an asset or an investment may differ from expected earnings. The wider the range of possible earnings, the greater the risk associated with that asset or investment.

Q. DID YOU INCLUDE SHORT-TERM DEBT IN YOUR CAPITAL STRUCTURE FOR MAWC?

A. No, I did not. On average the level of construction work in progress (CWIP) exceeded the level of short-term debt for the test year. Therefore I did not include short-term debt.

EMBEDDED COST RATES

Q. WHAT IS THE APPROPRIATE EMBEDDED COST RATE FOR MAWC'S LONG-TERM DEBT?

A. The embedded cost rate is 6.92% for MAWC's long-term debt. Calculation of the embedded cost of long-term debt is shown on Schedule MB-5.

Q. WHAT IS THE APPROPRIATE EMBEDDED COST RATE FOR MAWC'S PREFERRED AND PREFERENCE STOCK?

A. The embedded cost rate is 9.08% for MAWC's preferred stock. Calculation of the embedded cost is shown on Schedule MB-6.

COST OF COMMON EQUITY

Q. WHAT IS YOUR RECOMMENDED COST OF COMMON EQUITY FOR MAWC?

A. MAWC should be allowed a return on common equity of 9.92%. This return on common equity was determined using the Discounted Cash Flow (DCF) method and is based on a dividend yield of 4.67% (Schedule MB-8), a sustainable growth rate of 5.00%, and an increase of 25 basis points (b.p.) in consideration of likely interest rate increases. I substantiated this recommendation with a CAPM analysis.

Q. PLEASE EXPLAIN IN DETAIL HOW YOU ARRIVED AT YOUR RECOMMENDED COST OF COMMON EQUITY FOR MAWC.

A. I relied primarily on a Discounted Cash Flow (DCF) analysis performed on the common stock of AWK and four other water utilities covered by Value Line to calculate a return on common equity (ROE) for MAWC.

Additionally, I checked the reasonableness of my calculated cost of common equity by calculating the Capital Asset Pricing Model (CAPM) cost of common equity (Schedule MB-10) for AWK and the four water utilities in my comparable group. Additionally, I performed the CAPM on five other water utilities covered by Value Line that were not included in my DCF analysis. My CAPM analysis provides very good support for my recommended cost of common equity.

DISCOUNTED CASH FLOW MODEL

Q. PLEASE DESCRIBE THE STANDARD DISCOUNTED CASH FLOW (DCF) MODEL YOU USED TO ARRIVE AT THE APPROPRIATE COST OF EQUITY CAPITAL.

A. The model is represented by the following equation:

$$k = D/P + g$$

where "k" is the cost of equity capital (i.e. investors' required return), "D/P" is the current dividend yield (dividend (D) divided by the stock price (P)) and "g" is the expected sustainable growth rate.

If future dividends are expected to grow at a constant rate (i.e., the constant growth assumption) and dividends, earnings and stock price are expected to increase in proportion to each other, the sum of the current dividend yield (D/P) and the expected growth rate (g) equals the required rate of return, or the cost of equity, to the firm. This form of the DCF model is commonly used in the regulatory arena and is known as the constant growth, or

Gordon, DCF model. The constant growth DCF model is based on the following assumptions:

1) A constant rate of growth,

2) The constant growth will continue for an infinite period,

3) The dividend payout ratio remains constant,

4) The discount rate must exceed the growth rate, and

5) The stock price grows proportionately to the growth rate.

Although all of these assumptions do not always hold in a technical sense, the relaxation of these assumptions does not make the model unreliable.

The DCF model is based on two basic financial principals. First; the current market price of any financial asset, including a share of stock, is equivalent to the value of all expected future cash flows associated with that asset discounted back to the present at the appropriate discount rate. The discount rate that equates anticipated future cash flows and the current market price is defined as the rate of return or the company's cost of equity capital.

Cash flows associated with owning a share of common stock can take two forms: selling the stock and dividends. Just as the current value of a share of stock is a function of future cash flows (dividends), the *future* price of the stock at any time is also a function of future dividends. When a share of stock is sold, what is given up is the right to receive all future dividends. Therefore, the DCF model, using expected future dividends as the cash flows, is appropriate regardless of how long the investor plans to hold the stock. Determination of a holding period and an associated terminal price is unnecessary. Brealey and Myers emphasize the irrelevance of investors' time horizons:

> How far out could we look? In principle the horizon period H could be infinitely distant. Common Stocks do not expire of old age. Barring such corporate hazards as bankruptcy or acquisition, they are immortal. As H

> approaches infinity, the present value of the terminal price ought to approach zero.... We can, therefore, forget about the terminal price entirely and express today's price as the present value of a perpetual stream of cash dividends. (Principles of Corporate Finance, Fourth Edition, page 52).

The other basic financial principle on which the DCF is grounded is the "time value of money." Investors view a dollar received today as being worth more than a dollar received in the future because a dollar today can immediately be invested. Therefore, future cash flows are discounted. The rate used by investors to discount future cash flows to the present is the discount rate or opportunity cost of capital.

GROWTH RATE

Q. TO WHAT DOES THE GROWTH COMPONENT OF THE DCF FORMULA REFER?

A. The growth rate variable, g, in the traditional DCF model is the dividend growth rate investors expect to continue into the *indefinite future* (i.e., the sustainable growth rate). This is not necessarily the same growth rate that a company or analysts expect over the next one year or even the next five years.

Q. HOW IS THE SUSTAINABLE GROWTH RATE DETERMINED?

A. Sustainable growth is determined by analyzing various historical and projected growth rates for the Company. These growth rates might be calculated from raw data or taken from financial resources such as Value Line Investment Survey. The growth rates analyzed can include historical and projected growth rates of, for example, earnings per share (EPS), dividends per share (DPS) and book value per share (BVPS). Analysts also consider retention growth (both historical and projected), which is a calculation of the level of earnings the company retains and does not pay out in dividends.

Q. PLEASE DESCRIBE RETENTION GROWTH IN MORE DETAIL.

A. It is important to recognize the fundamentals of long-term investor-expected growth when developing a sustainable growth rate. Retention growth and a company's dividend policy, including payout ratio, can be important when calculating a sustainable growth rate. Future dividends will be generated by future earnings and a primary source of growth in future earnings is the reinvestment of present earnings back into the firm (for example, investment in new infrastructure components and other rate base assets). This reinvestment of earnings also contributes to the growth in book value. Furthermore, it is the earned return on reinvested earnings and existing capital (i.e., book value) that ultimately determines the basic level of future cash flows. Therefore, as measured by retention growth, the future growth rate called for in the DCF formula is found by multiplying the future expected earned return on book equity (r) by the percentage of earnings expected to be retained in the business (b). This calculation, known as the "b*r" method, or retention growth rate, results in a valid sustainable growth rate which can be used in the Discounted Cash Flow formula. While the retention growth rate can be calculated using historic data on earnings retention and equity returns, this information is relevant only to the extent that it provides a meaningful basis for determining the future sustainable growth rate. Consequently, *projected* data on earnings retention and return on book equity are generally more representative of investors' expectations.

Q. CAN YOU PROVIDE AN EXAMPLE THAT ILLUSTRATES THE FUNDAMENTALS OF SUSTAINABLE GROWTH AS MEASURED BY RETENTION GROWTH?

A. Yes. To better understand the principles of retention growth, it is helpful to compare the growth in a utility's cash flows to the fundamental causes of growth in an individual's passbook account. For an individual who has $100 in a passbook account paying 5.0% interest, earnings will be $5 for the first year. If this individual leaves 100% of the

earnings in the passbook account (retention ratio equals 100%), the account balance at the end of the first year will be $105. Total earnings in the second year will be $5.25 ($105 x 5.0%), and the growth rate of the account in year two is 5.0% [100%(b) x 5%(r)]. On the other hand, if the individual withdraws $3 of the earnings from the first year and reinvests only $2 (retention ratio equals 40%) earnings in the second year will be only $5.10 ($102 x 5.0%), with growth equaling 2.0% [($102-$100)/$100 = 2.0% = 40%(b) x 5%(r)]. In both cases, the return, along with the level of earnings retained, dictate future earnings.

These exact principles regarding growth apply to a utility's common stock. When earnings are retained, they are available for additional investment and, as such, generate future growth. When earnings are distributed in the form of dividends, they are unavailable for reinvestment in those assets that would ultimately produce future growth. Either way, for both a utility's common stock or an individual's passbook account, the level of earnings retained, along with the rate of return, determine the level of sustainable growth.

Q. ARE THERE ANY OTHER FACTORS THAT INFLUENCE INVESTOR-EXPECTED SUSTAINABLE GROWTH?

A. Yes. Stock financing will cause investors to expect additional growth if a company is expected to issue new shares at a price above book value. The excess of market price over book value would benefit current shareholders, increasing their per share book equity. Therefore, if stock financing is expected at prices above book value, shareholders will expect their book value to increase, and that adds to the growth expectation stemming from earnings retention, or "b*r" growth. A more thorough explanation of "external" growth is included in Appendix (I). This external growth factor has been included in all historic and projected retention growth rate calculations for MAWC and the group of comparison utilities.

Q. ARE THERE OTHER GROWTH RATE PARAMETERS THAT ARE SOMETIMES USED BY ANALYSTS TO MEASURE GROWTH?

A. Yes. Other methods sometimes used as a proxy for determining the investor-expected sustainable growth rate utilized in the DCF model include: 1) *historical* growth rates, and 2) analysts' *projections* of expected growth rates. Three commonly employed historic growth parameters are: 1) earnings per share, 2) dividends per share, and 3) book value per share. Additionally, analysts' *projections* of future growth in earnings per share, dividends per share, and book value per share are sometimes used as an estimate of the sustainable growth rate.

As a matter of completeness, all of the above-mentioned techniques for measuring growth were utilized: historical growth in EPS, DPS, and BVPS, historical retention growth, projections of growth in EPS, DPS, and BVPS, and projected retention growth. My growth rate calculations are summarized on Schedule MB-7, page 1. Calculations for individual companies are shown on Schedule MB-7, pages 2-6.

Q. THE DCF GROWTH RATE IS THE SUSTAINABLE GROWTH RATE FOR DIVIDENDS PER SHARE. IS THE HISTORIC GROWTH RATE IN DIVIDENDS PER SHARE AN APPROPRIATE PROXY FOR THE SUSTAINABLE GROWTH RATE?

A. Not necessarily. The historic growth rate in dividends per share will tend to overstate (understate) the sustainable growth rate when the dividend payout ratio has increased (decreased) over the measurement period. For an extended discussion and illustration of this phenomenon, please see Appendix I.

DETERMINATION OF SUSTAINABLE GROWTH

Q. DID YOU RELY ON DATA FROM MAWC AND AWK ONLY TO ARRIVE AT A RECOMMENDATION OF SUSTAINABLE GROWTH?

A. No. Since MAWC is not a publicly traded stock, much of the data needed for a DCF calculation is not available. Therefore, I analyzed the group of water utilities covered by Value Line Investment Survey (Value Line) to provide some insight as to the reasonableness of a sustainable growth rate for MAWC. Value Line is readily available to the average investor and a recognized source of financial and investment information.

The following companies were included in the analysis: 1) American Water Works; 2) American States Water Company; 3) California Water Service Company; 4) E'town Corporation; 5) Philadelphia Suburban Corp. United Water Resources was excluded because it has Missouri jurisdictional operations and because it is currently in the process of selling its water operations.

Value Line also covers additional publicly traded water utilities, albeit in less detail. My comparable group includes all the water companies covered by Value Line that include forecasted financial information AND are not currently in the process of being taken over.

Four of the five companies I analyzed were also analyzed by Company witness Walker. I used American States; he did not. He used Aquarion, which was taken over in January, and he used United Water Resources, which has Missouri-jurisdictional operations and is involved in a sale of water operations.

Q. WHAT GROWTH RATE PARAMETERS HAVE YOU EXAMINED IN ORDER TO ESTABLISH INVESTOR-EXPECTED GROWTH FOR MAWC?

A. The following growth parameters have been reviewed for AWK and the group of four comparison water utilities: 1) my calculations of historic compound growth in earnings,

dividends, and book value based on data from Value Line; 2) average of five-year and ten-year historic growth in earnings, dividends, and book value; 3) projected growth rate in earnings, dividends, and book value; 4) historic retention growth rate; and, 5) projected retention growth rate.

Q. PLEASE EXPLAIN IN MORE DETAIL HOW THE HISTORIC GROWTH RATES OF EARNINGS, DIVIDENDS, AND BOOK VALUE WERE DETERMINED.

A. Historic rates of growth in earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS) were analyzed using two methods. First, compound growth rates were calculated for the five-year periods ending 1997, 1998 and 1999. These three five-year compound growth rates were then averaged and are labeled "Ave. Compound Gr." on line (16) of Schedule MB-7, pages 2-6.

The second measure of historic growth was taken from Value Line. I averaged Value Line's calculated 5-year and 10-year historical growth rates when both were available. If only one was available, I used that one. The historic rates of growth furnished by Value Line are included in this analysis because:

1) The Value Line growth rates are readily available for investor use;

2) The Value Line rates of growth reflect both a five-year and ten-year time frame; and

3) The Value Line rates are measured from an average of three base years to an average of three ending years, smoothing the results and limiting the impact of nonrecurring events.

Value Line historic growth measurements for EPS, DPS and BVPS appear on line (19) of Schedule MB-7, pages 2-6.

Q. PLEASE DISCUSS YOUR ANALYSIS OF PROJECTED GROWTH RATE DATA.

A. Projected growth rates in EPS, DPS, and BVPS were taken from Value Line and are found on line 30 of Schedule MB-7, pages 2-6. Projected growth in EPS was also taken from First Call Corporation (line 32) and Zack's Analyst Watch, Inc. (line 33). If First Call or Zack's did not issue a projection for a particular company, those spaces were left blank. Information from both First Call and Zack's is available to the average investor. The projected growth in EPS found on line 36 is the average of earnings growth projections furnished by Value Line, First Call and Zack's. Value Line's projected growth in dividends and book value are listed again on line 36.

Q. PLEASE DISCUSS YOUR ANALYSIS OF HISTORIC AND PROJECTED RETENTION GROWTH RATES.

A. Historic retention growth was determined using the product of return (r) and retention rate (b) for the years 1995-99, and the average was calculated (line 10, final column). The projected retention growth data, found on lines 25-27 of Schedule MB-7, pages 2-6 is based on information from Value Line. Projected retention growth was calculated for 2000 and the period 2002-04. An average of these growth rates was calculated and compared to the growth rate for the 2002-04 period alone. The *larger* value, either the average or the 2002-04 rate was utilized as the projected retention growth rate.

Investors' expectations regarding growth from external sources (i.e. sales of additional stock at prices above book value) has been included in the determination of both historic and projected growth.

Q. PLEASE SUMMARIZE YOUR GROWTH RATE CALCULATIONS FOR AWK AND THE GROUP OF COMPARISON COMPANIES.

A. The following table shows the results of the analysis of growth rates for AWK. The high growth rate is 10% and the low growth rate is 5%. The overall average of all growth rates is 7.19% (Schedule MB-7). Negative growth rates were **not** used in calculations of overall averages.

Growth rate summary (AWK): Overall average = 7.19%.

	EPS	DPS	BVPS
Historic Compound Growth	6.80%	9.90%	7.37%
Historic Value Line Growth	5.00%	10.0%	7.75%
Projected Growth	6.24%	7.00%	5.50%

	Historic	Projected
Retention Growth	7.29%	6.19%

The following table outlines the results of the analysis of growth rates for the comparison group of four companies. The high average growth rate is 6.61% and the low average growth rate is 2.00%. The overall average of all growth rates for all four comparison companies is 4.43% (Schedule MB-7). Negative growth rates were **not** used in calculations of overall averages.

Growth rate summary (comparison group): Overall average = 4.43%

	EPS	DPS	BVPS
Historic Compound Growth	6.61%	2.00%	4.41%
Historic Value Line Growth	4.50%	2.31%	4.00%
Projected Growth	5.86%	3.88%	6.25%

	Historic	Projected
Retention Growth	5.63%	4.87%

Q. WHICH GROWTH RATE DO YOU CONSIDER TO BE REFLECTIVE OF THE INVESTOR-EXPECTED GROWTH FOR MAWC?

A. I do not expect MAWC's future growth to match or exceed the overall growth of its parent company, American Water Works. MAWC on a stand-alone basis is not as geographically diverse nor can it expect growth due to acquisition as AWK has done and will be able to do in the future.

I believe the sustainable growth rate for MAWC to be approximately 5.0%. Appropriately, this number is lower than AWK's average historical and projected growth rate of 7.19%. Also, 5.0% is in the upper part of the range of growth rates that I calculated for the comparison companies. The overall average for all five comparison water utilities is 4.43%.

DIVIDEND YIELD

Q. WHAT IS THE APPROPRIATE DIVIDEND YIELD FOR MAWC?

A. I calculated a dividend yield of 4.67% for AWK, the parent of MAWC. I chose to use this dividend yield to calculate MAWC's cost of equity.

The dividend yields calculated for the comparison companies range from 3.17% to 4.60%, with an average of 3.96% (Schedule MB-8). I believe this average is somewhat low to use for MAWC.

Q. EXPLAIN YOUR CALCULATION OF THE DIVIDEND YIELD.

A. The appropriate dividend yield to use in the DCF equation is equal to the expected dividend divided by stock price. Schedule MB-8 shows average stock price over a recent six week period, expected dividends for 2000 (as taken from Value Line) and calculations of dividend yields for AWK and the group of comparison companies.

I used a six-week period for determining the average stock price because I believe that period of time is long enough to avoid daily fluctuations and recent enough so that the stock price captured is representative of current expectations. The stock price is the average of the Friday closing price from 2/4/00 through 3/10/00.

DCF COST OF EQUITY

Q. WHAT IS THE DCF COST-OF-EQUITY FOR MAWC BASED ON THE PREVIOUSLY DETERMINED DIVIDEND YIELD AND GROWTH RATE?

A. MAWC's DCF cost of common equity is 9.67%. This value is based on a DCF cost of common equity analysis of AWK and the four other water utilities covered by Value Line.

Q. DO YOU BELIEVE ANY ADJUSTMENTS ARE APPROPRIATE TO YOUR DCF COST OF EQUITY?

A. Yes. I made a 25 b.p. upward adjustment to my calculated cost of common equity for MAWC in consideration of likely interest rate increases in the future. My recommended cost of common equity is therefore 9.92% (9.67% + 0.25% = 9.92%).

CAPITAL ASSET PRICING MODEL

Q. PLEASE DESCRIBE THE CAPITAL ASSET PRICING MODEL YOU USED TO SUBSTANTIATE YOUR RECOMMENDED RETURN ON COMMON EQUITY.

A. The Capital Asset Pricing Model (CAPM) is described by the following equation:

$$K = Rf + beta(Rm - Rf)$$

where,

K= the cost of common equity for the security being analyzed,

Rf = the risk free rate,

beta = the company's beta risk measure,

Rm = market return, and

(Rm - Rf) = market premium.

The formula states that the cost of common equity is equal to the risk free rate of interest, plus, beta multiplied by the difference between the return on the market and the risk free rate (the market premium).

The formula says that the cost of common equity is equal to the risk free rate plus some proportion of the market premium - that proportion being equal to beta. The market overall has a beta of 1.0. Firms with beta less than 1.0 are assumed to be less risky than the market; firms with beta greater than 1.0 are assumed to be more risky than the market. Beta for my group of comparison companies ranges from 0.55 to 0.60. Beta for the group of five other Value Line companies ranges from 0.4 to 0.55. Water utilities are generally viewed as relatively safe investments, and this is reflected in beta values below 1.0.

Q. DO YOU SUBSCRIBE TO THE CAPM AS AN ACCURATE MEASURE OF MARKET-BASED COST OF EQUITY?

A. I believe the CAPM and its dependence on the single risk measure beta has limitations in its ability to accurately take into account the risk factors faced by a company, and therefore that company's cost of equity. I do not believe the CAPM should be used as the primary cost-of-capital analysis tool. However, some investors continue to rely on the CAPM. Therefore, I included the analysis as support for my DCF analysis.

Q. HOW DID YOU ARRIVE AT THE VALUES OF THE RISK FREE RATE AND THE MARKET RETURN (OR MARKET PREMIUM) USED IN YOUR ANALYSIS?

A. The risk free interest rate I used (6.16%) is the rate on 30-year U.S. Government securities on 3/16/00, as reported by Value Line. I used a market premium of 7.2% as calculated and reported by Ibbotson Associates.

Q. WHAT DOES YOUR CAPM ANALYSIS SHOW?

A. As can be seen on Schedule MB-10, I performed a CAPM analysis on AWK, my four comparison water utilities and five other water utilities covered by Value Line. I could not perform a CAPM on MAWC directly, as that company does not have an independent beta.

The CAPM cost of common equity for AWK is 10.48%. The average CAPM cost of common equity for DCF-comparison group is 10.12%, with a high of 10.48% and a low of 9.76%. The average CAPM cost of equity for the additional group is 9.62%, with a high of 10.12% and a low of 9.04%. The overall average CAPM costs of common equity for AWK and the two groups of companies is 9.90%. This value certainly provides support for my recommended 9.92% cost of equity for Missouri-American Water Company.

WEIGHTED AVERAGE COST OF CAPITAL

Q. WHAT OVERALL, OR WEIGHTED AVERAGE, COST OF CAPITAL IS INDICATED BY YOUR ANALYSIS?

A. The weighted average cost of capital I calculated for MAWC is 8.24%. This is based on a 9.92% ROE, 9.08% embedded cost of preferred stock, and a 6.92% embedded cost of long-term debt. The capital structure contains 42.31% common equity, 2.41% preferred stock and 55.28% long-term debt. The WACC calculation is shown on Schedule MB-11.

Q. WHAT PRE-TAX COVERAGE RATIO IS IMPLIED BY YOUR RECOMMENDATION?

A. Based on a WACC of 8.24%, the pre-tax coverage ratio is approximately 2.87 times. The derivation of pre-tax coverage is shown on Schedule MB-11. MAWC's Indenture of Mortgage requirement is coverage of at least 2.0.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

APPENDIX A

DEVELOPMENT & PURPOSES OF REGULATION

Q. WHY ARE PUBLIC UTILITIES REGULATED?

A. The nature of public utility services generally requires a monopolistic mode of operation. Only a limited number of companies (and quite often only one) are normally allowed to provide a particular utility service in a specific geographic area. Public utilities are often referred to as "natural" monopolies; a state created by such powerful economies of scale or scope that only one firm can or should provide a given service. Even when a utility is not a pure monopoly, it still has substantial market power over at least some of its customers.

In order to secure the benefits arising from monopolistic-type operations, utilities are generally awarded an exclusive franchise (or certificate of public convenience) by the appropriate governmental body. Since an exclusive franchise generally protects a firm from the effects of competition, it is critical that governmental control over the rates and services provided by public utilities is exercised. Consequently, a primary objective of utility regulation is to produce market results that closely approximate the conditions that would be obtained if utility rates were determined competitively. Based on this competitive standard, utility regulation must: 1) secure safe and adequate service; 2) establish rates sufficient to provide a utility with the opportunity to cover all reasonable costs, including a fair rate of return on the capital employed; and 3) restrict monopoly-type profits.

APPENDIX B
CALCULATION OF THE WEIGHTED AVERAGE COST OF CAPITAL

Q. PLEASE EXPLAIN HOW THE WEIGHTED AVERAGE COST OF CAPITAL IS USED IN TRADITIONAL RATEMAKING AND HOW IT IS DERIVED.

A. The basic standard of rate regulation is the revenue-requirement standard, often referred to as the rate base-rate of return standard. Simply stated, a regulated firm must be permitted to set rates that will cover operating costs and provide an opportunity to earn a reasonable rate of return on assets devoted to the business. A utility's total revenue requirement can be expressed as the following formula:

$$R = O + (V - D + A)r$$

where R = the total revenue required,

O = cost of operations,

V = the gross value of the property,

D = the accrued depreciation, and

A = other rate base items,

r = the allowed rate of return/weighted average cost of capital.

This formula indicates that the process of determining the total revenue requirement for a public utility involves three major steps. First, allowable operating costs must be ascertained. Second, the net depreciated value of the tangible and intangible property, or net investment in property, of the enterprise must be determined. This net value, or investment (V - D), along with other allowable items is referred to as the rate base. Finally, a "fair rate of return" or weighted average cost of capital (WACC) must be determined. This rate, expressed as a percentage, is multiplied by the rate base. The weighted average cost of capital (WACC) is applied to the rate base (V-D+A) since it is generally recognized the rate base is financed with the capital structure and these two items

are normally similar in size. The allowed rate of return, or WACC, is typically defined as follows:

$$r = i(D/C) + l(P/C) + k(E/C)$$

where i = embedded cost of debt capital,

D = amount of debt capital,

l = embedded cost of preferred stock,

P = amount of preferred stock,

k = cost of equity capital,

E = amount of equity capital, and

C = amount of total capital.

This formula indicates that the process of determining WACC involves separate determinations for each type of capital utilized by a utility. Under the weighted cost approach, a utility company's total invested capital is expressed as 100 percent and is divided into percentages that represent the capital secured by the issuance of long-term debt, preferred stock, common stock, and sometimes short-term debt. This division of total capital by reference to its major sources permits the analyst to compute separately the cost of both debt and equity capital. The cost rate of each component is weighted by the appropriate percentage that it bears to the overall capitalization. The sum of the weighted cost rates is equal to the overall or weighted average cost of capital and is used as the basis for the fair rate of return that is ultimately applied to rate base.

APPENDIX C
ECONOMIC PRINCIPLES OF REGULATION

Q. BRIEFLY DESCRIBE THE ECONOMIC RATIONALE FOR RATE BASE-RATE OF RETURN REGULATION.

A. Rate base-rate of return regulation is based, in part, on basic economic and financial theory that applies to both regulated and unregulated firms.

> Although it is well recognized that no form of economic regulation can ever be a perfect substitution for competition in determining market prices for goods and services, there is nearly unanimous acceptance of the principle that regulation should act as a substitute for competition in utility markets. (Parcell, The Cost of Capital Manual p.1-4).

It is the interaction of competitive markets forces that holds the prices an unregulated firm can charge for its products or services in line with the actual costs of production. In fact, competition between companies is generally viewed as the mechanism that allows consumers to not only purchase goods and services at prices consistent with the costs of production but also allows consumers to receive the highest quality product. Since regulated utilities are franchised monopolies generally immune to competitive market forces, a primary objective of utility regulation is to produce results that closely approximate the conditions that would exist if utility rates were determined in a competitive atmosphere.

Under basic financial theory, it is generally assumed the goal for all firms is the maximization of shareholder wealth. Additionally, capital budgeting theory indicates that, in order to achieve this goal, an unregulated firm should invest in any project which, given a certain level of risk, is expected to earn a rate of return at or above its weighted average cost of capital.

Competition, in conjunction with the wealth maximization goal, induces firms to increase investment as long as the expected rate of return on an investment is greater that

the cost of capital. Competitive equilibrium is achieved when the rate of return on the last investment project undertaken just equals the cost of capital. When competitive equilibrium is achieved, the price ultimately received for goods or services reflects the full costs of production. Therefore, not only does competition automatically drive unregulated firms to minimize their capital costs (investment opportunities are expanded and competitive position is enhanced when capital costs can be lowered), it also ensures that the marginal return on investment just equals the cost of capital.

Given that regulation is intended to emulate competition and that, under competition, the marginal return on investment should equal the cost of capital, it is crucial for regulators to set the authorized rate of return equal to the **actual** cost. If this is accomplished, the marginal return on prudent and necessary investment just equals cost and the forces of competition are effectively emulated.

APPENDIX D
LEGAL REQUIREMENT FOR A FAIR RATE OF RETURN

Q. IS THERE A JUDICIAL REQUIREMENT RELATED TO THE DETERMINATION OF THE APPROPRIATE RATE OF RETURN FOR A REGULATED UTILITY?

A. Yes. The criteria established by the U.S. Supreme Court closely parallels economic thinking on the determination of an appropriate rate of return under the cost of service approach to regulation. The judicial background to the regulatory process is largely contained in two seminal decisions handed down in 1923 and 1944. These decisions are,

Bluefield Water Works and Improvement
Company v. Public Service Commission,
262 U.S. 679 (1923), and

FPC v. Hope Natural Gas Co., 320 U.S., 591 (1944)

In the Bluefield Case, the Court states,

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally.

Together, Hope and Bluefield have established the following standards,

1). A utility is entitled to a return similar to that available to other enterprises with similar risks;

2). A utility is entitled to a return level reasonably sufficient to assure financial soundness and support existing credit, as well as raise new capital; and

3). A fair return can change along with economic conditions and capital markets. Furthermore, in Hope, the Court makes clear that regulation does not guarantee utility profits and, in Permian Basin Area Rate Cases, 390 US 747 (1968), that, while investor interests (profitability) are certainly pertinent to setting adequate utility rates, those interests do not exhaust the relevant considerations.

APPENDIX E
REGULATION IN MISSOURI

Q. WHAT IS THE ORIGIN AND RATIONALE FOR THE REGULATION OF PUBLIC UTILITIES IN THE STATE OF MISSOURI?

A. All investor owned public utilities operating in the state of Missouri are subject to the Public Service Commission Act, as amended. The Public Service Commission Act was initially passed by the Forty-Seventh General Assembly on April 15, 1913. (Laws of 1913 pp. 557-651, inclusive).

In State ex rel Kansas City v. Kansas City Gas Co. 163 S.W. 854 (Mo.1914), the case of first impression pertaining to the Public Service Commission Act, the Missouri Supreme Court described the rationale for the regulation of public utilities in Missouri as follows:

> That act (Public Service Commission Act) is an elaborate law bottomed on the police power. It evidences a public policy hammered out on the anvil of public discussion. It apparently recognizes certain generally accepted economic principles and conditions, to wit: That a public utility (like gas, water, car service, etc.) is in its nature a monopoly; that competition is inadequate to protect the public, and, if it exists, is likely to become an economic waste; that regulation takes the place of and stands for competition; that such regulation to command respect from patron or utility owner, must be in the name of the overlord, the state, and, to be effective, must possess the power of intelligent visitation and the plenary supervision of every business feature to be finally (however invisible) reflected in rates and quality of service. (Kansas City Gas Co. at 857-58).

The General Assembly has determined that the provisions of the Public Service Commission Act "shall be liberally construed with a view to the public welfare, efficient facilities and substantial justice between patrons and public utilities" (See: 386.610 RSMo 1994). Pursuant to the above legislative directive, when developing the cost of equity capital for a public utility operating in Missouri, it is appropriate to do so with a view toward the public welfare; giving the utility an amount that will allow for efficient use of its facilities and the proper balance of interests between the ratepayers and the utility.

APPENDIX F
MARKET-TO-BOOK RATIO ILLUSTRATION

Q. COULD YOU PROVIDE AN EXAMPLE ILLUSTRATING THE IMPORTANCE OF MARKET-TO-BOOK RATIOS AND THEIR RELATIONSHIP TO THE COST OF EQUITY CAPITAL?

A. Yes. Assume that a utility's equity has a book value of $10 per share and that, for simplicity, this utility pays out all its earnings in dividends. If regulators allow the utility a 12% return, investors will expect the company to earn (and pay out) $1.20 per share. If investors require a 12% return on this investment, they will be willing to provide a market price of $10 per share for this stock ($1.20 dividends/$10 market price = 12%). In that case, the allowed/expected return is equal to the cost of capital and the market price is equal to the book value.

Now, assume the investors' required return is 10%. Investors would be drawn to a utility stock in a risk class for which they require a 10% return but was expected to pay out a 12% return. The increased demand by investors would result in an increase in the market price of the stock until the total share yield equaled the investors' required return. In our example, that point would be $12 per share ($1.20 dividends/$12 market price = 10%). As such, the allowed/expected return (12%) is greater than the required return (10%) and the per share market price ($12/share) exceeds book value ($10/share), producing a market-to-book ratio greater than one ($12/$10 = 1.20). Consequently, when the market-to-book ratio for a given utility is greater than one, the earned or projected return on book equity is greater than the cost of capital.

APPENDIX G
DEVELOPMENT OF A COMPARISON GROUP

Q. PLEASE EXPLAIN HOW YOU DEVELOPED A COMPARISON GROUP.

A. The water utility industry is somewhat unique among utility industries in that there are relatively few publicly traded companies available for analysis. Finding truly "comparable" publicly traded companies can be difficult, and with the merger activity in the industry the task is becoming even more difficult. Therefore, I utilized all water utilities covered by the Value Line Investment Survey for which financial forecasts were included in Value Line's analysis.

The following companies are included: 1) American Water Works; 2) American States Water Company; 3) California Water Service Company; 4) E'town Corporation; and 5) Philadelphia Suburban Corp. A comparison of risk measures appears on Schedule MB-3.

In addition to the companies above, for my CAPM analysis I also utilized five other water utilities covered by Value Line. However, the information for these companies did not include all of the data that is usually included in the Value Line Investment Survey, such as future estimates. Therefore, these companies could not be analyzed to the extent I could analyze the previously mentioned companies. For this reason, these companies were included in my CAPM analysis but were excluded from my DCF.

APPENDIX H

EFFICIENT NATURE OF THE CAPITAL MARKETS

Q. IS THE DISCOUNTED CASH FLOW MODEL INHERENTLY CAPABLE OF ADJUSTING FOR THE LEVEL OF REAL OR PERCEIVED RISKINESS TO A GIVEN SECURITY?

A. Yes. It is impossible for any one analyst to systematically interpret the impact that each and every risk variable facing an individual firm has on the cost of equity capital to that firm. Fortunately, this type of risk-by-risk analysis is not necessary when determining the appropriate variables to be plugged into the DCF formula.

As stated earlier, the DCF model can correctly identify the cost of equity capital to a firm by adding the current dividend yield (D/P) to the correct determination of investor-expected growth (g). Thus, the difficult task of determining the cost of equity capital is made easier, in part, by the relative ease of locating dividend and stock price information and the efficient nature of the capital markets.

Q. PLEASE EXPLAIN THAT STATEMENT.

A. The DCF model is based on the assumption that investors (1) calculate intrinsic values for stocks on the basis of their interpretation of available information concerning future cash flows and risk, (2) compare the calculated intrinsic value for each stock with its current market price, and (3) make buy or sell decisions based on whether a stock's intrinsic value is greater or less than its market price.

Only if its market price is equal to or lower than its intrinsic value as calculated by the marginal investor will a stock be demanded by that investor. If a stock sells at a price significantly above or below its calculated intrinsic value, buy or sell orders will quickly push the stock towards market equilibrium. The DCF model takes on the following form when used by investors to calculate the intrinsic value of a given security,

$$P\hat{} = D/k\text{-}g$$

where P^= the intrinsic value of the security,

D = the current dividend,

g = the expected growth rate, and

k = the required return on the security

Since the required rate of return for any given investor is based on both the perceived riskiness of the security and return opportunities available in other segments of the market, it can be easily demonstrated that when perceived riskiness is increased, the investors' required return is also increased and the market value of the investment falls as it is valued less by the marginal investor. Returning to the form of the DCF model used to determine the cost of equity capital to the firm,

$$k = D/P + g$$

we see that the required return rises as an increase in the perceived risk associated with a given security drives the price down. Within this context, the DCF formula incorporates all known information, including information regarding risks, into the cost of equity capital calculation. This is known as the "efficient market" hypothesis.

Q. IS THE "EFFICIENT MARKET" HYPOTHESIS SUPPORTED IN THE FINANCIAL LITERATURE?

A. Yes. Modern investment theory maintains that the U.S. capital markets are efficient and, at any point in time, the prices of publicly traded stocks and bonds reflect all available information about those securities. Additionally, as new information is discovered, security prices adjust virtually instantaneously. This implies that, at any given time, security prices reflect "real" or intrinsic values. This point is further clarified in Investments, by Bodie, Kane, and Marcus. According to Bodie, et.al.,

> A large body of empirical evidence supports a theory called the **efficient markets hypothesis** (EMH), which among other things says that active management of both types should not be expected to work for very long. The basic reasoning behind the EMH is that in a competitive financial environment successful trading strategies tend to "self-destruct." Bargains may exist for brief periods, but with so many talented highly paid analysts scouring the markets for them, by the time you or I "discover" them, they are no longer bargains. (pg. 3-4)

According to Brealy and Myers;

> In an efficient market you can trust prices. They impound all available information about the value of each security. (Principles of Corporate Finance, Fourth Edition, page 300)

APPENDIX I

DETERMINATION OF RETENTION GROWTH & SUSTAINABLE GROWTH vs. EARNINGS AND DIVIDEND GROWTH RATES

Q. PREVIOUSLY YOU STATED THAT IT IS CRITICAL TO UNDERSTAND THE SOURCES OF GROWTH WHEN DEVELOPING A SUSTAINABLE GROWTH RATE RECOMMENDATION. PLEASE PROVIDE AN EXAMPLE THAT ILLUSTRATES HOW SUSTAINABLE GROWTH IS MEASURED USING THE RETENTION GROWTH METHOD.

A. To understand how investors develop a growth rate expectation, it is helpful to look at an illustration that shows how expected growth is measured. To do this, assume that a hypothetical utility has a first period common equity, or book value per share of $20.00; the investor-expected return on that equity is 12 percent; and the stated company policy is to pay out 50 percent of earnings in dividends. The first period earnings per share are expected to be $2.40 ($20 per share book equity x 12% equity) and the expected dividend is $1.20. The amount of earnings not paid out to shareholders ($1.20), referred to as retained earnings, raises the book value of the equity to $21.20 in the second period. The following table continues the hypothetical for a three-year period and illustrates the underlying determinants of growth.

	Year 1	Year 2	Year 3	Gr.
Book Value	$20.00	$21.20	$22.47	6.00%
Equity Return	12%	12%	12%	
Earnings/Sh.	$2.40	$2.54	$2.67	6.00%
Payout Ratio	50%	50%	50%	
Dividend/Sh.	$1.20	$1.27	$1.34	6.00%

As can be seen, earnings, dividends, and book value all grow at the same rate when the payout ratio and return on equity remain stable. Moreover, key to this growth is the amount of earnings retained or reinvested in the firm and the return on equity.

Letting "b" equal the retention ratio of the firm (or 1 minus the payout ratio) and letting "r" equal the firm's expected return on equity, the DCF growth rate "g" (also referred to as the sustainable growth rate) is equal to their product, or

g = br.

As shown in the example, the growth rate for the hypothetical company is 6.00 percent (12% ROE x 50% payout ratio).

Dr. Gordon has determined that this equation embodies the underlying fundamentals of growth and, therefore, is a primary measure of growth to be used in the DCF model (Gordon, The Cost of Capital to a Public Utility, 1974, p.81). It should be noted, however, Dr. Gordon's research also indicates that analysts' growth rate projections are useful in estimating investors' expectations. As a result, analysts' published growth rate projections, along with other historic and projected growth rates, are considered in this analysis for the purpose of reaching an accurate estimation of the expected sustainable growth rate.

Q. CAN THE RETENTION GROWTH RATE MODEL BE FURTHER REFINED IN ORDER TO BEST REPRESENT INVESTORS' EXPECTATIONS?

A. Yes. The above hypothetical example does not allow for the existence of external sources of equity financing (i.e., sales of common stock). Stock financing will cause investors to expect additional growth if the company is expected to issue additional shares at a market price that exceeds book value.

The excess of market value over book value per share would benefit current shareholders by increasing their per share equity value. Therefore, if the company is expected to continue to issue stock at a price that exceeds book value per share, the shareholders would continue to expect their book value to increase and would add that growth expectation to that stemming from the retention of earnings, or internal growth.

On the other hand, if a company is expected to issue new common equity at a price below book value, that would have a negative effect on shareholders' current growth rate expectations. Finally, with little or no expected equity financing or a market-to-book ratio

at or near one, investors would expect the long-term sustainable growth rate for the company to equal the growth from earnings retention.

Dr. Gordon identifies the growth rate which includes both expected internal and external financing as,

$$g = br + sv$$

where, g = DCF expected growth rate,

r = return on equity,

b = retention ratio,

v = fraction of new common stock sold that accrues to the current shareholder,

s = funds raised from the sale of stock as a fraction of existing equity.

Additionally,

$$v = 1 - BV/MP$$

where,

MP = market price,
BV = book value.

The second term (sv), which represents the external portion of the expected growth rate, does not normally represent a major source of growth when compared to the expected growth attributed to the retention of earnings. For example, the FERC Generic Rate of Return Model estimates the (sv) component in the range of 0.1% to 0.2%. However, I have used this equation as the basis for determining sustainable growth for both MAWC and the comparison groups.

Q. IS HISTORIC OR PROJECTED GROWTH IN EARNINGS OR DIVIDENDS APPROPRIATE FOR DETERMINING THE DCF GROWTH RATE?

A. No, not always. As I have stated, growth derived from earnings or dividends alone can be unreliable for ratemaking purposes due to external influences on these parameters such as

changes in the historic or expected rate of return on common equity or changes in the payout ratio. An extended example will demonstrate this point.

If we take the example above and assume that, in year two, the expected return on equity rises from 12 percent to 15 percent, the resulting growth rate in earnings and dividends per share dramatically exceeds what the company could sustain indefinitely. The error that can result from exclusive reliance on earnings or dividends growth is illustrated in the following table:

	Year 1	Year 2	Year 3	Gr.
Book Value	$20.00	$21.20	$22.79	6.75%
Equity Return	12%	15%	15%	
Earnings/Sh.	$2.40	$3.18	$3.42	19.37%
Payout Ratio	50%	50%	50%	
Dividends/Sh.	$1.20	$1.59	$1.71	19.37%

Due to the change in return on equity in year two, the compound growth rate for dividends and earnings is greater than 19 percent, which is the result only of a short-term increase in the equity return rather than the intrinsic ability of the firm to grow continuously at a 19 percent annual rate.

For year one, the sustainable rate of growth (g=br) is 6.00 percent, just as it was in the previous example. On the other hand, in years two and three, the sustainable growth rate increases to 7.50 percent. (15% ROE x 50% retention rate = 7.50%). Consequently, if the utility is expected to continually earn a 15 percent return on equity and retain 50 percent of earnings for reinvestment, a growth rate of 7.50 percent would be a reasonable estimate of the long-term sustainable growth rate. However, the compound growth rate in earnings and dividends, which is over 19 percent, dramatically exceeds the actual investor-expected growth rate.

As can be seen in the hypothetical, the 19 percent growth rate is simply the result of the change in return on equity from year one to year two, not the firm's ability to grow

sustainably at that rate. Consequently, this type of growth rate cannot be relied upon to accurately measure investors' sustainable growth rate expectations. In this instance, to rely on either earnings or dividend growth would be to assume the return on equity could continue to increase indefinitely. This, of course, is a faulty assumption; the recognition of which emphasizes the need to analyze the fundamentals of actual growth.

Q. IS HISTORIC GROWTH IN DIVIDENDS AN ACCURATE INDICATOR OF INVESTORS' GROWTH EXPECTATIONS WHEN THE HISTORICAL PAYOUT RATIO HAS BEEN ERRATIC OR TRENDED DOWNWARD OVER TIME?

A. As stated, no. It can also be demonstrated that a change in our hypothetical utility's payout ratio makes the past rate of growth in dividends an unreliable basis for predicting investor-expected growth. If we assume the hypothetical utility consistently earns its expected equity return but in the second year changes its payout ratio from 50 percent to 75 percent, the resulting growth rate in dividends far exceeds a reasonable level of sustainable growth.

	Year 1	Year 2	Year 3	Gr.
Book Value	$20.00	$21.20	$21.84	4.50%
Equity Return	12%	12%	12%	
Earnings/Sh.	$2.40	$2.54	$2.62	4.50%
Payout Ratio	50%	75%	75%	
Dividends/Sh.	$1.20	$1.91	$1.97	28.13%

Although the company has registered a high dividend growth rate (28.13%), it is not representative of the growth that could be sustained, as called for in the DCF model. In actuality, the sustainable growth rate (br) has declined due to the increased payout ratio. To utilize a 28 percent growth rate in a DCF analysis for this hypothetical utility would be to assume that the payout ratio could continue to increase indefinitely and lead to the unlikely result that the firm could consistently pay out more in dividends than it earns. The problems associated with sole reliance on historic dividend growth has been recognized in the financial literature. According to Brigham and Gapenski,

If earnings and dividends are growing at the same rate, there is no problem, but if these two growth rates are unequal, we do have a problem. First, the DCF model calls for the expected dividend growth rate. However, if EPS and DPS are growing at different rates, something is going to have to change: these two series cannot grow at two different rates indefinitely (Intermediate Financial Management, p.145).

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Historical Financial Information

ROE

	1999	1998	1997	1996	Average
MAWC	13.36%	9.40%	9.69%	11.22%	**10.92%**
AWWC	9.00%	11.10%	10.90%	11.90%	**10.73%**

Capital Structure: Missouri-American

	1999	1998	1997	1996	Average
Common Equity	41.1%	40.1%	40.9%	42.1%	**41.1%**
Preferred Stock	2.4%	2.4%	3.3%	3.8%	**3.0%**
Long Term Debt	56.5%	57.4%	55.9%	54.1%	**56.0%**
	100.0%	100.0%	100.0%	100.0%	**100.0%**

These percentages are calculated slightly differently than my recommended capital structure.

Financial Ratios: Missouri-American

	1999	1998	1997	1996	Average
EPS	*	$ 0.69	$ 0.69	$ 0.83	$ 0.74
DPS		$ 0.59	$ 0.56	$ 0.61	$ 0.59
Payout (calculated)		0.86	0.81	0.73	0.80
BVPS		$ 5.70	$ 5.30	$ 5.15	$ 5.38
Interest Coverage (pre-tax)		2.4	2.3	2.8	2.5

Source: Company response to data requests 2011, 2013, 2014; Wall Street Journal
* MAWC did not supply this information in response to OPC data requests.

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Missouri-American Water Company
Capital Structure as of 30 September 1999

		Amount	Percent
Common Stock Equity	$	47,660,529	42.31%
Preferred Stock	$	2,712,952	2.41%
Long Term Debt	$	62,269,874	55.28%
	$	112,643,355	100.00%

Common Stock Equity

Common Stock	$	35,594,075
Retained Earnings	$	12,066,454
	$	47,660,529

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Risk Measures

	Public	Revenue	% Rev Water	S&P	Missouri Regulation?
American States Water Company	Yes	$ 165.9	94.0%	A+	No
California Water Service	Yes	$ 197.6	100.0%	AA-	No
E'town Corporation	Yes	$ 159.4	100.0%	A	No
Philadelphia Suburban Corp.	Yes	$ 231.8	100.0%	AA-	No
Average		**$ 188.7**	**98.5%**	**A+**	
American Water Works	Yes	**$ 1,162.8**	**98.0%**	**A+**	**Yes**

	Beta	Payout Ratio	Common Equity	Safety	MTB	Interest Coverage	Fixed Charge Coverage
American States Water Company	0.60	65.0%	48.0%	3	1.99	3.2	310%
California Water Service	0.55	68.0%	52.0%	2	2.12	3.7	340%
E'town Corporation	0.50	71.0%	39.0%	2	2.38	3.0	230%
Philadelphia Suburban Corp.	0.55	82.0%	42.0%	2	2.4	3.4	313%
Average	**0.55**	**71.5%**	**45.3%**	**2.25**	**2.22**	**3.3**	**298%**
American Water Works	**0.50**	**63.0%**	**35.5%**	**1**	**1.41**	**2.2**	**262%**

Source: C.A. Turner Utility Reports
Source: Value Line Investment Survey

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Percent Common Equity
Value Line Investment Survey Composite Index

	1999	1998	1997	1996	1995	Average
American States Water Company	50.0%	55.7%	56.3%	57.3%	52.5%	54.4%
California Water Service	52.0%	54.7%	53.5%	51.4%	49.7%	52.3%
E'town Corporation	44.0%	44.8%	42.8%	47.2%	46.3%	45.0%
Philadelphia Suburban Corp.	46.5%	46.6%	44.8%	44.0%	46.4%	45.7%
Average	**48.1%**	**50.5%**	**49.4%**	**50.0%**	**48.7%**	**49.3%**
Missouri-American	**41.1%**	**40.1%**	**40.9%**	**42.1%**		**41.1%**
American Water Works	36.0%	36.0%	36.6%	36.8%	35.5%	36.2%

	1999	1998	1997	1996	1995	Average
Value Line Composite Index (Water Utility Industry)	**45.0%**	**39.7%**	**39.6%**	**40.0%**	**38.9%**	**40.6%**
Missouri-American	**41.1%**	**40.1%**	**40.9%**	**42.1%**		**41.1%**

Note: Calculations do not include short term debt

Source: Value Line Investment Survey for all companies except MAWC.
MAWC data from Company response to OPC DR2013

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Missouri-American Water Company
Embedded Cost of Long Term Debt as of 30 September 1999

Description:	Issue Date	Maturity Date	Principal Original Issue	Amount Outstanding	Interest Rate	Annual Interest	Annual Amortization Issuance Expenses/ Premium	Unamortized Issuance Expense/ Premium	Total Annual Issuance Cost and Interest	Carrying Value
Gen. Mortgage	03/20/90	02/15/05	$6,000,000	$6,000,000	5.850%	$ 351,000	$ 1,244	$ 399,372	$ 352,244	$ 5,600,628
	05/18/93	01/01/23	5,700,000	$5,700,000	9.010%	$ 513,570	$ 3,470	$ 18,793	$ 517,040	$ 5,681,207
	03/16/94	03/01/31	5,000,000	$4,950,000	5.500%	$ 272,250	$ 12,981	$ 301,801	$ 285,231	$ 4,648,199
	12/01/68	12/01/98	12,500,000	$12,500,000	7.140%	$ 892,500	$ 8,371	$ 288,146	$ 900,871	$ 12,211,854
	04/01/78	03/01/98	3,000,000	$3,000,000	8.580%	$ 257,400	$ 2,595	$ 65,947	$ 259,995	$ 2,934,053
	10/28/87	10/15/02	8,000,000	$8,000,000	7.790%	$ 623,200	$ 3,799	$ 105,120	$ 626,999	$ 7,894,880
	02/01/91	02/01/21	4,090,000	$1,360,000	10.000%	$ 136,000	$ 2,898	$ 4,820	$ 138,898	$ 1,355,180
	04/21/95	03/01/25	4,500,000	$4,500,000	5.000%	$ 225,000	$ 11,831	$ 335,204	$ 236,831	$ 4,164,796
	07/26/96	07/01/26	19,000,000	$19,000,000	5.000%	$ 950,000	$ 41,980	$ 1,220,923	$ 991,980	$ 17,779,077
			$40,200,000	$65,010,000		$4,220,920	$89,169	$2,740,126	$4,310,089	$62,269,874

Carrying Value: $ 62,269,874
Annual Cost: $ 4,310,089

Embedded Cost Rate: 6.922%

Source: Company response to OPC data request 2002.

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Embedded Cost of Preferred Stock as of 30 September 1999

Amount Outstanding	Coupon Rate	Annual Dividend	Annual Ammort. Expense
$ 2,500,000	9.180%	$ 229,500	$ 266
$ 14,000	4.250%	$ 595	$ 1,854
$ 240,000	5.875%	$ 14,100	
$ 2,754,000		$ 244,195	$ 2,120

Total annual cost	$ 246,315
Carrying value	$ 2,712,952

Embedded Cost: **9.08%**

Source: Company response to OPC data requests 2001, 2002.

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Summary - Discounted Cash Flow Growth
Note: Negative growth is not included in averages.

Historic Growth		Compound Growth			Value Line		
COMPANY	br + sv	EPS	DPS	BVPS	EPS	DPS	BVPS
American States Water Company	3.69%	3.85%	1.29%	3.34%	3.50%	2.00%	4.75%
California Water Service	3.88%	6.48%	1.97%	4.16%	4.00%	3.00%	4.00%
E'town Corporation	4.14%	4.24%	0.12%	2.77%	0.50%	0.75%	2.50%
Philadelphia Suburban Corp.	10.82%	9.52%	4.61%	7.38%	6.00%	3.50%	4.75%
Average	**5.63%**	**6.02%**	**2.00%**	**4.41%**	**3.50%**	**2.31%**	**4.00%**
American Water Works	**7.29%**	**6.80%**	**9.90%**	**7.37%**	**5.00%**	**10.00%**	**7.75%**

Projected Growth		Value Line/First Call/Zack's		
COMPANY	br + sv	EPS	DPS	BVPS
American States Water Company	4.21%	5.67%	7.00%	5.50%
California Water Service	6.36%	6.00%	1.50%	5.00%
E'town Corporation	3.20%	4.75%	2.00%	6.50%
Philadelphia Suburban Corp.	5.70%	7.03%	5.00%	8.00%
Average	**4.87%**	**5.86%**	**3.88%**	**6.25%**
American Water Works	**6.19%**	**6.24%**	**7.00%**	**5.50%**

Ranges	Overall			Hi/Low	
COMPANY	Average	High	Low*	Average	Median
American States Water Company	4.07%	7.00%	1.29%	4.15%	3.85%
California Water Service	4.21%	6.48%	1.50%	3.99%	4.00%
E'town Corporation	2.86%	6.50%	0.12%	3.31%	2.77%
Philadelphia Suburban Corp.	6.57%	10.82%	3.50%	7.16%	6.00%
Average	**4.43%**	**7.70%**	**1.60%**	**4.65%**	**4.15%**
American Water Works	**7.19%**	**10.00%**	**5.00%**	**7.50%**	**7.00%**

Note: Negative growth rates not included in averages and are excluded from determination of "Low".
Source: Schedule MB-7, pages 2-6.

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Discounted Cash Flow Growth Parameters
American Water Works

Historic Growth

	Historic Data	Compound Growth EPS	DPS	BVPS	Retention Ratio (b)	Retention Growth Equity Return (r)	Growth (b*r)
1	1993	1.15	0.50	10.49	0.565		
2	1994	1.17	0.54	11.23	0.538		
3	1995	1.26	0.64	12.07	0.492	10.30%	5.07%
4	1996	1.31	0.70	13.47	0.466	9.60%	4.47%
5	1997	1.45	0.76	14.31	0.476	10.40%	4.95%
6	1998	1.58	0.82	15.29	0.481	10.30%	4.95%
7	1999	1.63	0.86	15.25	0.472	11.00%	5.20%
8							
9		Compound Growth Rates				Ave. Internal	
10	'93-97	5.97%	11.04%	8.07%		Growth (br):	4.93%
11							
12	'94-98	7.80%	11.01%	8.02%		ADD: External	
13						Growth (sv):	2.36%
14	'95-99	6.65%	7.67%	6.02%			
15						Historic	
16	Ave.Compound Gr.	**6.80%**	**9.90%**	**7.37%**		"br + sv" Gr.	**7.29%**
17							
18	Value Line	EPS	DPS	BVPS			
19	Historic Gr.	**5.00%**	**10.00%**	**7.75%**			
20	(Avg of 5 and 10 yr. if both are available)						
21							
22	**Projected Growth**						
23	*Retention Growth Calculation*				Retention	Equity	Growth
24	Value Line	EPS	DPS	BVPS	Ratio (b)	Return (r)	(b*r)
25	1999						
26	2000 est'd	1.75	0.94	16.00	0.463	11.00%	5.09%
27	2002-04 est'd	2.30	1.15	20.00	0.500	12.00%	6.00%
28							
29	*Analyst's Estimates*					Projected	
30	Value Line	8.00%	7.00%	5.50%		Growth (br):	6.00%
31							
32	First Call	5.00%				ADD: External	
33	Zack's	5.72%				Growth (sv):	0.19%
34							
35	Average					Projected	
36	Proj'd Growth	**6.24%**	**7.00%**	**5.50%**		"br + sv" Gr.	**6.19%**

Note: Negative (b*r) growth is not included in retention growth averages.

SOURCE: The Value Line Investment Survey; C.A. Turner Utility Reports; Zack's Analyst Watch; First Call Corporation

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Discounted Cash Flow Growth Parameters
American States Water Company

Historic Growth

		Compound Growth			Retention Growth		
	Historic Data	EPS	DPS	BVPS	Retention Ratio (b)	Equity Return (r)	Growth (b*r)
1	1993	1.66	1.19	14.92	0.283		
2	1994	1.43	1.20	15.10	*0.161*		
3	1995	1.55	1.21	15.43	0.219	10.00%	2.19%
4	1996	1.69	1.23	16.52	0.272	9.00%	2.45%
5	1997	1.56	1.25	16.86	0.199	9.20%	1.83%
6	1998	1.62	1.26	17.23	0.222	9.40%	2.09%
7	1999	1.85	1.28	17.75	0.308	10.50%	3.24%
8							
9		Compound Growth Rates				Ave. Internal	
10	'93-97	*-1.54%*	1.24%	3.10%		Growth (br):	2.36%
11							
12	'94-98	3.17%	1.23%	3.35%		ADD: External	
13						Growth (sv):	1.33%
14	'95-99	4.52%	1.42%	3.56%			
15						Historic	
16	Ave.Compound Gr.	**3.85%**	**1.29%**	**3.34%**		"br + sv" Gr.	**3.69%**
17							
18	Value Line	EPS	DPS	BVPS			
19	Historic Gr.	**3.50%**	**2.00%**	**4.75%**			
20	(Avg of 5 and 10 yr. if both are available)						
21							
22	**Projected Growth**						
23	*Retention Growth Calculation*				Retention	Equity	Growth
24	Value Line	EPS	DPS	BVPS	Ratio (b)	Return (r)	(b*r)
25	1999						
26	2000 est'd	1.90	1.32	18.35	0.305	10.00%	3.05%
27	2002-04 est'd	2.25	1.40	20.70	0.378	11.00%	4.16%
28							
29	*Analyst's Estimates*					Projected	
30	Value Line	8.00%	7.00%	5.50%		Growth (br):	4.16%
31							
32	First Call	5.00%				ADD: External	
33	Zack's	4.00%				Growth (sv):	0.06%
34							
35	Average					Projected	
36	Proj'd Growth	**5.67%**	**7.00%**	**5.50%**		"br + sv" Gr.	**4.21%**

Note: Negative (b*r) growth is not included in retention growth averages.
SOURCE: The Value Line Investment Survey; C.A. Turner Utility Reports; Zack's Analyst Watch; First Call Corporation

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Discounted Cash Flow Growth Parameters
California Water Service Company

Historic Growth

		Compound Growth			Retention Growth		
	Historic Data	EPS	DPS	BVPS	Retention Ratio (b)	Equity Return (r)	Growth (b*r)
1	1993	1.35	0.96	10.90	0.289		
2	1994	1.22	0.99	11.56	0.189		
3	1995	1.17	1.02	11.72	0.128	9.90%	1.27%
4	1996	1.51	1.04	12.22	0.311	12.30%	3.83%
5	1997	1.83	1.06	13.00	0.421	14.10%	5.93%
6	1998	1.45	1.07	13.38	0.262	10.80%	2.83%
7	1999	1.54	1.08	13.85	0.299	11.50%	3.44%
8							
9		Compound Growth Rates				Ave. Internal	
10	'93-97	7.90%	2.51%	4.50%		Growth (br):	3.46%
11							
12	'94-98	4.41%	1.96%	3.72%		ADD: External	
13						Growth (sv):	0.42%
14	'95-99	7.11%	1.44%	4.26%			
15						Historic	
16	Ave.Compound Gr.	**6.48%**	**1.97%**	**4.16%**		"br + sv" Gr.	**3.88%**
17							
18	Value Line	EPS	DPS	BVPS			
19	Historic Gr.	**4.00%**	**3.00%**	**4.00%**			
20	(Avg of 5 and 10 yr. if both are available)						
21							
22	**Projected Growth**						
23	*Retention Growth Calculation*				Retention	Equity	Growth
24	Value Line	EPS	DPS	BVPS	Ratio (b)	Return (r)	(b*r)
25	1999						
26	2000 est'd	1.70	1.10	14.50	0.353	12.00%	4.24%
27	2002-04 est'd	2.25	1.15	17.00	0.489	13.00%	6.36%
28							
29	*Analyst's Estimates*					Projected	
30	Value Line	6.00%	1.50%	5.00%		Growth (br):	6.36%
31							
32	First Call					ADD: External	
33	Zack's					Growth (sv):	0.00%
34							
35	Average					Projected	
36	Proj'd Growth	**6.00%**	**1.50%**	**5.00%**		"br + sv" Gr.	**6.36%**

Note: Negative (b*r) growth is not included in retention growth averages.
SOURCE: The Value Line Investment Survey; C.A. Turner Utility Reports; Zack's Analyst Watch; First Call Corporation

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Discounted Cash Flow Growth Parameters
E'town Corporation

Historic Growth

		Compound Growth			Retention Growth		
	Historic Data	EPS	DPS	BVPS	Retention Ratio (b)	Equity Return (r)	Growth (b*r)
1	1993	2.38	2.01	22.67	0.155		
2	1994	1.95	2.04	23.09	*-0.046*		
3	1995	2.16	2.04	23.54	0.056	6.00%	0.33%
4	1996	1.96	2.04	23.50	*-0.041*	5.30%	*-0.22%*
5	1997	2.41	2.04	24.17	0.154	6.10%	0.94%
6	1998	2.67	2.04	24.62	0.236	6.90%	1.63%
7	1999	2.55	2.04	28.70	0.200	6.00%	1.20%
8							
9		Compound Growth Rates				Ave. Internal	
10	'93-97	0.31%	0.37%	1.61%		Growth (br):	1.02%
11							
12	'94-98	8.17%	0.00%	1.62%		ADD: External	
13						Growth (sv):	3.12%
14	'95-99	4.24%	0.00%	5.08%			
15						Historic	
16	Ave.Compound Gr.	**4.24%**	**0.12%**	**2.77%**		"br + sv" Gr.	**4.14%**
17							
18	Value Line	EPS	DPS	BVPS			
19	Historic Gr.	**0.50%**	**0.75%**	**2.50%**			
20	(Avg of 5 and 10 yr. if both are available)						
21							
22	**Projected Growth**						
23	*Retention Growth Calculation*				Retention	Equity	Growth
24	Value Line	EPS	DPS	BVPS	Ratio (b)	Return (r)	(b*r)
25	1999						
26	2000 est'd	2.65	2.04	30.00	0.230	10.00%	2.30%
27	2002-04 est'd	3.30	2.30	35.60	0.303	10.00%	3.03%
28							
29	*Analyst's Estimates*					Projected	
30	Value Line	6.00%	2.00%	6.50%		Growth (br):	3.03%
31							
32	First Call					ADD: External	
33	Zack's	3.50%				Growth (sv):	0.17%
34							
35	Average					Projected	
36	Proj'd Growth	**4.75%**	**2.00%**	**6.50%**		"br + sv" Gr.	**3.20%**

Note: Negative (b*r) growth is not included in retention growth averages.

SOURCE: The Value Line Investment Survey; C.A. Turner Utility Reports; Zack's Analyst Watch; First Call Corporation

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Discounted Cash Flow Growth Parameters
Philadelphia Suburban Corp.

Historic Growth

		Compound Growth			Retention Growth		
	Historic Data	EPS	DPS	BVPS	Retention Ratio (b)	Equity Return (r)	Growth (b*r)
1	1993	0.64	0.54	5.96	0.156		
2	1994	0.68	0.55	6.26	0.191		
3	1995	0.77	0.57	6.41	0.260	11.70%	3.04%
4	1996	0.78	0.59	7.00	0.244	11.20%	2.73%
5	1997	0.88	0.62	7.39	0.295	12.00%	3.55%
6	1998	1.03	0.67	8.35	0.350	12.40%	4.33%
7	1999	1.10	0.70	9.10	0.364	12.50%	4.55%
8							
9		Compound Growth Rates				Ave. Internal	
10	'93-97	8.29%	3.51%	5.52%		Growth (br):	3.64%
11							
12	'94-98	10.94%	5.06%	7.47%		ADD: External	
13						Growth (sv):	7.18%
14	'95-99	9.33%	5.27%	9.16%			
15						Historic	
16	Ave.Compound Gr.	**9.52%**	**4.61%**	**7.38%**		"br + sv" Gr.	**10.82%**
17							
18	Value Line	EPS	DPS	BVPS			
19	Historic Gr.	**6.00%**	**3.50%**	**4.75%**			
20	(Avg of 5 and 10 yr. if both are available)						
21							
22	**Projected Growth**						
23	*Retention Growth Calculation*				Retention	Equity	Growth
24	Value Line	EPS	DPS	BVPS	Ratio (b)	Return (r)	(b*r)
25	1999						
26	2000 est'd	1.20	0.74	9.75	0.383	12.50%	4.79%
27	2002-04 est'd	1.50	0.85	12.00	0.433	12.50%	5.42%
28							
29	*Analyst's Estimates*					Projected	
30	Value Line	9.00%	5.00%	8.00%		Growth (br):	5.42%
31							
32	First Call	6.00%				ADD: External	
33	Zack's	6.10%				Growth (sv):	0.28%
34							
35	Average					Projected	
36	Proj'd Growth	**7.03%**	**5.00%**	**8.00%**		"br + sv" Gr.	**5.70%**

Note: Negative (b*r) growth is not included in retention growth averages.

SOURCE: The Value Line Investment Survey; C.A. Turner Utility Reports; Zack's Analyst Watch; First Call Corporation

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Historical Stock Prices and Dividend Yields

Historical Stock Prices

	Fri 2/4/00	Fri 2/11/00	Fri 2/18/00	Fri 2/25/00	Fri 3/3/00	Fri 3/10/00	Average
American Water Works	$ 21.560	$ 20.130	$ 19.940	$ 20.060	$ 19.500	$ 19.560	**$ 20.125**
American States Water Company	$ 32.690	$ 29.310	$ 29.000	$ 26.500	$ 26.250	$ 28.500	**$ 28.708**
California Water Service	$ 30.880	$ 28.000	$ 29.000	$ 27.250	$ 26.250	$ 25.130	**$ 27.752**
E'town Corporation	$ 64.000	$ 63.750	$ 64.380	$ 64.750	$ 64.630	$ 64.690	**$ 64.367**
Philadelphia Suburban Corp.	$ 19.190	$ 18.130	$ 18.000	$ 17.810	$ 18.310	$ 16.880	**$ 18.053**

Expected Dividend and Dividend Yield

	Average Stk. Price	2000 Expected Dividend	Dividend Yield
American Water Works	$ 20.125	$ 0.94	**4.67%**
American States Water Company	$ 28.708	$ 1.32	4.60%
California Water Service	$ 27.752	$ 1.10	3.96%
E'town Corporation	$ 64.367	$ 2.04	3.17%
Philadelphia Suburban Corp.	$ 18.053	$ 0.74	4.10%
Average			**3.96%**
Overall average: (All five companies)			**4.10%**

Source: Value Line Investment Survey; Wall Street Journal.

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

DCF Cost of Common Equity for MAWC, AWK and Comparison Group

	Dividend Yield	Growth	DCF Cost of Equity	Interest Rate Adjust.	Recommended Cost of Equity
MAWC	4.67%	5.00%	9.67%	0.25%	**9.92%**

	Dividend Yield	Growth Low	Growth High	Cost of Equity Low	Cost of Equity High
American Water Works	**4.67%**	**5.00%**	**10.00%**	**9.67%**	**14.67%**
Aquarion Company	4.60%	1.29%	7.00%	5.89%	11.60%
California Water Service	3.96%	1.50%	6.48%	5.46%	10.44%
Consumer's Water Company	3.17%	0.12%	6.50%	3.29%	9.67%
Philadelphia Suburban Corp.	4.10%	3.50%	10.82%	7.60%	14.92%
Average	**3.96%**	**1.60%**	**7.70%**	**5.56%**	**11.66%**

Comparison company's DCF midpoint: **8.61%**
Overall average DCF cost of equity: **9.32%**
(using Low and High for all five companies)

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Capital Assest Pricing Model (CAPM) Cost of Common Equity (Ke)

Formula: Ke = Rf + beta(Rm - Rf)

Risk Free Rate (Rf) = 6.16%
Market Premium (Rm - Rf) = 7.20%

Value Line Investment Survey Water Companies

	Beta	CAPM Ke
American Water Works	0.60	**10.48%**
American States Water Company	0.60	10.48%
California Water Service	0.55	10.12%
E'town Corporation	0.50	9.76%
Philadelphia Suburban Corp.	0.55	10.12%
Average CAPM cost of equity:		**10.12%**
Overall Average: (All five companies)		**10.19%**

Additional Value Line Water Companies

	Beta	CAPM Ke
Connecticut Water Services	0.50	9.76%
Dominguez Services Corp.	0.40	9.04%
Middlesex Water Company	0.45	9.40%
SJW Corp.	0.50	9.76%
Southwest Water Company	0.55	10.12%
Average CAPM cost of equity:		**9.62%**
Overall Average: (All ten companies)		**9.90%**

Source: Value Line Investment Survey; Ibottson Associates;

BURDETTE - DIRECT
WR-2000-281 Missouri-American Water Company

Missouri-American Water Company

Capital Structure, Weighted Average Cost of Capital
Pre-Tax Interest Coverage 9/30/99

		Amount	Percent	Cost Rate	Weighted Cost	
Common Stock Equity	$	47,660,529	42.31%	9.92%	4.20%	
Preferred/Pref. Stock	$	2,712,952	2.41%	9.08%	0.22%	
Long Term Debt	$	62,269,874	55.28%	6.92%	3.83%	
	$	112,643,355	100.00%		**8.24%**	**WACC**

Pre-Tax Interest Coverage Tax factor = 1.6231131

	Weighted Cost	Pre-tax Weighted Cost
Common Stock Equity	4.20%	6.81%
Preferred stock	0.22%	0.35%
Long Term Debt	3.83%	3.83%
Total	8.24%	10.99%
Pre-tax weighted cost:		10.99%
Cost of Debt:		3.83%
Pre-tax Interest Coverage		**2.87**

Source: Schedules MB-2, MB-5, MB-6, MB-8.
Note: Tax factor from Mulle-Direct, Schedule HGM 1.