Carolina Water Service, Inc.
Docket No. _____

BEFORE THE

PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

PREPARED DIRECT TESTIMONY

OF

PAULINE M. AHERN, CRRA
VICE PRESIDENT
AUS CONSULTANTS – UTILITY SERVICES

ON BEHALF OF

CAROLINA WATER SERVICE, INC.

CONCERNING

FAIR RATE OF RETURN

JUNE 2006

TABLE OF CONTENTS

		Page No.
I.	INTRODUCTION	1
II.	SUMMARY	3
III.	GENERAL PRINCIPLES	6
IV.	BUSINESS RISK	6
V.	FINANCIAL RISK	14
VI.	CAROLINA WATER SERVICE, INC.	16
VII.	PROXY GROUPS	16
VIII.	COMMON EQUITY COST RATE MODELS	19
	A. The Efficient Market Hypothesis (EMH)	19
	B. Discounted Cash Flow Model (DCF)	23
	1. Theoretical Basis	23
	2. Applicability of a Market-Based Common Equity Cost Rate to a Book Value Rate Base	25
	3. Application of the Single-Stage DCF Model	31
	a. Dividend Yield	31
	b. Discrete Adjustment of Dividend Yield	31
	c. Selection of Growth Rates for Use in the Single-Stage DCF Model	32
	d. Conclusion of Single-Stage Cost Rates	34
	4. Conclusion of DCF Cost Rates	36
	C. The Risk Premium Model (RPM)	36
	1. Theoretical Basis	36
	2. Estimation of Expected Bond Yield	38
	3. Estimation of the Equity Risk Premium	39
	D. The Capital Asset Pricing Model (CAPM)	46
	1. Theoretical Basis	46
	2. Risk-Free Rate of Return	48
	3. Market Equity Risk Premium	49
	E. Comparable Earnings Model (CEM)	54
	1. Theoretical Basis	54
	2. Application of the CEM	55
IX.	CONCLUSION OF COMMON EQUITY COST RATE RANGE	60

Appendix A to the Direct Testimony of Pauline M. Ahern

I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My name is Pauline M. Ahern and I am a Vice President of AUS Consultants - Utility Services. My business address is 155 Gaither Drive, P.O. Box 1050, Moorestown, New Jersey 08057.

Q. Please summarize your educational background and professional experience.

A. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor of Arts degree with honors in Economics in 1973. In 1991, I received a Master of Business Administration with high honors from Rutgers University.

In June 1988, I joined AUS Consultants - Utility Services as a Financial Analyst and am now a Vice President. I am responsible for the preparation of all fair rate of return and capital structure exhibits for AUS Consultants - Utility Services. I have offered expert testimony on behalf of investor-owned utilities before twenty-two state regulatory commissions. The details of these appearances, as well as details of my educational background, are shown in Appendix A supplementing this testimony.

I also calculate and maintain the A.G.A. Index under contract with the American Gas Association (A.G.A.). The A.G.A. Index is a market capitalization weighted index of the common stocks of about 70 corporate members of the A.G.A.

I have co-authored an article with Frank J. Hanley, President, AUS Consultants - Utility Services entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994. I also assisted in the preparation

of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

I am a member of the Society of Utility and Regulatory Financial Analysts, formerly the National Society of Rate of Return Analysts serving as President for 2006-2008 and Secretary/Treasurer for 2004-2006. In 1992, I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts. This designation is based upon education, experience and the successful completion of a comprehensive written examination.

I am an associate member of the National Association of Water Companies, serving on its Finance Committee, a member of the Energy Association of Pennsylvania, formerly the Pennsylvania Gas Association, and a member of the American Finance Association.

Q. What is the purpose of your testimony?

A. The purpose is to provide testimony on behalf of Carolina Water Service, Inc. (CWS or the Company) in the form of the fair rate of return, including common equity cost rate, senior capital cost rate and capital structure which it should be afforded the opportunity to earn on its jurisdictional water and sewer rate bases.

Q. What is your recommended overall fair rate of return range?

A. I recommend that the Public Service Commission of South Carolina (PSC SC or the Commission) authorize the Company the opportunity to earn an overall

rate of return in the range of 8.33% to 8.60% based upon the consolidated capital structure at September 30, 2005 of Utilities, Inc., the parent of CWS, which consisted of 59.10% debt and 40.90% common equity at a debt cost rate of 6.42% and my recommended common equity cost rate range of 11.10% to 11.75%.

The overall cost of capital is summarized in Table 1 below:

Table 1

	Capital Structure Ratios	Cost Rate	Weighted Return
Long-Term Debt	59.10%	6.42%	3.79%
Common Equity	40.90	11.10-11.75	4.54-4.81
Total	100.00%		8.33%-8.60%

Q. Have you prepared an exhibit which supports your overall recommended fair rate of return?

A. Yes, I have. It has been marked for identification as Exhibit No. ___ and consists of Schedules PMA-1 through PMA-12. Hereinafter, references to Schedules within this testimony will be from this Exhibit, unless otherwise noted.

II. SUMMARY

Q. Please summarize your recommended common equity cost rate range.

A. My recommended common equity cost rate range of 11.10% to 11.75% is

summarized on Schedule PMA-1, page 2. Because CWS' common stock is not publicly traded, a market-based common equity cost rate cannot be determined directly for CWS. Therefore, in arriving at my recommended common equity cost rate range of 11.10% to 11.75%, I assessed the market-based cost rates of companies of relatively similar risk, i.e., proxy group(s), for insight into a recommended common equity cost rate applicable to CWS and suitable for cost of capital purposes. It is appropriate to look to a proxy group or groups of companies as similar in risk as possible whose common stocks are actively traded for insight into an appropriate common equity cost rate applicable to CWS and then adjust the results upward to reflect CWS' greater business and financial risk (vis-à-vis the proxy group(s)). Using other utilities of relatively comparable risk as proxies is consistent with the principles of fair rate of return established in the Hope[1] and Bluefield[2] cases and adds reliability to the informed expert judgment used in arriving at a recommended common equity cost rate. However, no proxy group can be selected to be identical in risk to CWS and therefore, the proxy group(s)' results must be adjusted to reflect the greater relative business and financial risk of CWS as will be subsequently discussed in detail. Therefore, I have evaluated the market data of two proxy groups of water companies in arriving at my recommended common equity cost rate. The bases of selection are described below.

As explained in more detail below, my analysis reflects current capital market conditions and results from the application of four well-tested market-based cost of common equity models, the Discounted Cash Flow (DCF)

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1 Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

2 Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

approach, the Risk Premium Model (RPM), the Capital Asset Pricing Model (CAPM), and the Comparable Earnings Model (CEM).

The results derived from each are as follows:

Table 2

	Proxy Group of Seven AUS Utility Reports Water Cos.		Proxy Group of Four Value Line (Std. Ed.) Water Cos.
Discounted Cash Flow Model	9.9%		10.0%
Risk Premium Model	10.8		10.9
Capital Asset Pricing Model	10.3		10.3
Comparable Earnings Model	13.7		14.1
Indicated Range of Common Equity Cost Rate Before Business Risk Adjustment	10.60%	--	11.25%
Business Risk Adjustment	0.30		0.30
Recommended Range of Common Equity Cost Rate After Adjustment for Business Risk	10.90%	--	11.55%
Financial Risk Adjustment	0.20		0.20
Recommended Range of Common Equity Cost Rate After Adjustment for Business and Financial Risk	11.10%	--	11.75%

After reviewing the cost rates based upon the four models, I conclude that a range of common equity cost rate, before adjustment for business and financial risk of 10.60% to 11.25% is indicated based upon the application of all four models to the proxy group of seven AUS Utility Reports water companies and four Value Line (Standard Edition) water companies. After applying a business risk adjustment of 30 basis points due to CWS' small size and a financial risk adjustment of 20 basis points due to CWS' greater financial risk vis-a-vis the two proxy groups as will be discussed in detail

subsequently, my recommended range of common equity cost rate is 11.10% to 11.75% applicable to the Company's proposed common equity ratio of 40.90%.

III. GENERAL PRINCIPLES

Q. What general principles have you considered in arriving at your recommended range of common equity cost rate of 11.10% to 11.75%.

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of a product or service. In the case of regulated public utilities, regulation must act as a substitute for such marketplace competition. Consequently, marketplace data must be relied upon to assure that the utility can fulfill its obligations to the public and provide adequate service at all times. This requires a level of earnings sufficient to maintain the integrity of presently invested capital and permit the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the Hope and Bluefield cases cited previously. Consequently, in my determination of common equity cost rate, I have evaluated data gathered from the marketplace for utilities as similar in risk as possible to CWS.

IV. BUSINESS RISK

Q. Please define business risk and explain why it is important to the determination of a fair rate of return?

A. Business risk incorporates all of the risks of a firm other than financial risk,

which will be discussed subsequently. Examples of business risk include the quality of management, the regulatory environment, customer mix, service territory growth and the like, which have a direct bearing on earnings.

Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return investors demand, consistent with the basic financial precept of risk and return.

Q. Please discuss the business risks facing the water industry in general.

A. The water utility industry faces significant risks related to replacing aging transmission and distribution systems. Value Line Investment Survey[3] observes:

> Water utility companies have been hurt by unfavorable and delayed rate relief case rulings in recent years. Indeed, rulings by regulatory authorities, which were put in place to keep a balance of power between consumers and providers, have long been one-sided, with utilities typically coming out on the short end of the stick. However, it finally looks as though things are changing, particularly for those companies with operations in California. Governor Schwarzenegger has made numerous changes to the California Public Utilities Commission (CPUC), which is responsible for ruling on general rate case requests in the Golden State, most notably its board members. Constituents now appear to be more business-friendly, judging from a host of more-favorable case rulings in recent months. This is a major boon for business based in California such as *American States Water Co.* and *California Water Service Group*.
>
> Despite the aforementioned changes, regulatory laws on pipeline and well infrastructure continue to grow more stringent. Current infrastructures are typically in excess of 100 years old and need maintenance and, in some cases, significant renovations or

[3] Value Line Investment Survey, April 28, 2006.

> rebuilding. Meanwhile, geopolitical concerns are making matters worse, due to the threat of bioterrorism on U.S. water pipelines and reservoirs. As a result, these costs are only likely to increase going forward. In all, infrastructure repair costs are expected to climb to the hundreds of millions of dollars over the next two decades. This is particularly bad for smaller water companies, as they lack the capital to take these initiatives. Instead, many are being forced to sell, resulting in massive consolidation within the industry. That said, many of the larger, more flexible companies with the money to meet the higher costs have been using the weakness to improve their operations and increase their customer base. Aqua America, the largest water utility in our Survey, is a prime example, closing the doors on over 100 acquisitions in the past five years. In doing so, it has doubled its revenue base. The company does not appear to be slowing down, either. Its buying ways give it the best 3- to 5-year appreciation potential of the [sic] all the stocks in this industry.
>
> Most investors will probably want to steer clear of the stocks in this industry. None of them are ranked higher than 3 (Average) for Timeliness for the coming six to 12 months, and not one holds better-than-modest 3- to 5-year appreciation potential. As a result, we think that growth-oriented investors will want to look elsewhere. Meanwhile, the income appeal of many of these stocks has been diminished in recent months, as well. Although water utility stocks have long generated a steady stream of income, recent price appreciation, coupled with a rising interest-rate environment, has increased the income-producing appeal of alternative investments.

In addition, because the water industry is much more capital-intensive than the electric, natural gas or telephone industries, the investment required to produce a dollar of revenue is greater. And, because investor-owned water utilities typically do not receive federal funds for infrastructure replacement, the challenge to investor-owned water utilities is exacerbated and their access to financing is restricted, thus increasing risk.

The National Association of Regulatory Commissioners (NARUC) noted the challenges facing the water industry stemming from their capital

intensity when it noted the following[4]:

> WHEREAS, To meet the challenges of the water and wastewater industry which may face a combined capital investment requirement nearing one trillion dollars over a 20-year period, the following policies and mechanisms were identified to help ensure sustainable practices in promoting needed capital investment and cost-effective rates: a) the use of prospectively relevant test years; b) the distribution system improvement charge; c) construction work in progress; d) pass-through adjustments; e) staff-assisted rate cases; f) consolidation to achieve economies of scale; g) acquisition adjustment policies to promote consolidation and elimination of non-viable systems; h) a streamlined rate case process; i) mediation and settlement procedures; j) defined timeframes for rate cases; k) integrated water resource management; l) a fair return on capital investment; *and* m) improved communications with ratepayers and stakeholders; *and*
>
> WHEREAS, Due to the massive capital investment required to meet current and future water quality and infrastructure requirements, adequately adjusting allowed equity returns to recognize industry risk in order to provide a fair return on invested capital was recognized as crucial...
>
> RESOLVED, That the National Association of Regulatory Utility Commissions (NARUC), convened in its July 2005 Summer Meetings in Austin, Texas, conceptually supports review and consideration of the innovative regulatory policies and practices identified herein as "best practices;" *and be it further*
>
> RESOLVED, That NARUC recommends that economic regulators consider and adopt as many as appropriate of the regulatory mechanisms identified herein as best practices...

The water utility industry also experiences lower relative depreciation rates. Lower depreciation rates, as one of the principal sources of internal cash flows for all utilities, mean that water utility depreciation as a source of internally-generated cash is far less than for electric, natural gas or telephone

[4] "Resolution Supporting Consideration of Regulatory Policies Deemed as 'Best Practices'", Sponsored by the Committee on Water. Adopted by the NARUC Board of Directors, July 27, 2005.

utilities. Water utilities' assets have longer lives and, hence, longer capital recovery periods. As such, water utilities face greater risk due to inflation which results in a higher replacement cost per dollar of net plant than for other types of utilities. Specifically, water utilities, including CWS, experienced an average depreciation rate of but 1.7% for the test year ended September 30, 2005. In contrast, the electric, combination electric and gas, natural gas or telephone industries, experienced average depreciation rates of 3.9%, 3.8%, 3.9% and 7.2%, respectively.

In addition, as noted by S&P[5]:

> Environmental regulations, which can be particularly stringent for water utilities, impact credit quality. Mandatory compliance with environmental legislation is often quite capital intensive. This is particularly so in the areas of wastewater discharge and drinking water quality. In most jurisdictions observed by Standard & Poor's, pressures from environmental standards is likely to increase. High compliance costs can impact a water utility's creditworthiness if their financing is up-front and their recovery is over a long period, potentially putting stress on the financial profile in the short term.
>
> A key rating consideration is the extent of the link between a water utility's legislated environmental standards and its rate-setting mechanism. Stringent environmental rules requiring expensive upgrade and compliance costs are not necessarily a negative rating factor, so long as the utility has a flexible and transparent process for passing the costs through to consumers, and these consumers are willing and able to bear these costs. Standard & Poor's considers whether the environmental and economic regulators are acting in isolation, or perhaps have different constituencies.

Moody's[6] also notes that:

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[5] Standard & Poor's, Criteria: Infrastructure Finance, Water and Wastewater Utilities, Projects and Concessions, September 1998, p. 47.

[6] Moody's Investors Service, Global Credit Research, "Credit Risks and Increasing for U.S. Investor Owned Water Utilities", Special Comment, January 2004, p. 5.

> We expect that the credit quality of the investor-owned U.S. water utilities will likely deteriorate over the next several years, due to ongoing large capital spending requirements in the industry. Larger capital expenditures facing the water utility industry result from the following factors:
>
> - Continued federal and state environmental compliance requirements;
> - Higher capital investments for constructing modern water treatment and filtration facilities;
> - Ongoing improvement of maturing distribution and delivery infrastructure; and
> - Heightened security measures for emergency preparedness designed to prevent potential terrorist acts.
>
> Given the overwhelming importance of protecting the public health, the water utility industry remains regulated by the federal and state regulatory agencies. As a result of this importance, the level of state regulators' responsiveness is critical in enabling the water utilities to maintain their financial integrity. In addition, when utilities are permitted a fair rate of return and timely rate adjustments to reflect the costs of providing this essential service, they will be more able to implement the necessary safeguards to protect the public health.

In addition, the water utility industry, as well as the electric and natural gas utility industries, faces the need for increased funds to finance the increasing security costs required to protect the water supply and infrastructure from potential terrorist attacks in the post-September 11, 2001 world as noted by Value Line above.

In view of the foregoing, it is clear that the water utility industry's high degree of capital intensity coupled with the need for substantial infrastructure capital spending and increased anti-terrorism and anti-bioterrorism security spending, requires regulatory support in the form of adequate and timely rate relief, as recognized by NARUC so water utilities will be able to successfully meet the challenges they face.

Q. Does CWS face additional extraordinary business risk?

A. Yes. CWS' smaller size, i.e., total capital of $13.407 million at September 30, 2005 (see page 3 of Schedule PMA-1) vis-à-vis average total capital of $510.845 million in 2005 for the proxy group of seven AUS Utility Reports water companies (see page 3 of Schedule PMA-1), $815.059 million for the proxy group of four Value Line (Std. Ed.) water companies indicates greater relative business risk because all else equal, size has a bearing on risk.

Q. Please explain why size has a bearing on business risk.

A. Smaller companies are less capable of coping with significant events which affect sales, revenues and earnings.

The loss of revenues from a few larger customers, for example, would have a greater effect on a small company than on a much larger company with a larger customer base. Because CWS is the regulated utility to whose rate base the PSC SC's ultimately allowed overall cost of capital and fair rate of return will be applied, the relevant risk reflected in the cost of capital must be that of CWS, including the impact of its small size on common equity cost rate. Size is an important factor which affects common equity cost rate, and CWS is significantly smaller than the average company in each proxy group based upon total investor-provided capital as shown below:

Table 3

	2005 Total Capital ($ millions)	Times Greater than The Company	Market Capitalization(1) ($ Millions)	Times Greater than the Company
Proxy group of Seven AUS Utility Reports Water Companies	$510.845	38.1x	$675.530	20.0x
Proxy Group of Four Value Line (Std. Ed.) Water Companies	815.059	60.8x	1,104.905	32.8x
Carolina Water Service, Inc.	13.407		33.772 (2) 33.719 (3)	

(1) From Schedule PMA-1, page 3.
(2) Based upon the average market-to-book ratio of the proxy group of seven AUS Utility Reports water companies.
(3) Based upon the average market-to-book ratio of the proxy group of four Value Line (Std. Ed.) water companies.

I have also done a study of the market capitalization of the proxy groups of seven AUS Utility Reports water companies and four Value Line (Std. Ed.) water companies. The results are shown on page 5 of Schedule PMA-1 which summarizes the market capitalizations as of May 24, 2006.

CWS' common stock is not publicly traded. Consequently, I have assumed that if it were publicly traded, its consolidated common shares would be selling at the same market-to-book ratio as the average market-to-book ratio for each proxy group, or 251.9% (seven water companies) and 251.5% (four water companies) at May 24, 2006. Hence, CWS' market capitalization is estimated at $33.772 million and $33.719 million based upon the average market-to-book ratios of each proxy group, respectively, as of May 24, 2006. In contrast, the market capitalization of the average AUS Utility Reports water company was $675.530 million on May 24, 2006, or 20.0 times larger than CWS' estimated market capitalization. In addition, the market capitalization of the average Value Line (Std. Ed.) water company was $1.105 billion at May

24, 2006, or 32.8 times larger than CWS. It is conventional wisdom, supported by actual returns over time, and a general premise contained in basic finance textbooks, that smaller companies tend to be more risky causing investors to expect greater returns as compensation for that risk.

Q. Does the financial literature affirm a relationship between size and common equity cost rate?

A. Yes. Brigham[7] states"

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of large-firms stocks; this is called "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what *the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.* (italics added)

V. FINANCIAL RISK

Q. Please define financial risk and explain why it is important to the determination of a fair rate of return?

A. Financial risk is the additional risk created by the introduction of senior capital, i.e., debt and preferred stock, into the capital structure. In other words, the higher the proportion of senior capital in the capital structure, the higher the financial risk.

Utilities formerly were considered to have much less business risk vis-

[7] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 623.

a-vis unregulated enterprises, and, as a result, a larger percentage of debt capital was acceptable to investors. In June 2004, S&P revised its utility financial guidelines and assigned new business profile scores to U.S. utility and power companies to better reflect the relative business risk among companies in the sector. S&P's revised financial guidelines for utilities can be found in Schedule PMA-2, page 14, while pages 1 through 9 describe the utility bond rating process. As shown on page 14, S&P's revised financial guidelines for utilities establishes financial guideline ratios for ten levels of business position/profile with "1" being considered lowest risk and "10" being highest risk.

As shown on Schedule PMA-10, page 2, the average S&P bond rating (issuer credit rating) and business profile of the seven AUS Utility Reports water companies is A (A) and "2.6", which rounds to "3" and A+/A (A) and "2.7" (rounded to "3"), for the four Value Line (Std. Ed.) water companies.

Q. How can one measure the combined business and financial risks, i.e., investment risk of an enterprise?

A. Similar bond ratings/issue credit ratings reflect similar combined business and financial risks, i.e., total risk. Although the specific business or financial risks may differ between companies, the same bond rating indicates that the combined risks are similar as the bond rating process reflects acknowledgment of all diversifiable business and financial risks in order to assess credit quality or credit risk. For example, S&P expressly states that the bond rating process encompasses a qualitative analysis of business and financial risks (see pages 3 through 9 of Schedule PMA-2). While not a

means by which one can specifically quantify the differential in common equity risk between companies, the bond (credit) rating provides a useful means to compare/differentiate investment risk between companies because it is the result of a thorough and comprehensive analysis of all diversifiable business and financial risks, i.e., investment risk.

The Company's ratemaking common equity ratio of 40.90% is significantly lower than the average 2005 total equity ratios of the seven AUS Utility Reports water companies, 46.08%, as can be gleaned from the information shown on page 3 of Schedule PMA-3 and of the four Value Line water companies, 49.07%, as shown on page 3 of Schedule PMA-4, indicating similar, but slightly greater relative financial risk which exacerbates CWS's greater relative business risk based upon its smaller relative size vis-à-vis the two proxy groups.

VI. CAROLINA WATER SERVICE, INC.

Q. Have you reviewed the rate filing?

A. Yes. CWS is a wholly-owned subsidiary of Utilities, Inc. and provides water and sewer service to 7,431 (water) and 11,973 (sewer) customers in ten (10) South Carolina counties.

VII. PROXY GROUPS

Q. Please explain how you chose the proxy group of seven AUS Utility Reports water companies.

A. The basis of selection for the proxy group of seven AUS Utility Reports water companies were those companies that meet the following criteria: 1) they are included in the Water Company Group of AUS Utility Reports (May 2006); 2) they have Value Line or Thomson FN/First Call Consensus five-year EPS growth projections; and 3) they have more than 70% of their 2005 operating revenues derived from water operations. Seven companies met all of these criteria.

Q. Please describe Schedule PMA-3.

A. Schedule PMA-3 contains comparative capitalization and financial statistics for the seven AUS Utility Reports water companies for the years 2001 through 2005. The schedule consists of three pages. Page 1 contains a summary of the comparative data for the years 2001-2005. Page 2 contains notes relevant to page 1, as well as the basis of selection and names of the individual companies in the proxy group. Page 3 contains the capital structure ratios based upon total capital (including short-term debt) by company and on average for the years 2001-2005.

During the five-year period ending 2005, the historically achieved average earnings rate on book common equity for this group ranged between 8.28% in 2003, and 10.61% in 2001, and averaged 9.43%. The five-year ending 2005 average common equity ratio based upon total investor-provided capital was 44.86%, while the five-year average dividend payout ratio was 80.97%.

Coverage of interest charges, excluding all AFUDC from funds from operations for the years 2001-2005 ranged between 3.46 and 3.92 times and

averaged 3.59 times during the five-year period, while funds from operations relative to total debt ranged from 14.96% to 17.56% and averaged 15.98% for the five-year period.

Q. Please explain how you chose the proxy group of four Value Line water companies.

A. The basis of selection for the proxy group of four Value Line (Standard Edition) water companies was to include those companies which are part of Value Line's (Standard Edition) Water Utility Industry Group.

Q. Please describe Schedule PMA-4.

A. Schedule PMA-4 contains comparative capitalization and financial statistics for the four Value Line (Standard Edition) water companies for the years 2001 through 2005. The schedule consists of two pages. Page 1 contains a summary of the comparative data for the years 2001-2005. Page 2 contains notes relevant to page 1, as well as the basis of selection and names of the individual companies in the proxy group. Page 3 contains the capital structure ratios based upon total capital (including short-term debt) by company and on average for the years 2001-2005.

During the five-year period ending 2005, the historically achieved average earnings rate on book common equity for this group ranged between 8.38% in 2004, and 10.91% in 2002, and averaged 9.70%. The five-year ending 2005 average common equity ratio based upon total investor-provided capital was 45.71%, while the five-year average dividend payout ratio was 67.08%.

Coverage of interest charges, excluding all AFUDC from funds from operations for the years 2001-2005 ranged between 3.61 and 4.40 times and averaged 3.93 times during the five-year period, while funds from operations relative to total debt ranged from 15.81% to 20.38% and averaged 18.09% during the five-year period.

VIII. COMMON EQUITY COST RATE MODELS

A. The Efficient Market Hypothesis (EMH)

Q. Are the cost of common equity models you use market-based models, and hence based upon the EMH?

A. Yes. The DCF model is market-based in that market prices are utilized in developing the dividend yield component of the model. The RPM is market-based in that the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of risk. In addition, the use of betas to determine the equity risk premium also reflects the market's assessment of risk as betas are derived from regression analyses of market prices. The CAPM is market-based for many of the same reasons that the RPM is market-based i.e., the use of expected bond (Treasury bond) yields and betas. The CEM is market-based in that the process of selecting the comparable risk non-utility companies is based upon statistics which result from regression analyses of market prices. Therefore, all the cost of common equity models I utilize are market-based models, and hence based upon the EMH.

Q. Please describe the conceptual basis of the EMH.

A. The Efficient Market Hypothesis (EMH), which is the foundation of modern

investment theory, was pioneered by Eugene F. Fama[8] in 1970. An efficient market is one in which security prices reflect all relevant information all the time. This implies that prices adjust instantaneously to new information, thus reflecting the intrinsic fundamental economic value of a security.[9]

The essential components of the EMH are:

A. Investors are rational and invest in assets providing the highest expected return given a particular level of risk.

B. Current market prices reflect all publicly available information.

C. Returns are independent i.e., today's market returns are unrelated to yesterday's returns.

D. Capital markets follow a random walk i.e., the probability distribution of expected returns approximates a normal distribution.

Brealey and Myers state:[10]

> When economists say that the security market is 'efficient', they are not talking about whether the filing is up to date or whether desktops are tidy. They mean that information is widely and cheaply available to investors and that all relevant and ascertainable information is already reflected in security prices.

The three forms of the EMH are:

A. The "weak" form which asserts that all past market prices and data are fully reflected in securities prices i.e., technical analysis cannot enable

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[8] Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work". Journal of Finance, May 1970, pp. 383-417.

[9] Morin, Roger A., Regulatory Finance - Utilities' Cost of Capital. Public Utility Reports, Inc., Arlington, VA, 1994, p. 136.

[10] Brealey, R.A. and Myers, S.C., Principles of Corporate Finance, McGraw-Hill Publications, Inc., 1996, pp. 323-324.

an investor to "outperform the market".

B. The "semistrong" form which asserts that all publicly available information is fully reflected in securities prices i.e., fundamental analysis cannot enable an investor to "outperform the market".

C. The "strong" form which asserts that all information, both public and private, is fully reflected in securities prices i.e., even insider information cannot enable an investor to "outperform the market".

The "semistrong" form of the EMH is generally held to be true because the use of insider information often enables investors to "outperform the market" and earn excessive returns. The generally-accepted "semistrong" form of the EMH means that all perceived risks are taken into account by investors in the prices they pay for securities. Investors are aware of all publicly-available information, including bond ratings, discussions about companies by bond rating agencies and investment analysts as well as the various cost of common equity methodologies (models) discussed in the financial literature. In an attempt to emulate investor behavior, this means that no single common equity cost rate model should be relied upon in determining a cost rate of common equity and that the results of multiple cost of common equity models should be taken into account.

Q. Is there support in the academic literature for the need to rely upon more than one cost of common equity model in arriving at a recommended common equity cost rate?

A. Yes. For example, Phillips[11] states:

[11] Charles F. Phillips, Jr., The Regulation of Public Utilities-Theory and Practice, 1993, Public Utility Reports, Inc., Arlington, VA, p. 396, 398.

> Since regulation establishes a level of authorized earnings which, in turn, implicitly influences dividends per share, *estimation of the growth rate from such data is an inherently circular process. For these reasons, the DCF model "suggests a degree of precision which is in fact not present" and leaves "wide room for controversy and argument about the level of k" [investors' capitalization or discount rate, i.e., the cost of capital].* (italics added) (p. 396)
>
> * * *
>
> Despite the difficulty of measuring relative risk, the comparable earnings standard is no harder to apply than is the market-determined standard. The DCF method, to illustrate, requires a subjective determination of the growth rate the market is contemplating. Moreover, as Leventhal has argued: *'Unless the utility is permitted to earn a return comparable to that available elsewhere on similar risk, it will not be able in the long run to attract capital.'* (italics added) (p. 398)

Also, Morin[12] states:

> Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity. *It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings does not make it superior to other methods.* (italics added) (Morin, pp. 231-232)
>
> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. *The failure of the traditional infinite growth DCF model to account for changes in relative market valuation, discussed above, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. It follows that more than one methodology should be employed in arriving at a judgment on the cost of equity and that these methodologies should be applied across a series of comparable risk companies. ...Financial literature supports the use of multiple methods.* (italics added) (Morin, p. 239)

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[12] Roger A. Morin, Regulatory Finance-Utilities' Cost of Capital, 1994, Public Utilities Reports, Inc., Arlington, VA, pp. 231-232, 239-240.

Professor Eugene Brigham, a widely respected scholar and finance academician asserted:

> *In practical work, it is often best to use all three methods -CAPM, bond yield plus risk premium, and DCF* - and then apply judgement when the methods produce different results. People experienced in estimating capital costs recognize that both careful analysis and very fine judgements are required. It would be nice to pretend that these judgements are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible. (italics added) (Morin, pp. 239-240)

Another prominent finance scholar, Professor Stewart Myers, in his best-selling corporate finance textbook stated:

> *The constant growth formula and the capital asset pricing model are two different ways of getting a handle on the same problem.* (italics added) (Morin, p. 240)

In an earlier article, Professor Myers explained the point more fully:

> Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data. (Morin, p. 240)

In view of the foregoing, it is clear that investors are aware of all of the models available for use in determining a common equity cost rate. The EMH requires the assumption that, collectively, investors use them all.

B. Discounted Cash Flow Model (DCF)

1. Theoretical Basis

Q. What is the theoretical basis of the DCF model?

A. The theory of the DCF model is that the present value of an expected future

stream of net cash flows during the investment holding period can be determined by discounting the cash flows at the cost of capital, or the capitalization rate. DCF theory suggests that an investor buys a stock for an expected total return rate which is expected to be derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Thus, the dividend yield on market price plus a growth rate equals the capitalization rate, i.e., the total return rate expected by investors.

Q. Please comment on the applicability of the DCF model in establishing a cost of common equity for CWS.

A. The extent to which the DCF is relied upon should depend upon the extent to which the cost rate results differ from those resulting from the use of other cost of common equity models because the DCF model has a tendency to mis-specify investors' required return rate when the market value of common stock differs significantly from its book value. Market values and book values of common stocks are seldom at unity. The market-based DCF model will result in a total annual dollar return on book common equity equal to the total annual dollar return expected by investors only when market and book values are equal, a rare and unlikely situation. In recent years, the market values of utilities' common stocks have been well in excess of their book values as shown on page 1 of Schedule PMA-3 ranging between 210.95% and 252.26% for the proxy group of seven AUS Utility Reports water companies and between 220.49% and 248.19% for the proxy group of four Value Line (Std. Ed.) water companies as shown on page 1 of Schedule PMA-4.

Mathematically, the DCF model understates/overstates investors' required return rate when market value exceeds/is less than book value

because, in many instances, market prices reflect investors' assessments of long-range market price growth potentials (consistent with the infinite investment horizon implicit in the standard regulatory version of the DCF model) not fully reflected in analysts' shorter range forecasts of future growth for earnings per share (EPS) and dividends per share (DPS) accounting proxies. This indicates the need to better match market prices with investors' longer range growth expectations embedded in those prices. However, the understatement/overstatement of investors' required return rate associated with the application of the market price-based DCF model to the book value of common equity clearly illustrates why reliance upon a single common equity cost rate model should be avoided.

2. Applicability of a Market-Based Common Equity Cost Rate to a Book Value Rate Base

Q. Is it reasonable to expect the market values of utilities' common stocks to continue to sell well above their book values?

A. Yes. I believe that the common stocks of utilities will continue to sell substantially above their book values, because many investors, especially individuals who traditionally committed less capital to the equity markets, will likely continue to commit a greater percentage of their available capital to common stocks in view of lower interest rate alternative investment opportunities and to provide for retirement. The recent past and current capital market environment is in stark contrast to the late 1970's and early 1980's when very high (by historical standards) yields on secured debt instruments in public utilities were available. Despite the fact that the market declined significantly during late 2001 through 2003, following the September 11, 2001 tragedy and despite recent market volatility due to volatile energy

prices, utility stocks have continued to sell at market prices well above their book values. The significant recent increases in market-to-book ratios have been influenced by factors other than fundamentals such as actual and reported growth in earnings per share (EPS) and dividends per share (DPS).

Traditional rate base/rate of return regulation, where a market-based common equity cost rate is applied to a book value rate base, presumes that market-to-book ratios are one. However, there is ample empirical evidence over sustained periods which demonstrate that this is an incorrect presumption. Market-to-book ratios of one are rarely the case as there are many factors affecting the market price of common stocks, in addition to earnings. Moreover, allowed ROEs have a limited effect on utilities' market/book ratios as market prices of common stocks are influenced by a number of other factors beyond the direct influence of the regulatory process.

For example, Phillips[13] states:

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.'

In addition, Bonbright[14] states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile*

[13] Id., at p. 395.

[14] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, 1988, Public Utilities Reports, Inc., Arlington, VA, p. 334.

> *stock market.* In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (italics added)

In view of the foregoing, a mismatch results in the application of the DCF model as market prices reflect long range expectations of growth in market prices (consistent with the presumed infinite investment horizon of the standard DCF model), while the short range forecasts of growth in accounting proxies, i.e., EPS and DPS, do not reflect the full measure of growth (market price appreciation) expected in per share market value.

Q. Please explain why a DCF-derived common equity cost rate mis-specifies investors' expected common equity cost rate when the market/book ratio is greater or less than unity (100%).

A. Under the DCF model, the rate of return investors require is related to the price paid for a stock i.e., market price is the basis upon which they formulate the required rate of return. A regulated utility is limited to earning on its net book value (depreciated original cost) rate base. As discussed previously, market values differ from book values for many reasons unrelated to earnings. Thus, when market values differ significantly from book values, a market-based DCF cost rate applied to the book value of common equity will not accurately reflect investors' expected common equity cost rate. It will either overstate or understate investors' expected common equity cost rate (without regard to any adjustment for flotation costs which may, at times, be appropriate on an ad hoc basis) depending upon whether market value is less

than or greater than book value.

Schedule PMA-5 demonstrates how a market-based DCF cost rate applied to a book value which is either below or above market value will either understate or overstate investors' expectations because these expectations are based on a required return on market value. As shown, there is no realistic opportunity to earn the market-based rate of return on book value. Note that in Column 1, investors expect a 10.00% return on a market price of $24.00. Moreover, as shown in Column 2, when the 10.00% return rate on market value is applied to book value which is approximately 55.5% of market value, the total annual return opportunity is just $1.333 on book value. With an annual dividend of $0.840, there is an opportunity for growth of $0.493 which translates to just 2.05% in contrast to the 6.50% growth in market price expected by investors. There is no way to possibly achieve the expected growth of $1.560 or 6.50% absent a huge cut in the annual dividend, an unreasonable expectation which would result in an extremely adverse reaction by investors because it would be a sign of extreme financial distress.

Conversely, in Column 3, where the market-to-book ratio is 80%, when the 10.00% return rate on market value is applied to a book value which is approximately 25.0% greater than market value, the total annual return opportunity is $3.000 on book value with an annual dividend of $0.840, there is an opportunity for growth of $2.160 which translates to 9.00% in contrast to the 6.50% growth in market price expected by investors.

In view of the foregoing, it is clear that the DCF model either understates or overstates investors' required cost of common equity capital when market values exceed or are less than their underlying book values and thus multiple cost of common equity models should be relied upon when estimating investors' expectations.

Q. Have any commissions explicitly stated that the DCF model should not be relied upon exclusively?

A. Yes. As stated previously, the majority of regulatory commissions rely upon a combination of the various cost of common equity models available.

Specifically, the Iowa Utilities Board (IUB) has recognized the tendency of the DCF model to understate investors' expected cost of common equity capital when market values are significantly above their book values. In its June 17, 1994 Final Decision and Order in Re U.S. West Communications, Docket No. RPU-93-9 the IUB stated:[15]

> While the Board has relied in the past on the DCF model, in *Iowa Electric Light and Power Company*, Docket No. RPU-89-9, "Final Decision and Order" (October 15, 1990), the Board stated: '[T]he DCF model may understate the return on equity in some circumstances. This is particularly true when the market is relatively volatile and the company in question has a market-to-book ratio in excess of one." Those conditions exist in this case and the Board will not rely on the DCF return. (Consumer Advocate Ex. 367, See Tr. 2208, 2250, 2277, 2283-2284). *The DCF approach underestimates the cost of equity needed to assure capital attraction during this time of market uncertainty and volatility. The board will, therefore, give preference to the risk premium approach.* (italics added)

Similarly, in 1994, the Indiana Utility Regulatory Commission (IURC), for example, recognized the tendency of the DCF model to understate the cost of equity when market value exceeds book value[16]:

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[15] Re: U.S. West Communications, Inc., Docket No. RPU-93-9, 152 PUR4th at 459.

[16] Re: Indiana-American Water Company, Inc., Cause No. 39595, 150 PUR4th at 167-168.

> In determining a common equity cost rate, we must again recognize the tendency of the traditional DCF model, . . . to understate the cost of common equity. As the Commission stated in Indiana-Mich. Power Co. (BPU 8/24/90), Cause No. 38728, 116 PUR 4th 1, 17-18, *"the unadjusted DCF result is almost always well below what any informed financial analyst would regard as defensible, and therefore, requires an upward adjustment based largely on the expert witness's judgement."* (italics added)
>
> * * *
>
> [u]nder the traditional DCF model . . . the appropriate earnings level of the utility would not be derived by applying the DCF result to the market price of the Company's stock . . . it would be applied to the utility's net original cost rate base. *If the market price of the stock exceeds its book value, . . . the investor will not achieve the return which the model finds is necessary.* (italics added)

Also, the Hawaii Public Utilities Commission (HPUC) recognized this phenomenon in a decision dated June 30, 1992[17] in a case regarding Hawaiian Electric Company, Inc., when it stated:

> In this docket, as in other rate proceedings, experts disagree on the relative merits of the various methods of determining the cost of common equity. In this docket, HECO is particularly critical of the use of the constant growth DCF methodology. It asserts that method is imbued with downward bias and, thus, its use will understate common equity cost. *We are cognizant of the shortcomings of the DCF method.* There are, however, shortcomings to be found with the use of CAPM and the RP methods as well. We reiterate that, despite the problems with the use of any methodology, *all methods should be considered and that the DCF method and the combined CAPM and RP methods should be given equal weight.* (italics added)

Q. Do other cost of common equity models contain unrealistic assumptions and have shortcomings?

[17] Re: Hawaiian Electric Company, Inc., Docket No. 6998, 134 PUR4th at 479.

A. Yes. That is why I am not recommending that any of the models be relied upon exclusively. I have focused on the shortcomings of the DCF model because some regulatory commissions still place excessive or exclusive reliance upon it. Although the DCF model is useful, it is not a superior methodology that supplants financial theory and market evidence based upon other valid cost of common equity models. For these reasons, no model, including the DCF, should be relied upon exclusively.

3. Application of the Single-Stage DCF Model

a. Dividend Yield

Q. Please describe the dividend yield you used in your application of the DCF model.

A. The unadjusted dividend yields are based upon an average of a recent spot date (May 24, 2006) as well as an average of the three months ended April 30, 2006, respectively, which are shown on Schedule PMA-6. The average unadjusted yield is 2.8% for the seven AUS Utility Reports water companies and 2.4% for the four Value Line (Std. Ed.) water companies.

b. Discrete Adjustment of Dividend Yield

Q. Please explain the dividend growth component shown on Schedule PMA-6, page 1, Column 2.

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment to the dividend yield must be made. This

is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

Since the various companies in the proxy groups increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the D_1 expression, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on Schedule PMA-6 have been adjusted upward to reflect one-half the growth rates shown in Column 4.

c. Selection of Growth Rates for Use in the Single-Stage DCF Model

Q. Please explain the basis of the growth rates of the proxy group of seven AUS Utility Reports water companies and the proxy group of four Value Line (Std. Ed.) water companies which you use in your application of the DCF model.

A. Schedule PMA-8 indicates that approximately 75% of the common shares of the proxy group of seven AUS Utility Reports water companies and 69.1% of the common shares of the proxy group of four Value Line (Std. Ed.) water companies are held by individuals as opposed to institutional investors. Individual investors are particularly likely to place great significance on the opinions expressed by financial information services, such as Value Line and Thomson FN/First Call, which are easily accessible and/or available on the Internet.

Forecasts by analysts, including Value Line, are typically limited to five years. In my opinion, investors in water utilities would have little interest in historical growth rates beyond the most recent five years because an

historical five-year period balances the five-year period for projected growth rates. Consequently, the use of five-year historical and five-year projected growth rates in earnings per share (EPS) and dividends per share (DPS) as well as the sum of internal and external growth in per share value (BR + SV) is appropriate to consider in the determination of a growth rate for use in this application of the DCF model. In addition, investors realize that analysts have significant insight into the dynamics of the industries and they analyze individual companies as well as companies' abilities to effectively manage the effects of changing laws and regulations. Consequently, I have reviewed analysts' projected growth in EPS, as well as historical and projected five-year compound growth rates in EPS, DPS and (BR + SV) for each company in each proxy group. The historical growth rates are from Value Line or are calculated in a manner similar to Value Line, while the projected growth rates in earnings are from Value Line and Thomson FN/First Call forecasts. Thomson FN/First Call growth rate estimates are not available for DPS and internal growth, and they do not include the Value Line projections.

In addition to evaluating EPS and DPS growth rates, it is reasonable to assume that investors also assess (BR + SV). The concept is based on well documented financial theory that future dividend growth is a function of the portion of the overall return to investors which is reinvested in the firm plus the sales of new common stock. Consequently, the growth component as proxied by internal and external growth is defined as follows:

$$g = BR + SV$$

Where:

B = the fraction of earnings retained by the firm, i.e., retention ratio

R = the return on common equity

S = the growth in common shares outstanding

V = the premium/discount of a company's stock price relative to its book value, i.e., one minus the complement of the market/book ratio.

Consistent with the use of five-year historical and five-year projected growth rates in EPS and DPS, I have derived five-year historical and five-year projected (BR + SV) growth. Projected EPS growth rate averages are shown in Column 4 on the lower half of Schedule PMA-6, while historical and projected growth in DPS, EPS, and BR + SV is shown in Column 4 on the upper half of Schedule PMA-6. The bases of these growth rates are summarized for the companies in each proxy group on page 1, Schedule PMA-9. Supporting growth rate data are detailed on pages 2 through 9 of Schedule PMA-9, while pages 8 through 13 contain all of the most current Value Line Investment Survey data for the companies in both proxy groups.

d. Conclusion of Single-Stage Cost Rates

Q. Please summarize the single-stage growth DCF model results.

A. As shown on Schedule PMA-6, the results of the applications of the single-stage DCF model are 9.9% for the proxy group of seven AUS Utility Reports water companies and 10.0% for the proxy group of four Value Line (Std. Ed.) water companies. In arriving at conclusions of indicated common equity cost

rates for the two proxy groups, I included only those single-stage DCF results which are 8.7% or greater, i.e., 200 basis points above the average prospective yield on Moody's A rated public utility bonds of 6.7% based upon Blue Chip Financial Forecasts' June 1, 2006 consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds as discussed subsequently and derived in Note 3 on page 6 of Schedule PMA-10. As will also be discussed subsequently, it is necessary to adjust the average Aaa rated corporate bond yield to be equivalent to a Moody's A2 rated public utility bond. Thus, an adjustment to the average prospective yield on Aaa rated corporate bonds of 0.5% was required, as detailed in Note 2 on page 1 of Schedule PMA-10, resulting in an average prospective yield on Moody's A rated public utility bonds of 6.7%.

Based upon a review of recent authorized returns on common equity (ROE) throughout the United States vis-à-vis concurrent estimates of the forecasted average yield on A rated public utility bonds, I determined that the equity risk premium implicit in authorized ROEs for the first quarter 2006 ranged between 310 and 551 basis points and averaged 399 basis points and the twelve months ended December 2005 is between 310 and 551 basis points, averaging 404 basis points. In addition, the equity risk premium implicit in all regulatory awarded returns on common equity for 2004 and to date in 2005, ranged from 280 to 551 basis points, averaging 397 basis points. In accordance with the EMH, investors are aware of these implicit equity risk premia and, in my opinion, would not consider returns providing an equity risk premium of only 200 basis points either reasonable or credible. Therefore, it is reasonable, if not conservative, to eliminate any single-stage DCF results which are no more than 200 basis points above the current prospective average yield on A rated public utility bonds of 6.7%.

1
2 4. Conclusion of DCF Cost Rates
3 Q. Please summarize the DCF model results.
4
5 A. As shown on Schedule PMA-6, the results of the applications of the DCF
6 model are 9.9% for the proxy group of seven AUS Utility Reports water
7 companies and 10.0% for the proxy group of four Value Line (Std. Ed.) water
8 companies.
9
10 C. The Risk Premium Model (RPM)
11 1. Theoretical Basis
12 Q. Please describe the theoretical basis of the RPM.
13
14 A. Risk Premium theory indicates that the cost of common equity capital is
15 greater than the prospective company-specific cost rate for long-term debt
16 capital. In other words, the cost of common equity equals the expected cost
17 rate for long-term debt capital plus a risk premium to compensate common
18 shareholders for the added risk of being unsecured and last-in-line for any
19 claim on the corporation's assets and earnings.
20
21 Q. Some analysts state that the RPM is another form of the CAPM. Do you
22 agree?
23
24 A. While there are some similarities, there is a very significant distinction
25 between the two models. The RPM and CAPM both add a "risk premium" to
26 an interest rate. However, the beta approach to the determination of an equity
27 risk premium in the RPM should not be confused with the CAPM. Beta is a

measure of systematic, or market, risk, a relatively small percentage of total risk (the sum of both non-diversifiable systematic and diversifiable unsystematic risk). Unsystematic risk is fully captured in the RPM through the use of the prospective long-term bond yield as can be shown by reference to pages 3 through 9 of Schedule PMA-2, which confirm that the bond rating process involves an assessment of all business and financial risks. In contrast, the use of a risk-free rate of return in the CAPM does not, and by definition cannot, reflect a company's specific i.e., unsystematic risk. Consequently, a much larger portion of the total common equity cost rate is reflected in the company-specific bond yield (a product of the bond rating) than is reflected in the risk-free rate in the CAPM, or indeed even by the dividend yield employed in the DCF model. Moreover, the financial literature recognizes the RPM and CAPM as two separate and distinct cost of common equity models as discussed previously.

Q. Have you performed RPM analyses of common equity cost rate for the two proxy groups?

A. Yes. The results of my application of the RPM are summarized on page 1 of Schedule PMA-10. On Line No. 3, page 1, Schedule PMA-10, I show the average expected yield on A rated public utility bonds of 6.7%. On Line No. 4, I show the adjustments, if necessary, that need to be made to the average 6.7% expected A rated utility bond yield so that the expected yields of 6.7% in Line No. 5 is reflective of the average Moody's bond rating of A2 for both the proxy groups of seven AUS Utility Reports' water companies and of four Value Line (Std. Ed.) water companies. On Line No. 6 of page 1, my conclusions of an equity risk premium applicable to each proxy group are shown, while the

total risk premium common equity cost rates are shown on Line No. 7.

2. Estimation of Expected Bond Yield

Q. Please explain the basis of the expected bond yield of 6.7% applicable to the average company in both proxy groups.

A. Because the cost of common equity is prospective, a prospective yield on similarly-rated long-term debt is essential. As shown on Schedule PMA-10, page 2, the average Moody's bond rating of both proxy groups is A2. I relied upon a consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the third calendar quarter of 2007 as derived from the June 1, 2006 Blue Chip Financial Forecasts (shown on page 7 of Schedule PMA-10). As shown on Line No. 1 of page 1 of Schedule PMA-10, the average expected yield on Moody's Aaa rated corporate bonds is 6.2%. It is necessary to adjust that average yield to be equivalent to a Moody's A2 rated public utility bond. Consequently, an adjustment to the average prospective yield on Aaa rated corporate bonds of 0.5% was required. It is shown on Line No. 2, page 1 of Schedule PMA-10 and explained in Note 2 at the bottom of the page. After adjustment, the expected bond yield applicable to a Moody's A rated public utility bond is 6.7% as shown on Line No. 3, page 1 of Schedule PMA-10.

Because both the proxy group of seven AUS Utility Reports water companies' and the proxy group of four Value Line (Std. Ed.) water companies' average Moody's bond rating is A2, no adjustment is necessary to make the prospective bond yield applicable to an A2 public utility bond. Therefore, the expected specific bond yield is 6.7% for both proxy groups of

water companies.

3. Estimation of the Equity Risk Premium

Q. Please explain the method utilized to estimate the equity risk premium.

A. I evaluated the results of two different historical equity risk premium studies, as well as Value Line's forecasted total annual market return in excess of the prospective yield on high grade corporate bonds, as detailed on pages 5, 6 and 8 of Schedule PMA-10. As shown on Line No. 3, page 5 of Schedule PMA-10, the mean equity risk premium based on both of the studies is 4.1% applicable to the proxy group of seven AUS Utility Reports water companies and 4.2% applicable to the proxy group of four Value Line (Std. Ed.) water companies. These estimates are the result of an average of a beta-derived historical equity risk premium and a forecasted total market equity risk premium as well as the mean historical equity risk premium applicable to public utilities with bonds rated A based upon holding period returns.

The basis of the beta-derived equity risk premia applicable to the proxy groups is shown on page 6 of Schedule PMA-10. Beta-determined equity risk premia should receive substantial weight because betas are derived from the market prices of common stocks over a recent five-year period. Beta is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a relative share of the market's total equity risk premium.

The total market equity risk premium utilized is 5.6% and is based upon an average of both the long-term historical and forecasted market risk premia of 6.2% and 4.9%, respectively, as shown on page 6 of Schedule PMA-10. To derive the historical market equity risk premium, I used the most

recent Ibbotson Associates' data on holding period returns for the S&P 500 Composite Index and the average historical yield on Moody's Aaa and A rated corporate bonds for the period 1926-2005. The use of holding period returns over a very long period of time is useful in the beta approach. As Ibbotson Associates'[18] Valuation Edition 2006 Yearbook states:

> The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.
>
> Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s and 1940s contain too many unusual events. This view is suspect because all periods contain "unusual" events. Some of the most unusual events this century took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, and the development of the European Economic Community – all of these happened approximately in the last 30 years.
>
> It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term volatility without considering the stock market crash and market volatility of the 1929-1931 period.

[18] Ibbotson Associates, Stocks, Bonds, Bills and Inflation – Valuation Edition 2006 Yearbook, pp. 82-83.

> Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 80-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this. (footnote omitted)

In addition, the use of long-term data in a RPM model is consistent with the long-term investment horizon presumed by the DCF model. Consequently, the long-term arithmetic mean total return rates on the market as a whole of 12.3% and the long-term arithmetic mean yield on corporate bonds of 6.1% were used, as shown at Line Nos. 1 and 2 of page 6 of Schedule PMA-10. As shown on Line No. 3 of page 6, the resultant long-term historical equity risk premium on the market as a whole is 6.2%.

I used arithmetic mean return rates because they are appropriate for cost of capital purposes. As Ibbotson Associates state in their Valuation Edition 2006 Yearbook[19]:

> The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the

[19] Id., p. 77.

> building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.
>
> The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-3 shows the realized equity risk premium for each year based on the returns of the S&P 500 and the income return on long-term government bonds. (The actual, observed difference between the return on the stock market and the riskless rate is known as the realized equity risk premium.) There is considerable volatility in the year-by-year statistics. At times the realized equity risk premium is even negative.

As Ibbotson Associates[20] states in their 1999 Yearbook:

> The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values....Stated another way, the arithmetic mean is correct because an investment with uncertain returns will have a higher expected ending wealth value than an investment which earns, with certainty, its compound or geometric rate of return every year....*Therefore, in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.* (italics added)

Ex-post (historical) total returns and equity risk premium spreads differ in size and direction over time. This is precisely why the arithmetic mean is important as it provides insight into the variance and standard deviation of returns. This prospect for variance, as captured in the arithmetic mean, provides the valuable insight needed by investors to estimate future risk when

[20] Ibbotson Associates, Stocks, Bonds, Bills and Inflation - 1999 Yearbook, pp. 157-158.

making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk. As discussed previously, all of the cost of common equity models, including the DCF, are premised upon the EMH, that all publicly available information is reflected in the market prices paid. If investors relied upon the geometric mean of ex-post spreads, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, *critical to risk analysis*.

The basis of the forecasted market equity risk premium can be found on Line Nos. 4 through 6 on page 6 of Schedule PMA-10. It is derived from an average of the most recent 3-month (using the months of March 2006 through May 2006) and a recent spot (May 26, 2006) median market price appreciation potentials by Value Line as explained in detail in Note 1 on page 3 of Schedule PMA-11. The average expected price appreciation is 42% which translates to 9.54% per annum and, when added to the average (similarly calculated) dividend yield of 1.59% equates to a forecasted annual total return rate on the market as a whole of 11.13%, rounded to 11.1%. Thus, this methodology is consistent with the use of the 3-month and spot dividend yields in my application of the DCF model. To derive the forecasted total market equity risk premium of 4.9% shown on Schedule PMA-10, page 6, Line No. 6, the June 1, 2006 forecast of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the third calendar quarter 2007 of 6.2% from Blue Chip Financial Forecasts was deducted from the Value Line total market return of 11.1%. The calculation resulted in an expected market risk premium of 4.9%.

The average of the historical and projected market equity risk premia

of 6.2% and 4.9% is 5.55%, rounded to 5.6%.

On page 9 of Schedule PMA-10, the most current Value Line (Standard Edition) betas for the companies in the two proxy groups are shown. Applying the average beta of each proxy group to the average market equity risk premium of 5.6% results in a beta adjusted equity risk premium of 3.9% for the proxy group of seven AUS Utility Reports water companies and 4.1% for the proxy group of four Value Line (Std. Ed.) water companies as shown on Schedule PMA-10, page 6, Line No. 9.

A mean equity risk premium of 4.2% applicable to companies with A rated public utility bonds was calculated based upon holding period returns from a study using public utilities, as shown on Line No. 2, page 5 of Schedule PMA-10, and detailed on page 8 of the same schedule.

The equity risk premia applicable to the proxy group of seven AUS Utility Reports water companies and the proxy group of four Value Line (Std. Ed.) water companies are the averages of the beta-derived premia and that based upon the holding period returns of public utilities with A rated bonds, as summarized on Schedule PMA-10, page 5, i.e., 4.1% and 4.2%.

Q. What are the RPM calculated common equity cost rates?

A. They are 10.8% for the seven AUS Utility Reports water companies and 10.9% for the four Value Line (Std. Ed.) water companies as shown on Schedule PMA-10, page 1.

Q. Some critics of the RPM model claim that its weakness is that it presumes a constant equity risk premium. Is such a claim valid?

A. No. The equity risk premium varies inversely with interest rate changes, although not in tandem with those changes. This presumption of a constant equity risk premium is no different than the presumption of a constant "g", or growth component, in the DCF model. If one calculates a DCF cost rate today, the absolute result "k", as well as the growth component "g", would invariably differ from a calculation made just one or several months earlier. This implies that the "g" does change, although in the application of the standard DCF model, the "g" is presumed to be constant. Hence, there is no difference between the RPM and DCF models in that both models assume a constant component, but in reality, these components, the "g" and the equity risk premium both change.

As Morin[21] states with respect to the DCF model:

> It is not necessary that *g* be constant year after year to make the model valid. *The growth rate may vary randomly around some average expected value. Random variations around trend are perfectly acceptable, as long as the mean expected growth is constant.* The growth rate must be 'expectationally constant' to use formal statistical jargon. (italics added)

The foregoing confirms that the RPM is similar to the DCF model. Both assume an "expectationally constant" risk premium and growth rate, respectively, but in reality both vary (change) randomly around an arithmetic mean. Consequently, the use of the arithmetic mean, and not the geometric mean is confirmed as appropriate in the determination of an equity risk premium as discussed previously.

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[21] Id., p. 111.

D. The Capital Asset Pricing Model (CAPM)

1. Theoretical Basis

Q. Please explain the theoretical basis of the CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns. This covariability is measured by beta ("β"), an index measure of an individual security's variability relative to the market. A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. The CAPM presumes that investors require compensation for risks that cannot be eliminated through diversification. Systematic risks are caused by macroeconomic and other events that affect the returns on all assets. Essentially, the model is applied by adding a risk-free rate of return to a market risk premium. This market risk premium is adjusted proportionately to reflect the systematic risk of the individual security relative to the market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

R_s	=	Return rate on the common stock
R_f	=	Risk-free rate of return
R_m	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have confirmed its validity. These tests have measured the extent to which security returns and betas are related as predicted by the CAPM. However, Morin observes that while the results support the notion that beta is related to security returns, it has been determined that the empirical Security Market Line (SML) described by the CAPM is not as steeply sloped as the predicted SML. Morin[22] states:

> With few exceptions, the empirical studies agree that ... low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\ \beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. ...the value of x that best explains the observed relationship is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$ [23]

In view of theory and practical research, I have applied both the traditional CAPM and the empirical CAPM to the companies in the proxy groups and averaged the results.

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22 Id., at p. 321.

23 Id., at pp. 335-336.

2. Risk-Free Rate of Return

Q. Please describe your selection of a risk-free rate of return.

A. As shown at the top of column 3 on page 2 of Schedule PMA-11, the risk-free rate adopted for both applications of the CAPM is 5.3%. It is based upon the average consensus forecast of the reporting economists in the June 1, 2006 Blue Chip Financial Forecasts as shown in Note 2, page 4, of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the third calendar quarter 2007.

Q. Why is the prospective yield on long-term U.S. Treasury Bonds appropriate for use as the risk-free rate?

A. The yield on long-term T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds, and is consistent with the long-term investment horizon inherent in utilities' common stocks. Therefore, it is consistent with the long-term investment horizon presumed in the standard DCF model employed in regulatory ratemaking. As, Morin[24] states:

> Equity investors generally have an investment horizon far in excess of fifty days. More importantly, the short-term T-bill yields reflect the impact of factors different from those influencing long-term securities, such as common stock. For example, the premium for expected inflation absorbed into 90-day Treasury bills is likely to be far different than the inflationary premium absorbed into long-term securities yields. The yields on long-term Treasury bonds match more closely with common stock returns. *For investors with a long time*

[24] Id., at p. 308.

horizon, a long-term government bond is almost risk-free. (italics added)

In addition, Ibbotson Associates note in their Valuation Edition 2005 Yearbook[25]

> The horizon of the chosen Treasury security should match the horizon of whatever is being valued. When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond. Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury Note would not be appropriate since the Company will continue to exist beyond those five years.

In conclusion, the average expected yield on 30-year Treasury Bonds is the appropriate proxy for the risk-free rate in the CAPM because it is less volatile than yields on Treasury Bills, is almost risk-free as noted by Morin above and is consistent with the long-term investment horizon implicit in common stocks.

3. Market Equity Risk Premium

Q. Please explain the estimation of the expected equity risk premium for the market.

A. First, I estimate investors' expected total return rate for the market. Then I estimate the expected risk-free rate which I subtract from the expected total return rate for the market. The result is an expected equity risk premium for

[25] Id., p. 57.

the market, some proportion of which must be allocated to the companies in the proxy group through the use of beta. As a measure of risk relative to the market as a whole, the beta is an appropriate means by which to apportion the market risk premium to a specific company or group. The total market equity risk premium utilized was 6.5% and is based upon an average of the long-term historical and projected market risk premia.

The basis of the projected median market equity risk premium is explained in detail in Note 1 on page 3 of Schedule PMA-11. As previously discussed, it is derived from an average of the most recent 3-month (using the months of March 2006 through May 2006) and a recent spot (May 26, 2006) 3 - 5 year median total market price appreciation projections from Value Line, and the long-term historical average from Ibbotson Associates. The appreciation projections by Value Line plus average dividend yield equate to a forecasted annual total return rate on the market of 11.1%. The long-term historical return rate of 12.3% on the market as a whole is from Ibbotson Associates' Stocks, Bonds, Bills and Inflation – Valuation Edition 2006 Yearbook. In each instance, the relevant risk-free rate was deducted from the total market return rate. For example, from the Value Line projected total market return of 11.1%, the forecasted average risk-free rate of 5.3% was deducted indicating a forecasted market risk premium of 5.8%. From the Ibbotson Associates' long-term historical total return rate of 12.3%, the long-term historical income return rate on long-term U.S. Government Securities of 5.2% was deducted indicating an historical equity risk premium of 7.1%. Thus, the average of the projected and historical total market risk premia of 5.8% and 7.1%, respectively, is 6.45%, rounded to 6.5%.

Q What are the results of your applications of the traditional and empirical

CAPM to the proxy groups?

A. As shown on Schedule PMA-11, Line No. 1 of page 1, the traditional CAPM cost rate is 10.2% for the proxy group of seven AUS Utility Reports water companies and 10.1% for the proxy group of four Value Line (Std. Ed.) water companies. And, as shown on Line No. 2 of page 1, the empirical CAPM cost rate is 10.3% for the seven water companies and 10.5% for the four Value Line (Std. Ed.) water companies. The traditional and empirical CAPM cost rates are shown individually by company on pages 2 and 3 of Schedule PMA-11. As shown on Line No. 3, the CAPM cost rate applicable to the proxy group of seven AUS Utility Reports water companies is 10.3% and 10.3% applicable to the proxy group of four Value Line (Std. Ed.) water companies based upon the traditional and empirical CAPM results.

Q. Some critics of the ECAPM model claim that using adjusted betas in a traditional CAPM amounts to using an ECAPM. Is such a claim valid?

A. No. Frank J. Hanley, President, AUS Consultants - Utility Services and a colleague of mine, has been in communication with Dr. Roger A. Morin of Georgia State University and the author of Regulatory Finance – Utilities' Cost of Capital (1994, Public Utility Reports, Inc., Arlington, VA). Via e-mail, Dr. Morin has indicated that the ECAPM compensates for CAPM's inherent bias by ascribing a higher intercept and flatter slope to CAPM. It is not an attempt to increase beta. In his e-mail of August 31, 2000, Dr. Morin states:

> There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more

> fundamentally, does the standard form of the CAPM provide the best explanation of the risk-return relationship observed on capital markets?

Regarding the standard, or traditional, CAPM, Dr. Morin also states:

> There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well-known results in finance. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. The empirical form of the CAPM refines the standard form of the CAPM to account for this phenomenon.
>
> Thus, I do not share the view that the ECAPM is equivalent to a beta adjustment. For utility stocks with betas less than one, the CAPM understates the return. The ECAPM allows for the CAPM's inherent bias by ascribing a higher intercept and flatter slope to the CAPM. The ECAPM is a return (Y-axis, vertical axis) adjustment. It is not a beta risk (X-axis, horizontal) adjustment. <u>The ECAPM is not an attempt to increase the beta estimate, which would be a horizontal x-axis adjustment. The ECAPM is a return adjustment rather than a risk adjustment</u>. (emphasis added.)

Dr. Morin also indicates in his correspondence with Mr. Hanley that there "is a huge financial literature which supports both the use of the ECAPM and the use of adjusted betas."

Moreover, regulatory support for the ECAPM can be found in the New York Public Service Commission's Generic Financing Docket, Case 91-M-0509. In addition, the Regulatory Commission of Alaska (RCA) in its Order No. 151 in Docket No. P-97-4 re: In the Matter of the Correct Calculation and

Use of Acceptable Input Data to Calculate the 1997, 1998, 1999, 2000, 2001 and 2002 Tariff Rates for the Intrastate Transportation of Petroleum over the TransAlaska Pipeline System noted:

> Although we primarily rely upon Tesoro's recommendation, we are concerned, however, about Tesoro's CAPM analysis. Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony[604] that the ECAPM results are more accurate then [sic] traditional CAPM results. The reasonable investor would be aware of these empirical results. Therefore, we adjust Tesoro's recommendation to reflect only the ECAPM result.

Moreover, the slope of the Security Market Line (SML) should not be confused with beta. As Eugene F. Brigham, finance professor emeritus and the author of many financial textbooks states[26] :

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.[12]
>
> [12]Students sometimes confuse beta with the slope of the SML. This is a mistake. As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A, beta does represent the slope of a line, but *not* the Security Market Line. This confusion arises partly because the SML equation is generally written, in this book and throughout the finance literature, as $k_i = R_F + b_i(k_M - R_F)$, and in this form b_i looks like the slope coefficient and $(k_M - R_F)$ the variable. It would perhaps be less confusing if the second term were written $(k_M - R_F)b_i$, but this is not generally done.

In view of the foregoing, using adjusted betas in an ECAPM analysis is not incorrect, nor inconsistent with the financial literature. Rather, the use of

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26 Eugene F. Brigham, Financial Management – Theory and Practice, 4th Ed., The Dryden Press, 1985, p. 203.

the traditional CAPM results in an understated estimate of the cost of common equity capital for a utility with an adjusted beta below 1.00. And notwithstanding regulatory support for the use of only the ECAPM, my CAPM analysis, which includes both the traditional CAPM and the ECAPM, is a conservative approach resulting in a reasonable estimate of the cost of common equity

E. Comparable Earnings Model (CEM)

1. Theoretical Basis

Q. Please describe your application of the Comparable Earnings Model and how it is used to determine common equity cost rate.

A. My application of the CEM is summarized on Schedule PMA-12 which consists of six pages. Pages 1 and 2 show the CEM results for the proxy group of seven AUS Utility Reports water companies and pages 3 and 4 show the CEM results for the proxy group of four Value Line (Std. Ed.) water companies. Pages 5 and 6 contain notes related to pages 1 through 4.

The comparable earnings approach is derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, it is consistent with the Hope doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

The CEM is based upon the fundamental economic concept of opportunity cost which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is also consistent with one of the fundamental

principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

The CEM is designed to measure the returns expected to be earned on the book common equity, in this case net worth, of similar risk enterprises. Thus, it provides a direct measure of return, since it translates into practice the competitive principle upon which regulation rests. In my opinion, it is inappropriate to use the achieved returns of regulated utilities of similar risk because to do so would be circular and inconsistent with the principle of equality of risk with non-price regulated firms.

The difficulty in application of the CEM is to select a proxy group of companies which are similar in risk, but are not price regulated utilities. Consequently, the first step in determining a cost of common equity using the comparable earnings model is to choose an appropriate proxy group of non-price regulated firms. The proxy group should be broad-based in order to obviate any company-specific aberrations. As stated previously, utilities need to be eliminated to avoid circularity since the returns on book common equity of utilities are substantially influenced by regulatory awards and are therefore not representative of the returns that could be earned in a truly competitive market.

2. Application of the CEM

Q. Please describe your application of the CEM.

A. My application of the CEM is market-based in that the selection of non-price regulated firms of comparable risk is based upon statistics derived from the market prices paid by investors.

I have chosen two proxy groups of domestic, non-price regulated firms

to reflect both the systematic and unsystematic risks of the proxy group of seven AUS Utility Reports water companies and the proxy group of four Value Line (Std. Ed.) water companies, respectively. The proxy group of eighty-six non-utility companies similar in risk to the proxy group of seven AUS Utility Reports water companies and ninety-four non-utility companies similar in risk to the proxy group of four Value Line (Std. Ed.) water companies are listed on pages 1 through 4, Schedule PMA-12. The criteria used in the selection of these proxy companies were that they be domestic non-utility companies and have a meaningful rate of return on net worth, common equity or partners' capital reported in Value Line (Std. Ed.) for each of the five years ended 2005, or projected for 2009-2011. Value Line betas were used as a measure of systematic risk. The standard error of the regression was used as a measure of each firm's specific, i.e., unsystematic risk. The standard error of the regression reflects the extent to which events specific to a company's operations will affect its stock price and, therefore, is a measure of diversifiable, unsystematic, company-specific risk. *In essence, companies which have similar betas and standard errors of the regressions, have similar investment risk, i.e., the sum of systematic (market) risk as reflected by beta and unsystematic (business and financial) risk, as reflected by the standard error of the regression, respectively. Those statistics are derived from regression analyses using market prices which, under the EMH reflect all relevant risks. The application of these criteria results in proxy groups of non-price regulated firms similar in risk to the average company in each proxy group.*

Using a Value Line, Inc. proprietary database dated March 16, 2006, the proxy group of eighty-six non-price regulated companies were chosen based upon ranges of unadjusted beta and standard error of the regression.

The ranges were based upon the average standard deviations of the unadjusted beta and the average standard error of the regression for the proxy group of seven AUS Utility Reports water companies.

The seven AUS Utility Reports water companies in the proxy group have an average unadjusted beta of 0.52 whose standard deviation is 0.0969 as of March 16, 2006, as shown on page 2, Schedule PMA-12. The average standard error of the regression is 3.4130 as also shown on Schedule PMA-12, page 2 with a standard deviation of 0.1500 as derived in Note 5, page 5 of Schedule PMA-12. Ranges of unadjusted betas from 0.23 to 0.81 and of standard errors of the regression from 2.9630 to 3.8630 were used to select the proxy group of eighty-six domestic non-utility companies comparable to the profile of the proxy group of seven AUS Utility Reports water companies as can be gleaned from pages 1 and 2 and explained in Note 1 on page 5 of Schedule PMA-12. These ranges are based upon the proxy group's average unadjusted beta of 0.52 and average standard error of the regression of 3.4130 plus or minus three standard deviations of beta (0.0969 x 3 = 0.2907) and standard error of the regressions (0.1500 x 3 = 0.4500). The use of three standard deviations assures capturing 99.73% of the distribution of unadjusted betas and standard errors, assuring comparability.

Likewise, using the same Value Line, Inc. proprietary database dated March 16, 2005, the proxy group of ninety-four non-price regulated companies were chosen based upon ranges of unadjusted beta and standard error of the regression. The ranges were based upon the average standard deviations of the unadjusted beta and the average standard error of the regression for the proxy group of four Value Line (Std. Ed.) water companies.

The four Value Line (Std. Ed.) water companies in the proxy group have an average unadjusted beta of 0.58 whose standard deviation is 0.0922

as of March 16, 2006, as shown on page 4, Schedule PMA-12. The average standard error of the regression is 3.2476 as also shown on Schedule PMA-12, page 4 with a standard deviation of 0.1427 as derived in Note 10, page 6 of Schedule PMA-12. Ranges of unadjusted betas from 0.30 to 0.86 and of standard errors of the regression from 2.8195 to 3.6757 were used to select the proxy group of ninety-four domestic non-utility companies comparable to the profile of the proxy group of four Value Line (Std. Ed.) water companies as can be gleaned from pages 3 and 4 and explained in Note 9 on pages 5 and 6 of Schedule PMA-12. These ranges are based upon the proxy group's average unadjusted beta of 0.58 and average standard error of the regression of 3.2476 plus or minus three standard deviations of beta (0.0922 x 3 = 0.2766) and standard error of the regressions (0.1427 x 3 = 0.4281). The use of three standard deviations assures capturing 99.73% of the distribution of unadjusted betas and standard errors, assuring comparability.

I believe that this methodology for selecting non-price regulated firms of similar total risk (i.e., non-diversifiable systematic and diversifiable non-systematic risk) is meaningful and effectively responds to the criticisms normally associated with the selection of firms presumed to be comparable in total risk. This is because the selection of non-price regulated companies comparable in total risk is based upon regression analyses of market prices which reflect investors' assessment of all risks, diversifiable and non-diversifiable. Thus, the empirical selection process results in companies comparable in both systematic and unsystematic risks, i.e., total risk.

Once proxy groups of non-price regulated companies are selected, it is then necessary to derive returns on book common equity, net worth or partners' capital for the companies in the groups. I have measured these returns using the rate of return on net worth, common equity or partners'

capital reported by Value Line (Standard Edition). It is reasonable to measure these returns over both the most recent historical five-year period as well as those projected over the ensuing five-year period.

Q. What are your conclusions of CEM cost rate?

A. Conclusions of CEM cost rates are 15.7% for the proxy group of seven AUS Utility Reports water companies as shown on page 2 of Schedule PMA-12 and 16.0% for the proxy group of four Value Line (Std. Ed.) water companies as shown on page 4. Note that I have applied a test of significance (Student's t-statistic) to determine whether any of the historical or projected returns are significantly different from their respective means at the 95% confidence level. As a result, the historical and the projected means of several companies have been excluded.

I have also eliminated from the groups of non-price regulated companies, all those rates of return which are 20.0% or greater and 8.7% and below, i.e., 200 basis points above the current prospective yield of 6.7% on Moody's A rated public utility bonds (see page 1 of Schedule PMA-10) for reasons discussed previously. Such an elimination results in an arithmetic mean return rate of 13.8% on an historical five-year and 13.6% on a projected five-year basis for the seven AUS Utility Reports water companies and 14.2% on an historical five-year basis and 14.0% on a projected five-year basis for the four Value Line (Std. Ed.) water companies as shown on pages 2 and 4 of Schedule PMA-12, respectively. I rely upon the midpoint of the arithmetic mean historical five-year and projected five-year rates of return of 13.7% and 14.1% as my CEM conclusion for each proxy group, respectively.

IX. CONCLUSION OF COMMON EQUITY COST RATE RANGE

Q. What is your recommended common equity cost rate range?

A. It is 11.10% to 11.75% based the common equity cost rates resulting from all four cost of common equity models consistent with the EMH which logically mandates the use of multiple cost of common equity models as adjusted for CWS' greater business and financial risk

In formulating my recommended common equity cost rate range of 11.10% to 11.75%, I reviewed the results of the application of four different cost of common equity models, namely, the DCF, RPM, CAPM, and CEM for the two proxy groups. I employ all four cost of common equity models as primary tools in arriving at my recommended common equity cost rate because no single model is so inherently precise that it can be relied upon solely, to the exclusion of other theoretically sound models. As discussed above, all four models are based upon the Efficient Market Hypothesis (EMH), and therefore, have application problems associated with them. The EMH, as also previously discussed, requires the assumption that investors rely upon multiple cost of common equity models. Moreover, as demonstrated in this testimony, the prudence of using multiple cost of common equity models is supported in the financial literature. Therefore, none should be relied upon exclusively to estimate investors' required rate of return on common equity.

In a market environment where market value deviates significantly from book value (lower or higher), sole reliance on the DCF model is problematic for a regulated utility because its application results in an overstatement or understatement, respectively, of investors' required rate of return. Investors expect to achieve their required rate of return based upon dividends received <u>and appreciation in market price</u>. This testimony has

shown that market prices are significantly influenced by factors other than earnings per share (EPS) and dividends per share (DPS). Thus, because it is necessary to use accounting proxies for growth in the DCF model (such as EPS, DPS, or their derivative, internal growth), that model does not reflect the full extent of market price growth expected by investors. Market prices reflect other factors affecting growth not accounted for in the standard regulatory version of the DCF model such as an increase in the market value per share due to expected increases in price/earnings multiples and less obvious factors included in the long-range goals of investors. For these reasons, sole reliance on the DCF model should be avoided. In fact, as discussed in detail above, state commissions in Iowa, Indiana and Hawaii have questioned their previous primary reliance upon the DCF, having explicitly recognized this tendency of the DCF model to understate the common equity cost rate when, as now, market prices significantly exceed book values.

The results of the four cost of common equity models applied to the proxy groups of seven AUS Utility Reports water companies and four Value Line (Std. Ed.) water companies are shown on Schedule PMA-1, page 2 and summarized below:

Table 4

	Proxy Group of Seven AUS Utility Reports Water Cos.		Proxy Group of Four Value Line (Std. Ed.) Water Cos.
Discounted Cash Flow Model	9.9%		10.0%
Risk Premium Model	10.8		10.9
Capital Asset Pricing Model	10.3		10.3
Comparable Earnings Model	13.7		14.1
Indicated Range of Common Equity Cost Rate Before Business Risk Adjustment	10.60%	–	11.25%
Business Risk Adjustment	0.30		0.30
Recommended Range of Common Equity Cost Rate After Adjustment for Business Risk	10.90%	--	11.55%
Financial Risk Adjustment	0.20		0.20
Recommended Range of Common Equity Cost Rate After Adjustment for Business and Financial Risk	11.10%	--	11.75%

Based upon these common equity cost rate results, I conclude that a range of common equity cost rate of 10.60% to 11.25% is indicated based upon the use of multiple common equity cost rate models applied to the market data of both proxy groups and before any adjustment for CWS' greater relative business and financial risk as shown on Line No. 5, page 2 of Schedule PMA-1.

Q. Is there a way to quantify a business risk adjustment due to CWS's small size vis-à-vis the two proxy groups?

A. Yes. As discussed previously, CWS has greater business risk than the average proxy group company because of its small size vis-à-vis each proxy

group, whether measured by book capitalization or the market capitalization of common equity (estimated market value for CWS, whose common stock is not traded). Therefore, it is necessary to upwardly adjust the range of common equity cost rates of 10.60% to 11.25% based upon the two proxy groups. Based upon CWS' small relative size, an adjustment to reflect its smaller relative size of 3.81% (381 basis points) relative to the conclusion of common equity cost rate of the seven AUS Utility Reports water companies and 4.69% (469 basis points) relative to the conclusion of common equity cost rate of the four Value Line (Std. Ed.) water companies are indicated. These adjustments are based upon data contained in Chapter 7 entitled "Firm Size and Return" from Ibbotson Associates' Stocks, Bonds, Bills and Inflation-Valuation Edition 2006 Yearbook. The determinations are based on the size premia for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2005 period and related data shown on pages 3 through 18 of Schedule PMA-1. The average size premia for the deciles in which the proxy groups fall have been compared to the average size premia for the 10th decile in which CWS would fall if its stock were traded and sold at the May 24, 2006 average market/book ratio of either 251.9% or 251.5% experienced by each proxy group, respectively. As shown on page 3 of Schedule PMA-1, the size premium spread between CWS and the seven water companies is 3.81% and 4.69% between CWS and the four Value Line (Std. Ed.) water companies. Page 4 contains notes relative to page 3. Page 5 contains data in support of page 3 while pages 6 through 18 of PMA-1 contain relevant information from the Ibbotson Associates' Valuation Edition 2006 Yearbook discussed previously.

Consequently, business risk adjustments of 3.81% and 4.69% are indicated for the seven water companies and the four Value Line (Std. Ed.)

water companies, respectively. However, I will make a conservatively reasonable business risk adjustment of 0.30% (30 basis points) to the range of indicated common equity cost rate of 10.60% to 11.25%. This results in a range of business risk adjusted common equity cost rate of 10.90% to 11.55%.

Q. Is there a way to quantify a financial risk adjustment due to CWS' greater financial risk vis-à-vis the two proxy groups?

A. Yes. As previously discussed, the Company's requested common equity ratio at September 30, 2005, 40.90%, is significantly lower than the common equity and even the total equity (the sum of preferred stock and common equity) ratios maintained, on average, by the companies in the two proxy groups. Thus, CWS has greater financial risk than the companies in either of the two proxy groups. Because investors require a higher return in exchange for bearing high risk, an upward adjustment to the common equity cost rates derived from the market data of water companies with a lower degree of financial risk than CWS is necessary.

A study by Brigham, Gapenski and Aberwald[27] concluded that a 1 percentage point change in common equity ratio in the range of 40.0% to 50.0% results in an average 12 basis point change in common equity cost rate with the change approximately 15 basis points at the lower end of the range, i.e., near 40.0%, and approximately 7 basis points at the higher end of the range, i.e., near 50.0%. Clearly, the lower the common equity ratio, the higher the common equity cost rate, all else equal. Thus, an adjustment to the range

[27] Eugene F. Brigham, Louis C. Gapenski, and Dana A. Aberwald, "Capital Structure, Cost of Capital, and Revenue Requirements", Public Utilities Fortnightly, January 8, 1987, pp. 15-24.

of common equity cost rate based upon the two proxy groups and the 484 basis points (4.84%) and 794 basis points (7.94%) difference between the average 2005 common equity ratios of the two proxy groups[28] can be derived as follows: 0.58% = [(45.74% - 40.90%) * 0.12%] = [(4.84% x 0.12%) and 0.95 = [(48.85% - 40.90%) * 0.12%] = [7.95% * 0.12%].

Consequently, financial risk adjustments of 0.58% and 0.95% are indicated for the seven water companies and the four water companies, respectively. However, I will make a conservatively reasonable financial risk adjustment of 0.20% (20 basis points) to the range of indicated common equity cost rates of 10.90% to 11.55% as adjusted for business risk. This results in a range of financial and business risk adjusted common equity cost rates of 11.10% to 11.75%, which is my recommended range of common equity cost rate, which in my opinion is both reasonable and conservative. A common equity cost rate range of 11.10% to 11.75% will provide CWS with sufficient earnings to enable it to attract necessary new capital.

Q. Does that conclude your direct testimony?

A. Yes.

[28] See page 3 of Schedule Pauline M. Ahern-3 and Pauline M. Ahern-4. 4.84% is the difference between the average 2005 common equity ratio of the seven water companies, 45.74% and CWS proposed common equity ratio of 40.90%. Likewise, 7.94% is the difference between the average 2005 common equity ratio of the four water companies, 48.84% and 40.90% (4.84% = 45.74% - 40.90%) and (7.94% = 48.84% and 40.90%).

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

PAULINE M. AHERN, CRRA
VICE PRESIDENT

AUS CONSULTANTS – UTILITY SERVICES

PROFESSIONAL QUALIFICATIONS
OF
PAULINE M. AHERN, CRRA
VICE PRESIDENT
AUS CONSULTANTS – UTILITY SERVICES

PROFESSIONAL EXPERIENCE

1996-Present

As a Vice President, I offer testimony as an expert witness on the subjects of fair rate of return and cost of capital before state public utility commissions. I provide assistance and support to clients throughout the entire ratemaking litigation process.

1994-1996

As an Assistant Vice President, I prepared fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. These supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital. The exhibits also support the determination of a recommended return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility. I also assisted in the preparation of responses to any interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, I assisted in the evaluation of opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony. I also evaluated and assisted in the preparation of briefs and exceptions following the hearing process. I have submitted testimony before state public utility commissions regarding appropriate capital structure ratios and fixed capital cost rates.

1990-1994

As a Senior Financial Analyst, I supervised two analysts in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. The team also assisted in the preparation of interrogatory responses.

I evaluated the final orders and decisions of various commissions to determine whether further actions are warranted and to gain insight which may assist in the preparation of future rate of return studies.

I assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

I co-authored an article with Frank J. Hanley entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994.

I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts (now the Society of Utility and Regulatory Financial Analysts (SURFA)). This designation is based upon education, experience and the successful completion of a comprehensive examination.

As Administrator of Financial Analysis for AUS Utility Reports, which reports financial data for over 200 utility companies and has approximately 1,000 subscribers, I oversee the preparation of this monthly publication, as well as the annual publication, Financial Statistics - Public Utilities.

1988-1990

As a Financial Analyst, I assisted in the preparation of fair rate of return studies including capital structure determination, development of senior capital cost rates, as well as the determination of an appropriate rate of return on equity. I also assisted in the preparation of interrogatory responses, interrogatory questions of the opposition, areas of cross-examination and rebuttal testimony. I also assisted in the preparation of the annual publication C. A. Turner Utility Reports - Financial Statistics - Public Utilities.

1973-1975

As a research assistant in the Research Department of the Regional Economics Division of the Federal Reserve Bank of Boston, I was involved in the development and maintenance of econometric models to simulate regional economic conditions in New England in order to study the effects of, among other things, the energy crisis of the early 1970's and property tax revaluations on the economy of New England. I was also involved in the statistical analysis and preparation of articles for the New England Economic Review. Also, I acted as assistant editor for New England Business Indicators.

1972

As a research assistant in the Office of the Assistant Secretary for International Affairs, U.S. Treasury Department, Washington, D.C., I developed and maintained econometric models which simulated the economy of the United States in order to study the results of various alternate foreign trade policies so that national trade policy could be formulated and recommended.

I am also a member of the Society of Utility and Regulatory Financial Analysts (formerly the National Society of Rate of Return Analysts).

Clients Served

I have offered expert testimony before the following commissions:

Arkansas
California
Delaware
Florida
Hawaii
Idaho
Illinois
Indiana
Kentucky
Maine
Maryland
Michigan
Missouri
Nevada
New Jersey
New York
North Carolina
Ohio
Pennsylvania
South Carolina
Virginia
Washington

I have sponsored testimony on the rate of return and capital structure effects of merger and acquisition issues for:

California-American Water Company
New Jersey-American Water Company

I have sponsored testimony on fair rate of return and related issues for:

Aqua Illinois, Inc.
Aqua New Jersey, Inc.
Aqua Virginia, Inc.
Audubon Water Company
Carolina Pines Utilities, Inc.
Carolina Water Service, Inc.
Consumers Illinois Water Company
Consumers Maine Water Company
Consumers New Jersey Water Company
City of DuBois, Pennsylvania
Elizabethtown Water Company
Emporium Water Company
GTE Hawaiian Telephone Inc.
Greenridge Utilities, Inc.
Borough of Hanover, Pennsylvania
Long Neck Water Company
Middlesex Water Company
Missouri-American Water Company
Mt. Holly Water Company
Nero Utility Services, Inc.
New Jersey-American Water Company
Ohio-American Water Company
Penn Estates
Pinelands Waste Water Company
Pittsburgh Thermal
Spring Creek Utilities, Inc.
Sussex Shores Water Company
Thames Water Americas
Tidewater Utilities, Inc.
Transylvania Utilities, Inc.
Twin Lakes Utilities, Inc.
United Utility Companies
United Water Arkansas, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Rochelle, Inc.
United Water New York, Inc.
United Water Pennsylvania, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Utilities, Inc. of Florida
Utilities Services of South Carolina
Valley Energy, Inc.
Water Service Corp. of Kentucky
Wellsboro Electric Company
Western Utilities, Inc.

I have sponsored testimony on capital structure and senior capital cost rates for the following clients:

Alpena Power Company
Arkansas-Western Gas Company
Associated Natural Gas Company
PG Energy Inc.
United Water Delaware, Inc.
Washington Natural Gas Company

I have assisted in the preparation of rate of return studies on behalf of the following clients:

Algonquin Gas Transmission Company
Arkansas-Louisiana Gas Company
Arkansas Western Gas Company
Artesian Water Company
Associated Natural Gas Company
Atlantic City Electric Company
Bridgeport-Hydraulic Company
Cambridge Electric Light Company
Carolina Power & Light Company
Citizens Gas and Coke Utility
City of Vernon, CA
Columbia Gas/Gulf Transmission Cos.
Commonwealth Electric Company
Commonwealth Telephone Company
Conestoga Telephone & Telegraph Co.
Connecticut Natural Gas Corporation
Consolidated Gas Transmission Company
Consumers Power Company
CWS Systems, Inc.
Delmarva Power & Light Company
East Honolulu Community Services, Inc.
Equitable Gas Company
Equitrans, Inc.
Florida Power & Light Company
Gary Hobart Water Company
Gasco, Inc.
GTE Arkansas, Inc.
GTE California, Inc.
GTE Florida, Inc.
GTE Hawaiian Telephone
GTE North, Inc.
GTE Northwest, Inc.
GTE Southwest, Inc.
Great Lakes Gas Transmission L.P.
Hawaiian Electric Company
Hawaiian Electric Light Company
IES Utilities Inc.
Illinois Power Company
Interstate Power Company
Iowa Electric Light and Power Company
Iowa Southern Utilities Company
Kentucky-West Virginia Gas Company
Lockhart Power Company
Middlesex Water Company
Milwaukee Metropolitan Sewer District
Mountaineer Gas Company

Rate of Return Study Clients, Continued

National Fuel Gas Distribution Corp.
National Fuel Gas Supply Corp.
Newco Waste Systems of NJ, Inc.
New Jersey Natural Gas Company
New Jersey-American Water Company
New York-American Water Company
North Carolina Natural Gas Corp.
Northumbrian Water Company
Ohio-American Water Company
Oklahoma Natural Gas Company
Orange and Rockland Utilities
Paiute Pipeline Company
PECO Energy Company
Penn-York Energy Corporation
Pennsylvania-American Water Co.
PG Energy Inc.
Philadelphia Electric Company
South Carolina Pipeline Company
Southwest Gas Corporation
Stamford Water Company
Tesoro Alaska Petroleum Company
United Telephone of New Jersey
United Utility Companies
United Water Arkansas, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New York, Inc.
United Water Pennsylvania, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Vista-United Telecommunications Corp.
Washington Natural Gas Company
Washington Water Power Corporation
Waste Management of New Jersey – Transfer Station A
Wellsboro Electric Company
Western Reserve Telephone Company
Western Utilities, Inc.

EDUCATION:

1973 – Clark University – B.A. – Honors in Economics
1991 – Rutgers University – M.B.A. – High Honors

PROFESSIONAL AFFILIATIONS:

American Finance Association
Society of Utility and Regulatory Financial Analysts
President – 2006-2008
Secretary/Treasurer – 2004-2006
Energy Association of Pennsylvania
National Association of Water Companies – Member of the Finance Committee

Carolina Water Service, Inc.
Docket No. _____

BEFORE THE

PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

EXHIBIT

TO ACCOMPANY THE

PREPARED DIRECT TESTIMONY

OF

PAULINE M. AHERN, CRRA
VICE PRESIDENT
AUS CONSULTANTS – UTILITY SERVICES

ON BEHALF OF

CAROLINA WATER SERVICE, INC.

CONCERNING

FAIR RATE OF RETURN

JUNE 2006

Carolina Water Service, Inc.
Table of Contents
to the Financial Supporting Exhibits
of Pauline M. Ahern

	Schedule No.
Summary of Cost of Capital and Fair Rate of Return	PMA-1
Standard & Poor's Public Utility Rating Methodology Profile and Revised Public Utility Financial Benchmarks	PMA-2
Financial Profile of the Proxy Group of Seven AUS Utility Reports Water Companies	PMA-3
Financial Profile of the Proxy Group of Four Value Line Water Companies	PMA-4
Inadequacy of DCF Return Related to Book Value	PMA-5
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model	PMA-6
Derivation of Dividend Yield for Use in the Discounted Cash Flow Model	PMA-7
Current Institutional Holdings	PMA-8
Historical and Projected Growth for Use in the Discounted Cash Flow Model	PMA-9
Indicated Common Equity Cost Rate Using the Risk Premium Model	PMA-10
Indicated Common Equity Cost Rate Using the Capital Asset Pricing Model	PMA-11
Indicated Common Equity Cost Rate Using Comparable Earnings Analysis	PMA-12

Carolina Water Service, Inc.
Summary of Cost of Capital and Fair Rate of Return
Based on the Actual Consolidated Capital Structure of Utilities, Inc. at September 30, 2005

Type of Capital	Ratios (1)	Cost Rate	Weighted Cost Rate	
Total Debt	59.10 %	6.42% (1)	3.79%	3.79%
Common Equity	40.90	11.10% - 11.75% (2)	4.54%	4.81%
Total	100.00 %		8.33% -	8.60%

(1) From Exhibit B, Page 5 of the Application of Carolina Water Service, Inc. for adjustment of rates and charges for the provision of water and sewer service and modification of rate schedules.

(2) Based upon informed judgment from the entire study, the principal results of which are summarized on page 2 of this Schedule.

Carolina Water Service, Inc.
Brief Summary of Common Equity Cost Rate

No.	Principal Methods	Proxy Group of Seven AUS Utility Reports Water Companies	Proxy Group of Four Value Line (Standard Edition) Water Companies
1.	Discounted Cash Flow Model (DCF) (1)	9.9 %	10.0 %
2.	Risk Premium Model (RPM) (2)	10.8	10.9
3.	Capital Asset Pricing Model (CAPM) (3)	10.3	10.3
4.	Comparable Earnings Model (CEM) (4)	13.7	14.1
5.	Indicated Range of Common Equity Cost Rate before Adjustment for Business Risk	10.60 %	11.25 %
6.	Business Risk Adjustment (5)	0.30	0.30
7.	Indicated Range of Common Equity Cost Rate after Adjustment for Business Risk	10.90 %	11.55 %
8.	Financial Risk Adjustment (6)	0.20	0.20
9.	Recommended Range of Common Equity Cost Rate after Adjustment for Business and Financial Risk	11.10 % --	11.75 %

Notes:
(1) From Schedule 6 of this Exhibit.
(2) From page 1 of Schedule 10 of this Exhibit.
(3) From page 1 Schedule 11 of this Exhibit.
(4) From page 2 and 4 of Schedule 12. of this Exhibit.
(5) Business risk adjustment to reflect Carolina Water Service, Inc.'s greater business risk due to its small size vis-à-vis each proxy group as detailed in Ms. Ahern's accompanying direct testimony.

Carolina Water Service, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		1 Total Capitalization (incl. Short-Term Debt) for the Year 2005 (millions)		(times larger)		2 Market Capitalization on May 24, 2006 (1) (millions)		(times larger)		3 Applicable Decile of the NYSE/AMEX/ NASDAQ	4 Applicable Size Premium		5 Spread from Applicable Size Premium (2)
1.	Carolina Water Service, Inc.	$ 13.407	(3)			$ 33.772				10 (4)	6.36%	(5)	
A.	Based upon the Proxy Group of Seven AUS Utility Reports Water Companies					$ 33.719				10 (4)	6.36%	(5)	
B.	Based upon the Proxy Group of Four Value Line (Standard Edition) Water Companies												
2.	Proxy Group of Seven AUS Utility Reports Water Companies	$ 510.845	(6)	38.1	x	$ 675.530	20.0	x		8 - 9 (7)	2.55%	(8)	3.81%
3.	Proxy Group of Four Value Line (Standard Edition) Water Companies	$ 815.059	(9)	60.8		$ 1,104.905	32.8			7 (10)	1.67%	(11)	4.69%

Decile	Number of Companies	Recent Total Market Capitalization (millions)	Recent Average Market Capitalization (millions)
1 - Largest	169	$8,869,801.117	$52,484.030
2	182	2,025,323.685	11,128.152
3	195	1,074,448.763	5,509.994
4	206	656,297.080	3,185.908
5	207	452,329.097	2,185.165
6	238	389,595.517	1,636.956
7	299	319,642.175	1,069.037
8	352	287,783.718	817.567
9	693	268,738.291	387.790
10 - Smallest	1746	216,334.858	123.903

See page 4 for notes.

Carolina Water Service, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE

Notes:

(1) From page 5 of this Schedule.

(2) Line No. 1 – Line No. 2 and Line No. 1 – Line No. 3 of Columns 3 and 4, respectively. For example, the 3.81% in Column 5, Line No. 2 is derived as follows 3.81% = 6.36% - 2.55%.

(3) From Schedule A, Exhibit "B", page 1 of the Application of Carolina Water Service, Inc. for adjustment of rates and charges for the provision of water and sewer service.

(4) With an estimated market capitalization of $33.772 million (based upon the proxy group of seven AUS Utility Reports water companies) and $33.719 (based upon the proxy group of four Value Line (Standard Edition) water companies), Carolina Water Service, Inc. falls in the 10th decile of the NYSE/AMEX/NASDAQ which has an average market capitalization of $123.903 as shown in the table on the bottom half of page 3 of this Schedule.

(5) Size premium applicable to the 10th decile of the NYSE/AMEX/NASDAQ as shown on page 15 of this Schedule.

(6) From page 1 of Schedule PMA-3 of this Exhibit.

(7) With an estimated market capitalization of $675.530 million, the proxy group of seven AUS Utility Reports water companies falls between the 8th and 9th deciles of the NYSE/AMEX/NASDAQ which have an average market capitalization of $602.679 million as can be gleaned from the information shown in the table on the bottom half of page 3 of this Schedule.

(8) Average size premium applicable to the 8th and 9th deciles of the NYSE/AMEX/NASDAQ as can be gleaned from the information shown on page 15 of this Schedule.

(9) From page 1 of Schedule PMA-4 of this Exhibit.

(10) With an estimated market capitalization of $1,104.905 million, the proxy group of four Value Line (Standard Edition) water companies falls in the 7th decile of the NYSE/AMEX/NASDAQ which has an average market capitalization of $1,069.037 million as shown in the table on the bottom half of page 3 of this Schedule.

(11) Size premium applicable to the 7th decile of the NYSE/AMEX/NASDAQ as shown on page 15 of this Schedule.

Source of Information: Ibbotson Associates, Stocks, Bonds, Bills and Inflation -- Valuation Edition -- 2006 Yearbook, Chicago, IL, 2006

Carolina Water Service, Inc.

Market Capitalization of Carolina Water Service, Inc.
the Proxy Group of Seven AUS Utility Reports Water Companies and the
the Proxy Group of Four Value Line (Standard (Edition) Water Companies

Company	1 Common Stock Shares Outstanding at December 31, 2005 (millions)	2 Book Value per Share at December 31, 2005 (1)	3 Total Common Equity at December 31, 2005 (millions)	4 Closing Stock Market Price on May 24, 2006	5 Market-to-Book Ratio at May 24, 2006 (2)	6 Market Capitalization on May 24, 2006 (3) (millions)
Carolina Water Service, Inc.	NA (4)	NA	$ 13.407 (4)	NA	251.9 % (5)	$ 33.772 (6)
Based upon the Proxy Group of Seven AUS Utility Reports Water Companies					251.5 % (7)	$ 33.719 (8)
Based upon the Proxy Group of Four Value Line (Standard Edition) Water Companies						
Proxy Group of Seven AUS Utility Reports Water Companies						
American States Water Co.	16.798	$ 15.722	$ 264.094	$ 37.160	236.4 %	$ 624.214
Aqua America, Inc.	128.970	6.295	811.923	22.110	351.2	2,851.527
Artesian Resources Corp.	3.426	16.875	57.813	29.926	177.3	102.526
California Water Service Group	18.390	15.984	293.941	36.210	226.5	665.902
Middlesex Water Company	11.584	8.597	99.592	18.240	212.2	211.292
Pennichuck Corp.	4.190	10.892	45.636	20.490	188.1	85.853
York Water Company	6.933	7.272	50.415	27.030	371.7	187.399
Average	27.184	$ 11.662	$ 231.916	$ 27.309	251.9 %	$ 675.530
Proxy Group of Four Value Line (Standard Edition) Water Companies						
American States Water Co.	16.798	$ 15.722	$ 264.094	$ 37.160	236.4 %	$ 624.214
Aqua America, Inc.	128.970	6.295	811.923	22.110	351.2	2,851.527
California Water Service Group	18.390	15.984	293.941	36.210	226.5	665.902
Southwest Water Company	22.185	6.527	144.792	12.530	192.0	277.978
	46.586	$ 11.132	$ 378.688	$ 27.003	251.5 %	$ 1,104.905

NA = Not Available

Notes:
(1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 5 * Column 3.
(4) From Schedule A, Exhibit "B", page 1 of the Application of Carolina Water Service, Inc. for adjustment of rates and charges for the provision of water and sewer service.
(5) The market-to-book ratio of Carolina Water Service, Inc. at May 24, 2006 is assumed to be equal to the average market-to-book ratio at May 24, 2006 of the proxy group of Seven AUS Utility Reports Water Companies.
(6) Carolina Water Service, Inc.'s common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at May 24, 2006 of the proxy group of Seven AUS Utility Reports water companies, 251.9%, and Carolina Water Service, Inc.'s market capitalization at May 24, 2006 would therefore have been $33.772 million. ($33.772 = $13.407 * 251.9%).
(7) The market-to-book ratio of Carolina Water Service, Inc. at May 24, 2006 is assumed to be equal to the average market-to-book ratio at May 24, 2006 of the proxy group of Four Value Line (Standard Edition) water companies.
(8) Carolina Water Service, Inc.'s common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at May 24, 2006 of the proxy group of three Value Line (Standard Edition) water companies, 251.5%, and Carolina Water Service, Inc.'s market capitalization at May 24, 2006 would therefore have been $33.719 million. ($33.719 = $13.407 * 251.5%).

Source of Information: Company Annual Forms 10-K
finance.yahoo.com

SBBI

Stocks, Bonds, Bills, and Inflation

Valuation Edition
2006 Yearbook

ibbotson

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Chapter 7

Firm Size and Return

The Firm Size Phenomenon

One of the most remarkable discoveries of modern finance is that of a relationship between firm size and return. The relationship cuts across the entire size spectrum but is most evident among smaller companies, which have higher returns on average than larger ones. Many studies have looked at the effect of firm size on return.[1] In this chapter, the returns across the entire range of firm size are examined.

Construction of the Decile Portfolios

The portfolios used in this chapter are those created by the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. CRSP has refined the methodology of creating size-based portfolios and has applied this methodology to the entire universe of NYSE/AMEX/NASDAQ-listed securities going back to 1926.

The New York Stock Exchange universe excludes closed-end mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depository Receipts, unit investment trusts, and Americus Trusts. All companies on the NYSE are ranked by the combined market capitalization of their eligible equity securities. The companies are then split into 10 equally populated groups, or deciles. Eligible companies traded on the American Stock Exchange (AMEX) and the Nasdaq National Market (NASDAQ) are then assigned to the appropriate deciles according to their capitalization in relation to the NYSE breakpoints. The portfolios are rebalanced, using closing prices for the last trading day of March, June, September, and December. Securities added during the quarter are assigned to the appropriate portfolio when two consecutive month-end prices are available. If the final NYSE price of a security that becomes delisted is a month-end price, then that month's return is included in the quarterly return of the security's portfolio. When a month-end NYSE price is missing, the month-end value of the security is derived from merger terms, quotations on regional exchanges, and other sources. If a month-end value still is not determined, the last available daily price is used.

Base security returns are monthly holding period returns. All distributions are added to the month-end prices, and appropriate price adjustments are made to account for stock splits and dividends. The return on a portfolio for one month is calculated as the weighted average of the returns for its individual stocks. Annual portfolio returns are calculated by compounding the monthly portfolio returns.

Size of the Deciles

Table 7-1 reveals that the top three deciles of the NYSE/AMEX/NASDAQ account for most of the total market value of its stocks. Nearly two-thirds of the market value is represented by the first decile, which currently consists of 169 stocks, while the smallest decile accounts for just over

1 Rolf W. Banz was the first to document this phenomenon. See Banz, Rolf W. "The Relationship Between Returns and Market Value of Common Stocks," *Journal of Financial Economics*, Vol. 9, 1981, pp. 3–18.

one percent of the market value. The data in the second column of Table 7-1 are averages across all 80 years. Of course, the proportion of market value represented by the various deciles varies from year to year.

Columns three and four give recent figures on the number of companies and their market capitalization, presenting a snapshot of the structure of the deciles near the end of 2005.

Table 7-1
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Size and Composition
1926 through September 30, 2005

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in thousands)	Recent Percentage of Total Capitalization
1-largest	63.29%	169	$8,869,801,117	60.92%
2	13.97%	182	2,025,323,685	13.91%
3	7.57%	195	1,074,448,763	7.38%
4	4.74%	206	656,297,080	4.51%
5	3.24%	207	452,329,097	3.11%
6	2.37%	238	389,595,517	2.68%
7	1.73%	299	319,642,175	2.20%
8	1.28%	352	287,783,718	1.98%
9	0.99%	693	268,738,291	1.85%
10-Smallest	0.81%	1,746	216,334,858	1.49%
Mid-Cap 3-5	15.55%	608	2,183,074,940	14.99%
Low-Cap 6-8	5.39%	889	997,021,410	6.85%
Micro-Cap 9-10	1.80%	2,439	485,073,149	3.33%

Source: © 200603 CRSP® Center for Research in Security Prices. Graduate School of Business, The University of Chicago. Used with permission. All rights reserved. www.crsp.uchicago.edu.

Historical average percentage of total capitalization shows the average, over the last 80 years, of the decile market values as a percentage of the total NYSE/AMEX/NASDAQ calculated each month. Number of companies in deciles, recent market capitalization of deciles, and recent percentage of total capitalization are as of September 30, 2005.

Table 7-2 gives the current breakpoints that define the composition of the NYSE/AMEX/NASDAQ size deciles. The largest company and its market capitalization are presented for each decile. Table 7-3 shows the historical breakpoints for each of the three size groupings presented throughout this chapter. Mid-cap stocks are defined here as the aggregate of deciles 3–5. Based on the most recent data (Table 7-2), companies within this mid-cap range have market capitalizations at or below $7,187,244,000 but greater than $1,728,888,000. Low-cap stocks include deciles 6–8 and currently include all companies in the NYSE/AMEX/NASDAQ with market capitalizations at or below $1,728,888,000 but greater than $586,393,000. Micro-cap stocks include deciles 9–10 and include companies with market capitalizations at or below $586,393,000. The market capitalization of the smallest company included in the micro-capitalization group is currently $1,079,000.

Table 7-2
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, Largest Company and Its Market Capitalization by Decile
September 30, 2005

Decile	Market Capitalization of Largest Company (in thousands)	Company Name
1-Largest	$367,495,144	General Electric Co.
2	16,016,450	Entergy Corp.
3	7,187,244	Chesapeake Energy Corp.
4	3,961,425	Ball Corp.
5	2,519,280	Celenese Corp.
6	1,728,888	AGCO Corp.
7	1,280,966	ESCO Technologies Inc.
8	872,103	West Pharmaceutical Services Inc.
9	586,393	General Cable Corp.
10-Smallest	264,981	4Kids Entertainment Inc.

Source: Center for Research in Security Prices, University of Chicago.

Presentation of the Decile Data

Summary statistics of annual returns of the 10 deciles over 1926–2005 are presented in Table 7-4. Note from this exhibit that both the average return and the total risk, or standard deviation of annual returns, tend to increase as one moves from the largest decile to the smallest. Furthermore, the serial correlations of returns are near zero for all but the smallest two deciles. Serial correlations and their significance will be discussed in detail later in this chapter.

Graph 7-1 depicts the growth of one dollar invested in each of three NYSE/AMEX/NASDAQ groups broken down into mid-cap, low-cap, and micro-cap stocks. The index value of the entire NYSE/AMEX/NASDAQ is also included. All returns presented are value-weighted based on the market capitalizations of the deciles contained in each subgroup. The sheer magnitude of the size effect in some years is noteworthy. While the largest stocks actually declined 9 percent in 1977, the smallest stocks rose more than 20 percent. A more extreme case occurred in the depression-recovery year of 1933, when the difference between the first and tenth decile returns was far more substantial, with the largest stocks rising 46 percent, and the smallest stocks rising 224 percent. This divergence in the performance of small and large company stocks is a common occurrence.

Table 7-3

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Largest and Smallest Company by Size Group

from 1926 to1965

	Capitalization of Largest Company (in thousands)			Capitalization of Smallest Company (in thousands)		
Date (Sept 30)	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10
1926	$61,490	$14,040	$4,305	$14,100	$4,325	$43
1927	$65,281	$14,746	$4,450	$15,311	$4,496	$72
1928	$81,998	$18,975	$5,074	$19,050	$5,119	$135
1929	$107,085	$24,328	$5,875	$24,480	$5,915	$126
1930	$67,808	$13,050	$3,219	$13,068	$3,264	$30
1931	$42,607	$8,142	$1,905	$8,222	$1,927	$15
1932	$12,431	$2,170	$473	$2,196	$477	$19
1933	$40,298	$7,210	$1,830	$7,280	$1,875	$100
1934	$38,129	$6,669	$1,669	$6,734	$1,673	$68
1935	$37,631	$6,519	$1,350	$6,549	$1,383	$38
1936	$46,920	$11,505	$2,660	$11,526	$2,668	$98
1937	$51,750	$13,601	$3,500	$13,635	$3,539	$68
1938	$36,102	$8,325	$2,125	$8,372	$2,145	$60
1939	$35,784	$7,367	$1,697	$7,389	$1,800	$75
1940	$31,050	$7,990	$1,861	$8,007	$1,872	$51
1941	$31,744	$8,316	$2,086	$8,336	$2,087	$72
1942	$26,135	$6,870	$1,779	$6,875	$1,788	$82
1943	$43,218	$11,475	$3,847	$11,480	$3,903	$395
1944	$46,621	$13,066	$4,800	$13,068	$4,812	$309
1945	$55,268	$17,325	$6,413	$17,575	$6,428	$225
1946	$79,158	$24,192	$10,013	$24,199	$10,051	$829
1947	$57,830	$17,735	$6,373	$17,872	$6,380	$747
1948	$67,238	$19,575	$7,313	$19,651	$7,329	$784
1949	$55,506	$14,549	$5,037	$14,577	$5,108	$379
1950	$65,881	$18,675	$6,176	$18,750	$6,201	$303
1951	$82,517	$22,750	$7,567	$22,860	$7,598	$668
1952	$97,936	$25,452	$8,428	$25,532	$8,480	$480
1953	$98,595	$25,374	$8,156	$25,395	$8,168	$459
1954	$125,834	$29,645	$8,484	$29,707	$8,488	$463
1955	$170,829	$41,445	$12,353	$41,681	$12,366	$553
1956	$183,434	$46,805	$13,481	$46,886	$13,524	$1,122
1957	$192,861	$47,658	$13,844	$48,509	$13,848	$925
1958	$195,083	$46,774	$13,789	$46,871	$13,816	$550
1959	$253,644	$64,221	$19,500	$64,372	$19,548	$1,804
1960	$246,202	$61,485	$19,344	$61,529	$19,385	$831
1961	$296,261	$79,058	$23,562	$79,422	$23,613	$2,455
1962	$250,433	$58,866	$18,952	$59,143	$18,968	$1,018
1963	$308,438	$71,846	$23,819	$71,971	$23,822	$296
1964	$344,033	$79,343	$25,594	$79,508	$25,595	$223
1965	$363,759	$84,479	$28,365	$84,600	$28,375	$250

Source: Center for Research in Security Prices, University of Chicago.

Table 7-3 (continued)

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Largest and Smallest Company by Size Group

from 1966 to 2005

	Capitalization of Largest Company (in thousands)			Capitalization of Smallest Company (in thousands)		
Date (Sept 30)	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10
1966	$399,455	$99,578	$34,884	$99,935	$34,966	$381
1967	$459,170	$117,985	$42,267	$118,329	$42,313	$381
1968	$528,326	$149,261	$60,351	$150,128	$60,397	$592
1969	$517,452	$144,770	$54,273	$145,684	$54,280	$2,119
1970	$380,246	$94,025	$29,910	$94,047	$29,916	$822
1971	$542,517	$145,340	$45,571	$145,673	$45,589	$865
1972	$545,211	$139,647	$46,728	$139,710	$46,757	$1,031
1973	$424,584	$94,809	$29,601	$95,378	$29,606	$561
1974	$344,013	$75,272	$22,475	$75,853	$22,481	$444
1975	$465,763	$96,954	$28,140	$97,266	$28,144	$540
1976	$551,071	$116,184	$31,987	$116,212	$32,002	$564
1977	$573,084	$135,804	$39,192	$137,323	$39,254	$513
1978	$572,967	$159,778	$46,621	$160,524	$46,629	$830
1979	$661,336	$174,480	$49,088	$174,517	$49,172	$948
1980	$754,562	$194,012	$48,671	$194,241	$48,953	$549
1981	$954,665	$259,028	$71,276	$261,059	$71,289	$1,446
1982	$762,028	$205,590	$54,675	$206,536	$54,883	$1,060
1983	$1,200,680	$352,698	$103,443	$352,944	$103,530	$2,025
1984	$1,068,972	$314,650	$90,419	$315,214	$90,659	$2,093
1985	$1,432,342	$367,413	$93,810	$368,249	$94,000	$760
1986	$1,857,621	$444,827	$109,956	$445,648	$109,975	$706
1987	$2,059,143	$467,430	$112,035	$468,948	$112,125	$1,277
1988	$1,957,926	$420,257	$94,268	$421,340	$94,302	$696
1989	$2,147,608	$480,975	$100,285	$483,623	$100,384	$96
1990	$2,164,185	$472,003	$93,627	$474,065	$93,750	$132
1991	$2,129,863	$457,958	$87,586	$458,853	$87,733	$278
1992	$2,428,671	$500,346	$103,352	$501,050	$103,500	$510
1993	$2,711,068	$608,520	$137,945	$608,825	$137,987	$602
1994	$2,497,073	$601,552	$149,435	$602,552	$149,532	$598
1995	$2,793,761	$653,178	$158,011	$654,019	$158,063	$89
1996	$3,150,685	$763,377	$195,188	$763,812	$195,326	$1,043
1997	$3,511,132	$818,299	$230,472	$821,028	$230,554	$480
1998	$4,216,707	$934,264	$253,329	$936,727	$253,336	$1,671
1999	$4,251,741	$875,309	$218,336	$875,582	$218,368	$1,502
2000	$4,143,902	$840,000	$192,598	$840,730	$192,721	$1,462
2001	$5,252,063	$1,114,792	$269,275	$1,115,200	$270,391	$443
2002	$5,012,705	$1,143,845	$314,042	$1,144,452	$314,174	$501
2003	$4,794,027	$1,166,799	$330,608	$1,167,040	$330,797	$332
2004	$6,241,953	$1,607,854	$505,437	$1,607,931	$506,410	$1,393
2005	$7,187,244	$1,728,888	$586,393	$1,729,364	$587,243	$1,079

Source: Center for Research in Security Prices, University of Chicago.

Table 7-4

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, Summary Statistics of Annual Returns 1926–2005

Decile	Geometric Mean	Arithmetic Mean	Standard Deviation	Serial Correlation
1-Largest	9.5	11.3	19.17	0.09
2	10.9	13.2	21.86	0.03
3	11.3	13.8	23.66	–0.02
4	11.3	14.3	25.94	–0.02
5	11.6	14.9	26.78	–0.02
6	11.8	15.3	27.84	0.04
7	11.6	15.6	29.99	0.01
8	11.8	16.6	33.47	0.04
9	12.0	17.5	36.55	0.05
10-Smallest	14.0	21.6	45.44	0.15
Mid-Cap, 3-5	11.4	14.2	24.74	–0.02
Low-Cap, 6-8	11.7	15.7	29.52	0.03
Micro-Cap, 9-10	12.7	18.8	39.16	0.08
NYSE/AMEX/NASDAQ Total Value-Weighted Index	10.1	12.0	20.21	0.03

Source: Center for Research in Security Prices, University of Chicago.

Aspects of the Firm Size Effect

The firm size phenomenon is remarkable in several ways. First, the greater risk of small stocks does not, in the context of the capital asset pricing model (CAPM), fully account for their higher returns over the long term. In the CAPM only systematic, or beta risk, is rewarded; small company stocks have had returns in excess of those implied by their betas.

Second, the calendar annual return differences between small and large companies are serially correlated. This suggests that past annual returns may be of some value in predicting future annual returns. Such serial correlation, or autocorrelation, is practically unknown in the market for large stocks and in most other equity markets but is evident in the size premia.

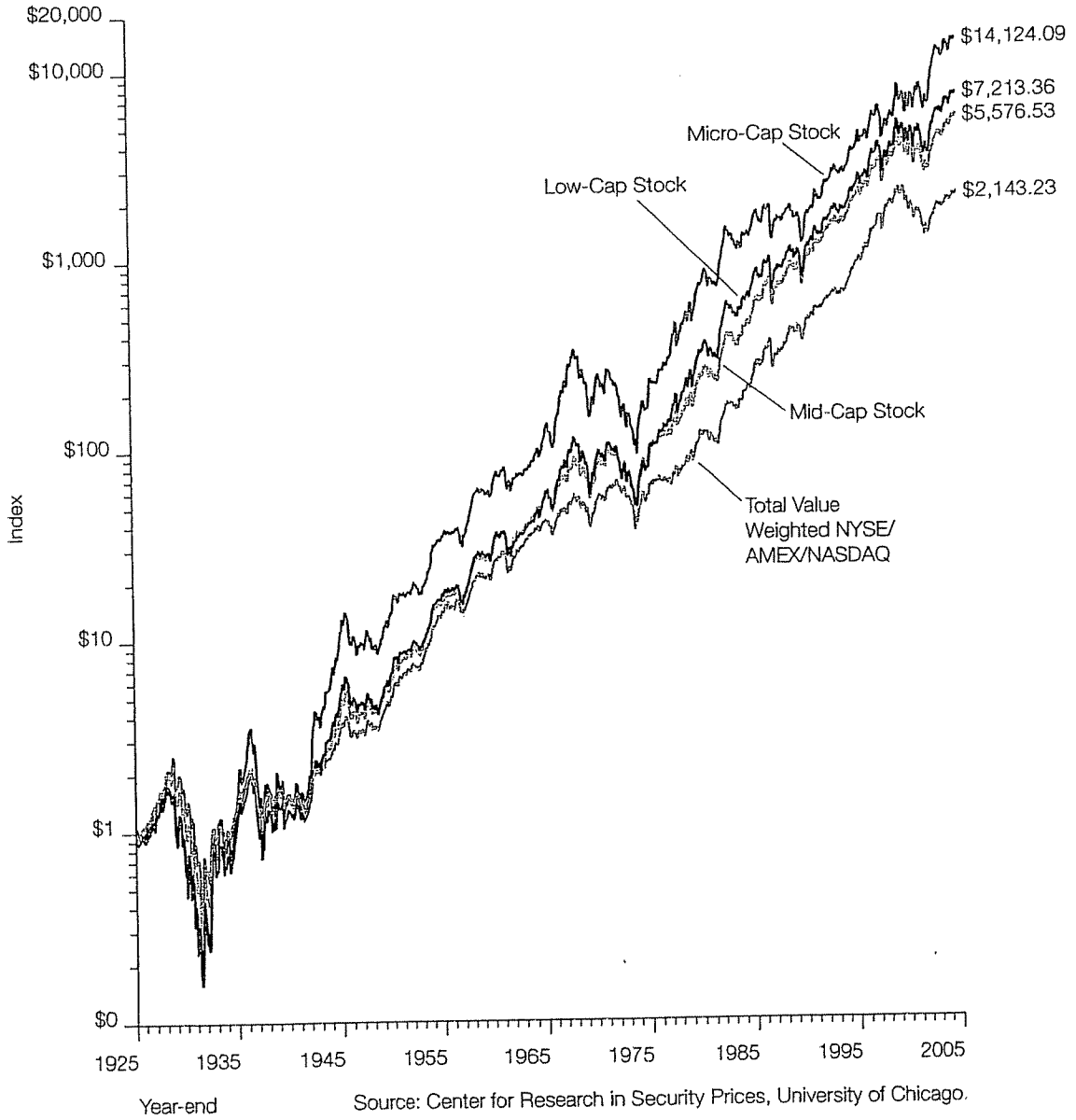
Third, the firm size effect is seasonal. For example, small company stocks outperformed large company stocks in the month of January in a large majority of the years. Such predictability is surprising and suspicious in light of modern capital market theory. These three aspects of the firm size effect—long-term returns in excess of systematic risk, serial correlation, and seasonality—will be analyzed thoroughly in the following sections.

Graph 7-1

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ: Wealth Indices of Investments in Mid-, Low-, Micro- and Total Capitalization Stocks

1925–2005

Year-end 1925 = $1.00



Source: Center for Research in Security Prices, University of Chicago.

Long-Term Returns in Excess of Systematic Risk

The capital asset pricing model (CAPM) does not fully account for the higher returns of small company stocks. Table 7-5 shows the returns in excess of systematic risk over the past 80 years for each decile of the NYSE/AMEX/NASDAQ. Recall that the CAPM is expressed as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

Table 7-5 uses the CAPM to estimate the return in excess of the riskless rate and compares this estimate to historical performance. According to the CAPM, the expected return on a security should consist of the riskless rate plus an additional return to compensate for the systematic risk of the security. The return in excess of the riskless rate is estimated in the context of the CAPM by multiplying the equity risk premium by β (beta). The equity risk premium is the return that compensates investors for taking on risk equal to the risk of the market as a whole (systematic risk).[2] Beta measures the extent to which a security or portfolio is exposed to systematic risk.[3] The beta of each decile indicates the degree to which the decile's return moves with that of the overall market.

A beta greater than one indicates that the security or portfolio has greater systematic risk than the market; according to the CAPM equation, investors are compensated for taking on this additional risk. Yet, Table 7-5 illustrates that the smaller deciles have had returns that are not fully explained by their higher betas. This return in excess of that predicted by CAPM increases as one moves from the largest companies in decile 1 to the smallest in decile 10. The excess return is especially pronounced for micro-cap stocks (deciles 9–10). This size-related phenomenon has prompted a revision to the CAPM, which includes a size premium. Chapter 4 presents this modified CAPM theory and its application in more detail.

This phenomenon can also be viewed graphically, as depicted in the Graph 7-2. The security market line is based on the pure CAPM without adjustment for the size premium. Based on the risk (or beta) of a security, the expected return lies on the security market line. However, the actual historic returns for the smaller deciles of the NYSE/AMEX/NASDAQ lie above the line, indicating that these deciles have had returns in excess of that which is appropriate for their systematic risk.

2 The equity risk premium is estimated by the 80-year arithmetic mean return on large company stocks, 12.30 percent, less the 80-year arithmetic mean income-return component of 20-year government bonds as the historical riskless rate, in this case 5.22 percent. (It is appropriate, however, to match the maturity, or duration, of the riskless asset with the investment horizon.) See Chapter 5 for more detail on equity risk premium estimation.

3 Historical betas were calculated using a simple regression of the monthly portfolio (decile) total returns in excess of the 30-day U.S. Treasury bill total returns versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2005. See Chapter 6 for more detail on beta estimation.

Table 7-5

Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ
1926–2005

Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	11.29%	6.07%	6.45%	–0.37%
2	1.04	13.22%	8.00%	7.33%	0.67%
3	1.10	13.84%	8.62%	7.77%	0.85%
4	1.13	14.31%	9.09%	7.98%	1.10%
5	1.16	14.91%	9.69%	8.20%	1.49%
6	1.18	15.33%	10.11%	8.38%	1.73%
7	1.23	15.62%	10.40%	8.73%	1.67%
8	1.28	16.60%	11.38%	9.05%	2.33%
9	1.34	17.48%	12.26%	9.50%	2.76%
10-Smallest	1.41	21.59%	16.37%	10.01%	6.36%
Mid-Cap, 3-5	1.12	14.15%	8.94%	7.91%	1.02%
Low-Cap, 6-8	1.22	15.66%	10.44%	8.63%	1.81%
Micro-Cap, 9-10	1.36	18.77%	13.55%	9.61%	3.95

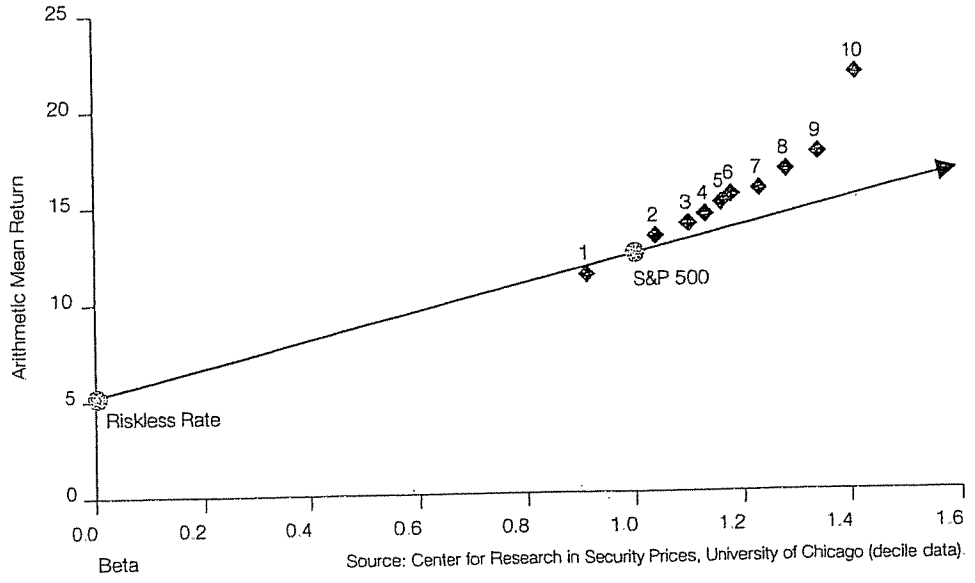
*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2005.

**Historical riskless rate is measured by the 80-year arithmetic mean income return component of 20-year government bonds (5.22 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.30 percent) minus the arithmetic mean income return component of 20-year government bonds (5.22 percent) from 1926–2005.

Graph 7-2

Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
1926–2005



Source: Center for Research in Security Prices, University of Chicago (decile data).

Further Analysis of the 10th Decile

The size premia presented thus far do a great deal to explain the return due solely to size in publicly traded companies. However, by splitting the 10th decile into two size groupings we can get a closer look at the smallest companies. This magnification of the smallest companies will demonstrate whether the company size to size premia relationship continues to hold true.

As previously discussed, the method for determining the size groupings for size premia analysis was to take the stocks traded on the NYSE and break them up into 10 deciles, after which stocks traded on the AMEX and NASDAQ were allocated into the same size groupings. This same methodology was used to split the 10th decile into two parts: 10a and 10b, with 10b being the smaller of the two. This is equivalent to breaking the stocks down into 20 size groupings, with portfolios 19 and 20 representing 10a and 10b.

Table 7-7 shows that the pattern continues; as companies get smaller their size premium increases. There is a noticeable increase in size premium from 10a to 10b, which can also be demonstrated visually in Graph 7-3. This can be useful in valuing companies that are extremely small. Table 7-6 presents the size, composition, and breakpoints of deciles 10a and 10b. First, the recent number of companies and total decile market capitalization are presented. Then the largest company and its market capitalization are presented.

Breaking the smallest decile down lowers the significance of the results compared to results for the 10th decile taken as a whole, however. The same holds true for comparing the 10th decile with the Micro-Cap aggregation of the 9th and 10th deciles. The more stocks included in a sample the more significance can be placed on the results. While this is not as much of a factor with the recent years of data, these size premia are constructed with data back to 1926. By breaking the 10th decile down into smaller components we have cut the number of stocks included in each grouping. The change over time of the number of stocks included in the 10th decile for the NYSE/AMEX/NASDAQ is presented in Table 7-8. With fewer stocks included in the analysis early on, there is a strong possibility that just a few stocks can dominate the returns for those early years.

While the number of companies included in the 10th decile for the early years of our analysis is low, it is not too low to still draw meaningful results even when broken down into subdivisions 10a and 10b. All things considered, size premia developed for deciles 10a and 10b are significant and can be used in cost of capital analysis. These size premia should greatly enhance the development of cost of capital analysis for very small companies.

Table 7-6

Size-Decile Portfolios 10a and 10b of the NYSE/AMEX/NASDAQ, Largest Company and Its Market Capitalization
September 30, 2005

Decile	Recent Number of Companies	Recent Decile Market Capitalization (in thousands)	Market Capitalization of Largest Company (in thousands)	Company Name
10a	483	$108,194,821	$264,981	4Kids Entertaint Inc.
10b	1,279	$102,157,012	$169,195	Quaker Chemical Corp.

Note: These numbers may not aggregate to equal decile 10 figures.
Source: Center for Research in Security Prices, University of Chicago.

Table 7-7

Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split
1926–2005

	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	11.29%	6.07%	6.45%	–0.37%
2	1.04	13.22%	8.00%	7.33%	0.67%
3	1.10	13.84%	8.62%	7.77%	0.85%
4	1.13	14.31%	9.09%	7.98%	1.10%
5	1.16	14.91%	9.69%	8.20%	1.49%
6	1.18	15.33%	10.11%	8.38%	1.73%
7	1.23	15.62%	10.40%	8.73%	1.67%
8	1.28	16.60%	11.38%	9.05%	2.33%
9	1.34	17.48%	12.26%	9.50%	2.76%
10a	1.43	19.71%	14.49%	10.10%	4.39%
10b-Smallest	1.39	24.87%	19.65%	9.82%	9.83%
Mid-Cap, 3-5	1.12	14.15%	8.94%	7.91%	1.02%
Low-Cap, 6-8	1.22	15.66%	10.44%	8.63%	1.81%
Micro-Cap, 9-10	1.36	18.77%	13.55%	9.61%	3.95%

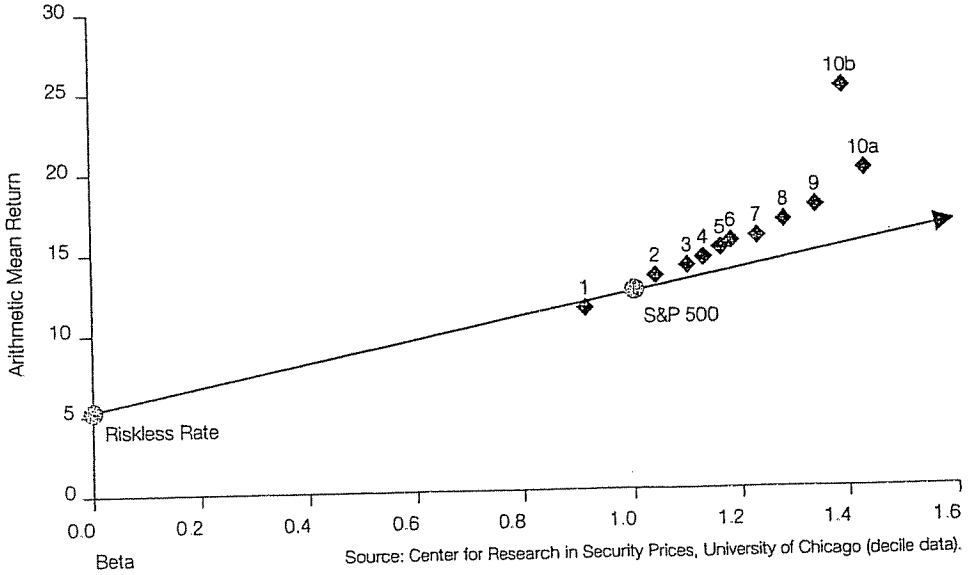
*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2005.

**Historical riskless rate is measured by the 80-year arithmetic mean income return component of 20-year government bonds (5.22 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.30 percent) minus the arithmetic mean income return component of 20-year government bonds (5.22 percent) from 1926–2005.

Graph 7-3

Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split
1926-2005



Source: Center for Research in Security Prices, University of Chicago (decile data).

Table 7-8
Historical Number of Companies for NYSE/AMEX/NASDAQ Decile 10

Sept.	Number of Companies
1926	52*
1930	72
1940	78
1950	100
1960	109
1970	865
1980	685
1990	1,814
2000	1,927
2005	1,746

*The fewest number of companies was 49 in March, 1926

Source: Center for Research in Security Prices, University of Chicago.

Alternative Methods of Calculating the Size Premia

The size premia estimation method presented above makes several assumptions with respect to the market benchmark and the measurement of beta. The impact of these assumptions can best be examined by looking at some alternatives. In this section we will examine the impact on the size premia of using a different market benchmark for estimating the equity risk premia and beta. We will also examine the effect on the size premia study of using sum beta or an annual beta.[4]

Changing the Market Benchmark

In the original size premia study, the S&P 500 is used as the market benchmark in the calculation of the realized historical equity risk premium and of each size group's beta. The NYSE total value-weighted index is a common alternative market benchmark used to calculate beta. Table 7-9 uses this market benchmark in the calculation of beta. In order to isolate the size effect, we require an equity risk premium based on a large company stock benchmark. The NYSE deciles 1–2 large company index offers a mutually exclusive set of portfolios for the analysis of the smaller company groups: mid-cap deciles 3–5, low-cap deciles 6–8, and micro-cap deciles 9–10. The size premia analyses using these benchmarks are summarized in Table 7-9 and depicted graphically in Graph 7-4.

For the entire period analyzed, 1926–2005, the betas obtained using the NYSE total value-weighted index are higher than those obtained using the S&P 500. Since smaller companies had higher betas using the NYSE benchmark, one would expect the size premia to shrink. However, as was illustrated in Chapter 5, the equity risk premium calculated using the NYSE deciles 1–2 benchmark results in a value of 6.33, as opposed to 7.08 when using the S&P 500. The effect of the higher betas and lower equity risk premium cancel each other out, and the resulting size premia in Table 7-9 are slightly higher than those resulting from the original study.

4 Sum beta is the method of beta estimation described in Chapter 6 that was developed to better account for the lagged reaction of small stocks to market movements. The sum beta methodology was developed for the same reason that the size premia were developed; small company betas were too small to account for all of their excess returns.

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Utilities

The utilities rating methodology encompasses two basic components: business risk analysis and financial analysis. Evaluation of industry characteristics, the utility's position within that industry, its regulation, and its management provides the context for assessing a firm's financial condition.

Historical analysis is a tool for identifying strengths and weaknesses, and provides a starting point for evaluating financial condition. Business position assessment is the qualitative measure of a utility's fundamental creditworthiness. It focuses on the forces that will shape the utilities' future.

Utilities credit analysis factors

Business risk	Financial risk
• Markets and service area economy	• Earnings protection
• Competitive position	• Capital structure
• Operations	• Cash flow adequacy
• Regulation	• Financial flexibility/capital attraction
• Management	
• Fuel, power, and water supply	
• Asset concentration	

The credit analysis of utilities is quickly evolving, as utilities are treated less as regulated monopolies and more as entities faced with a host of challengers in a competitive environment. Marketplace dynamics are supplanting the power of regulation, making it critically important to reduce costs and/or market new services in order to thwart competitors' inroads.

Markets and service area economy

Assessing service territory begins with the economic and demographic evaluation of the area in which the utility has its franchise. Strength of long-term demand for the product is examined from a macroeconomic perspective. This enables Standard & Poor's to evaluate the affordability of rates and the staying power of demand.

Standard & Poor's tries to discern any secular consumption trends and, more importantly, the reasons for them. Specific items examined include the size and growth rate of the market, strength of the franchise, historical and projected sales growth, income levels and trends in population, employment, and per capita income. A utility with a healthy economy and customer base—as illustrated by diverse employment opportunities, average or above-average wealth and income statistics, and low unemployment—will have a greater capacity to support its operations.

For electric and gas utilities, distribution by customer class is scrutinized to assess the depth and diversity of the utility's customer mix. For example, heavy industrial concentration is viewed cautiously, since a utility may have significant exposure to cyclical volatility. Alternatively, a large residential component yields a stable and more predictable revenue stream. The largest utility customers are identified to determine their importance to the bottom line and assess the risk of their loss and potential adverse effect on the utility's financial position. Credit concerns arise when individual customers represent more than 5% of revenues. The company or industry may play a significant role in the overall economic base of the service area. Moreover, large customers may turn to cogeneration or alternative power supplies to meet their energy needs, potentially leading to reduced cash flow for the utility (even in cases where a large customer pays discounted rates and is not a profitable account for the utility). Customer concentration is less significant for water and telecommunication utilities.

Competitive position

As competitive pressures have intensified in the utilities industry, Standard & Poor's analysis has deepened to include a more thorough review of competitive position.

Electric utility competition

For electric utilities, competitive factors examined include: percentage of firm wholesale revenues that are most vulnerable to competition; industrial load concentration; exposure of key customers to alternative suppliers; commercial concentrations; rates for various customer classes; rate design and flexibility; production costs, both marginal and fixed; the regional capacity situation; and transmission constraints. A regional focus is evident, but high costs and rates relative to national averages are also of significant concern because of the potential for electricity substitutes over time.

Mounting competition in the electric utility industry derives from excess generating capacity, lower barriers to entering the electric generating business, and marginal costs that are below embedded costs. Standard & Poor's has already witnessed declining prices in wholesale markets, as *de facto* retail competition is already being seen in several parts of the country. Standard & Poor's believes that over the coming years more and more customers will want and demand lower prices. Initial concerns focus on the largest industrial loads, but other customer classes will be increasingly vulnerable. Competition will not necessar-

ily be driven by legislation. Other pressures will arise from global competition and improving technologies, whether it be the declining cost of incremental generation or advances in transmission capacity or substitute energy sources like the fuel cell. It is impossible to say precisely when wide-open retail competition will occur; this will be evolutionary. However, significantly greater competition in retail markets is inevitable.

Gas utility competition

Similarly, gas utilities are analyzed with regard to their competitive standing in the three major areas of demand: residential, commercial, and industrial. Although regulated as holders of monopoly power, natural gas utilities have for some time been actively competing for energy market share with fuel oil, electricity, coal, solar, wood, etc. The long-term staying power of market demand for natural gas cannot be taken for granted. In fact, as the electric utility industry restructures and reduces costs, electric power will become more cost competitive and threaten certain gas markets. In addition, independent gas marketers have made greater inroads behind the city gate and are competing for large gas users. Moreover, the recent trend by state regulators to unbundle utility services is creating opportunities for outsiders to market niche products. Distributors still have the upper hand, but those who do not reduce and control costs, and thus rates, could find competition even more difficult.

Natural gas pipelines are judged to carry a somewhat higher business risk than distribution companies because they face competition in every one of their markets. To the extent a pipeline serves utilities versus industrial end users, its stability is greater. Over the next five years, pipeline competition will heat up since many service contracts with customers are expiring. Most distributor or end-use customers are looking to reduce pipeline costs and are working to improve their load factor to do so. Thus, pipelines will likely find it difficult to recontract all capacity in coming years. Being the pipeline of choice is a function of attractive transportation rates, diversity and quality of services provided, and capacity available in each particular market. In all cases though, periodic discounting of rates to retain customers will occur and put pressure on profitability.

Water utility competition

As the last true utility monopoly, water utilities face very little competition and there is currently no challenge to the continuation of franchise areas. The only exceptions have been cases where investor-owned water companies have been subject to condemnation and municipalization because of poor service or political motivations. In that regard, Standard & Poor's pays close attention to costs and rates in relation to neighboring utilities and national averages. (In contrast, the privatization of public water facilities has begun, albeit at a slower pace than anticipated. This is occurring mostly in the form of operating contracts and public/private partnerships, and not in asset transfers. This trend should continue as cities look for ways to balance their tight budgets.) Also, water utilities are not fully immune to the forces of competition; in a few instances wholesale customers can access more than one supplier.

Telephone competition

The Telecommunications Act of 1996 accelerates the continuing challenge to the local exchange companies' (LECs) century-old monopoly in the local loop. Competitive access providers (CAPs), both facilities-based and resellers, are aggressively pursuing customers, generally targeting metropolitan areas, and promising lower rates and better service.

Most long-distance calls are still originated and terminated on the local telephone company network. To complete such a call, the long-distance provider (including AT&T, MCI, Sprint and a host of smaller interexchange carriers or "IXCs") must pay the local telephone company a steep "access" fee to compensate the local phone company for the use of its local network. CAPs, in contrast, build or lease facilities that directly connect customers to their long-distance carrier, bypassing the local telephone company and avoiding access fees, and thereby can offer lower long-distance rates. But the LECs are not standing still; they are combating the loss of business to CAPs by lowering access fees, thereby reducing the economic incentive for a high usage long-distance customer to use a CAP. LECs are attempting to make up for the loss of revenues from lower access fees by increasing basic local service rates (or at least not lowering them), since basic service is far less subject to competition. LECs are improving operating efficiency and marketing high margin, value-added new services. Additionally, in the wake of the Telecommunications Act, LECs will capture at least some of the inter-LATA long-distance market. As a result of these initiatives, LECs continue to rebuild themselves—from the traditional utility monopoly to leaner, more marketing oriented organizations.

While LECs, and indeed all segments of the telecommunications sector, face increasing competition, there are favorable industry factors that tend to offset heightened business risk and auger for overall ratings stability for most LECs. Importantly, telecommunications is a declining-cost business. With increased deployment of fiber optics, the cost of transport has fallen dramatically and digital switching hardware and software have yielded more capable, trouble-free and cost-efficient networks. As a result, the cost of network maintenance has dropped sharply, as illustrated by the ratio of employees per 10,000 access lines, an oft cited measurement of efficiency. Ratios as low as 25 employees per 10,000 lines are being seen, down from the typical 40 or more employees per 10,000 ratio of only a few years ago.

In addition, networks are far more capable. They are increasingly digitally switched and able to accommodate high-speed communications. The infrastructure needed to accommodate switched broadband services will be built into telephone networks over the next few years. These advanced networks will enable telephone companies to look to a greater variety of high-margin, value-added serv-

ices. In addition to those current services such as call waiting or caller ID, the delivery of hundreds of broadcast and interactive video channels will be possible. While these services offer the potential of new revenue streams, they will simultaneously present a formidable challenge. LECs will be entering the new (to them) arena of multimedia entertainment and will have to develop expertise in marketing and entertainment programming acumen; such skills stand in sharp contrast to LECs' traditional strengths in engineering and customer service.

Operations

Standard & Poor's focuses on the nature of operations from the perspective of cost, reliability, and quality of service. Here, emphasis is placed on those areas that require management attention in terms of time or money and which, if unresolved, may lead to political, regulatory, or competitive problems.

Operations of electric utilities

For electrics, the status of utility plant investment is reviewed with regard to generating plant availability and utilization, and also for compliance with existing and contemplated environmental and other regulatory standards. The record of plant outages, equivalent availability, load factors, heat rates, and capacity factors are examined. Also important is efficiency, as defined by total megawatt hour per employee and customers per employee. Transmission interconnections are evaluated in terms of the number of utilities to which the utility in question has access, the cost structures and available generating capacity of these other utilities, and the price paid for wholesale power.

Because of mounting competition and the substantial escalation in decommissioning estimates, significant weight is given to the operation of nuclear facilities. Nuclear plants are becoming more vulnerable to high production costs that make their rates uneconomic. Significant asset concentration may expose the utility to poor performance, unscheduled outages or premature shutdowns, and large deferrals or regulatory assets that may need to be written off for the utility to remain competitive. Also, nuclear facilities tend to represent significant portions of their operators' generating capability and assets. The loss of a productive nuclear unit from both power supply and rate base can interrupt the revenue stream and create substantial additional costs for repairs and improvements and replacement power. The ability to keep these stations running smoothly and economically directly influences the ability to meet electric demand, the stability of revenues and costs, and, by extension, the ability to maintain adequate creditworthiness. Thus, economic operation, safe operation, and long-term operation are examined in depth. Specifically, emphasis is placed on operation and maintenance costs, busbar costs, fuel costs, refueling outages, forced outages, plant statistics, NRC evaluations, the potential need for repairs, operating licenses, decommissioning estimates and amounts held in external trusts, spent fuel storage capacity, and management's nuclear experience. In essence, favorable nuclear operations offer significant opportunities but, if a nuclear unit runs poorly or not at all, the attendant risks can be great.

Operations of gas utilities

For gas pipeline and distribution companies, the degree of plant utilization, the physical condition of the mains and lines, adequacy of storage to meet seasonal needs, "lost and unaccounted for" gas levels, and per-unit nongas operating and construction costs are important factors. Efficiency statistics such as load factor, operating costs per customer, and operating income per employee are also evaluated in comparison to other utilities and the industry as a whole.

Operations of water utilities

As a group, water utilities are continually upgrading their physical plant to satisfy regulations and to develop additional supply. Over the next decade, water systems will increasingly face the task of maintaining compliance, as drinking water regulations change and infrastructure ages. Given that the Safe Drinking Water Act was authorized in 1974, the first generation of treatment plants built to conform with these rules are almost 20 years old. Additionally, because the focus during this period was on satisfying environmental standards, deferred maintenance of distribution systems has been common, especially in older urban areas. The increasing cost of supplying treated water argues against the high level of unaccounted for water witnessed in the industry. Consequently, Standard & Poor's anticipates capital plans for rebuilding distribution lines and major renewal and replacement efforts aimed at treatment plants.

Operations of telephone companies

For telephone companies, cost-of-service analysis focuses on plant capability and measures of efficiency and quality of service. Plant capability is ascertained by looking at such parameters as percentage of digitally switched lines; fiber optic deployment, in particular in those portions of the plant key to network survival; and the degree of broadband capacity fiber and coaxial deployment and broadband switching capacity. Efficiency measures include operating margins, the ratio of employees per 10,000 access lines, and the extent of network and operations consolidation. Quality of service encompasses examination of quantitative measures, such as trouble reports and repeat service calls, as well as an assessment of qualitative factors, that may include service quality goals mandated by regulators.

Regulation

Regulatory rate-setting actions are reviewed on a case-by-case basis with regard to the potential effect on creditworthiness. Regulators' authorizing high rates of return is of little value unless the returns are earnable. Furthermore, allowing high returns based on noncash items does not benefit bondholders. Also, to be viewed positively, regulatory treatment should allow consistent performance from

period to period, given the importance of financial stability as a rating consideration.

The utility group meets frequently with commission and staff members, both at Standard & Poor's offices and at commission headquarters, demonstrating the importance Standard & Poor's places on the regulatory arena for credit quality evaluation. Input from these meetings and from review of rate orders and their impact weigh heavily in Standard & Poor's analysis.

Standard & Poor's does not "rate" regulatory commissions. State commissions typically regulate a number of diverse industries, and regulatory approaches to different types of companies often differ within a single regulatory jurisdiction. This makes it all but impossible to develop inclusive "ratings" for regulators.

Standard & Poor's evaluation of regulation also encompasses the administrative, judicial, and legislative processes involved in state and federal regulation. These can affect rate-setting activities and other aspects of the business, such as competitive entry, environmental and safety rules, facility siting, and securities sales.

As the utility industry faces an increasingly deregulated environment, alternatives to traditional rate-making are becoming more critical to the ability of utilities to effectively compete, maintain earnings power, and sustain creditor protection. Thus, Standard & Poor's focuses on whether regulators, both state and federal, will help or hinder utilities as they are exposed to greater competition. There is much that regulators can do, from allocating costs to more captive customers to allowing pricing flexibility—and sometimes just stepping out of the way.

Under traditional rate-making, rates and earnings are tied to the amount of invested capital and the cost of capital. This can sometimes reward companies more for justifying costs than for containing them. Moreover, most current regulatory policies do not permit utilities to be flexible when responding to competitive pressures of a deregulated market. Lack of flexible tariffs for electric utilities may lure large customers to wheel cheaper power from other sources.

In general, a regulatory jurisdiction is viewed favorably if it permits earning a return based on the ability to sustain rates at competitive levels. In addition to performance-based rewards or penalties, flexible plans could include market-based rates, price caps, index-based prices, and rates premised on the value of customer service. Such rates more closely mirror the competitive environment that utilities are confronting.

Electric industry regulation

The ability to enter into long-term arrangements at negotiated rates without having to seek regulatory approval for each contract is also important in the electric industry. (While contracting at reduced rates constrains financial performance, it lessens the potential adverse impact in the event of retail wheeling. Since revenue losses associated with this strategy are not likely to be recovered from ratepayers, utilities must control costs well enough to remain competitive if they are to sustain current levels of bondholder protection.)

Natural gas industry regulation

In the gas industry, too, several state commission policies weigh heavily in the evaluation of regulatory support. Examples include stabilization mechanisms to adjust revenues for changes in weather or the economy, rate and service unbundling decisions, revenue and cost allocation between sales and transportation customers, flexible industrial rates, and the general supportiveness of construction costs and gas purchases.

Water industry regulation

In all water utility activities, federal and state environmental regulations continue to play a critical role. The legislative timetable to effect the 1986 amendments to the Safe Drinking Water Act of 1974 was quite aggressive. But environmental standards-setting has actually slowed over the past couple of years due largely to increasing sentiment that the stringent, costly standards have not been justified on the basis of public health. A moratorium on the promulgation of significant new environmental rules is anticipated.

Telecommunications industry regulation

Despite the advances in telecommunications deregulation, analysis of regulation of telephone operators will continue to be a key rating determinant for the foreseeable future. The method of regulation may be either classic rate-based rate of return or some form of price cap mechanism. The most important factor is to assess whether the regulatory framework—no matter which type—provides sufficient financial incentive to encourage the rated company to maintain its quality of service and to upgrade its plant to accommodate new services while facing increasing competition from wireless operators and cable television companies.

Where regulators do still set tariffs based on an authorized return, Standard & Poor's strives to explore with regulators their view of the rate-of-return components that can materially impact reported versus regulatory earnings. Specifically these include the allowable base upon which the authorized return can be earned, allowable expenses, and the authorized return. Since regulatory oversight runs the gamut from strict, adversarial relationships with the regulated operating companies to highly supportive postures, Standard & Poor's probes beyond the apparent regulatory environment to ascertain the actual impact of regulation on the rated company.

Management

Evaluating the management of a utility is of paramount importance to the analytical process since management's abilities and decisions affect all areas of a company's operations. While regulation, the economy, and other outside factors can influence results, it is ultimately the quality of management that determines the success of a company.

With emerging competition, utility management will be more closely scrutinized by Standard & Poor's and will become an increasingly critical component of the credit evaluation. Management strategies can be the key determinant in differentiating utilities and in establishing where companies lie on the business position spectrum. It is imperative that managements be adaptable, aggressive, and proactive if their utilities are to be viable in the future; this is especially important for utilities that are currently uncompetitive.

The assessment of management is accomplished through meetings, conversations, and reviews of company plans. It is based on such factors as tenure, industry experience, grasp of industry issues, knowledge of customers and their needs, knowledge of competitors, accounting and financing practices, and commitment to credit quality. Management's ability and willingness to develop workable strategies to address their systems' needs, to deal with the competitive pressures of free market, to execute reasonable and effective long-term plans, and to be proactive in leading their utilities into the future are assessed. Management quality is also indicated by thoughtful balancing of public and private priorities, a record of credibility, and effective communication with the public, regulatory bodies, and the financial community. Boards of directors will receive ever more attention with respect to their role in setting appropriate management incentives.

With competition the watchword, Standard & Poor's also focuses on management's efforts to enhance financial condition. Management can bolster bondholder protection by taking any number of discretionary actions, such as selling common equity, lowering the common dividend payout, and paying down debt. Also important for the electric industry will be creativity in entering into strategic alliances and working partnerships that improve efficiency, such as central dispatching for a number of utilities or locking up at-risk customers through long-term contracts or expanded flexible pricing agreements. Proactive management teams will also seek alternatives to traditional rate-base, rate-of-return rate-making, move to adopt higher depreciation rates for generating facilities, segment customers by individual market preferences, and attempt to create superior service organizations.

In general, management's ability to respond to mounting competition and changes in the utility industry in a swift and appropriate manner will be necessary to maintain credit health.

Fuel, power, and water supply

Assessment of present and prospective fuel and power supply is critical to every electric utility analysis, while gauging the long-term natural gas supply position for gas pipeline and distribution companies and the water resources of a water utility is equally important. There is no similar analytical category for telephone utilities.

Electric utilities

For electric utilities emphasis is placed on generating reserve margins, fuel mix, fuel contract terms, demand-side management techniques, and purchased power arrangements. The adequacy of generating margins is examined nationally, regionally, and for each individual company. However, the reserve margin picture is muddied by the imprecise nature of peak-load growth forecasting, and also supply uncertainty relating to such things as Canadian capacity availability and potential plant shutdowns due to age, new NRC rules, acid rain remedies, fuel shortages, problems associated with nontraditional technologies, and so forth. Even apparently ample reserves may not be what they seem. Moreover, the quality of capacity is just as important as the size of reserves. Companies' reserve requirements differ, depending upon individual operating characteristics.

Fuel diversity provides flexibility in a changing environment. Supply disruptions and price hikes can raise rates and ignite political and regulatory pressures that ultimately lead to erosion in financial performance. Thus, the ability to alter generating sources and take advantage of lower cost fuels is viewed favorably.

Dependence on any single fuel means exposure to that fuel's problems: electric utilities that rely on oil or gas face the potential for shortages and rapid price increases; utilities that own nuclear generating facilities face escalating costs for decommissioning; and coal-fired capacity entails environmental problems stemming from concerns over acid rain and the "greenhouse effect."

Buying power from neighboring utilities, qualifying facility projects, or independent power producers may be the best choice for a utility that faces increasing electricity demand. There has been a growing reliance on purchased power arrangements as an alternative to new plant construction. This can be an important advantage, since the purchasing utility avoids potential construction cost overruns as well as risking substantial capital. Also, utilities can avoid the financial risks typical of a multiyear construction program that are caused by regulatory lag and prudence reviews. Furthermore, purchased power may enhance supply flexibility, fuel resource diversity, and maximize load factors. Utilities that plan to meet demand projections with a portfolio of supply-side options also may be better able to adapt to future growth uncertainties. Notwithstanding the benefits of purchasing, such a strategy has risks associated with it. By entering into a firm long-term purchased power contract that contains a fixed-cost component, utilities can incur substantial market, operating, regulatory, and financial risks. Moreover, regulatory treatment of purchased power removes any upside potential that might help offset the risks. Utilities are not compensated through incentive rate-making; rather, purchased power is recovered dollar-for-dollar as an operating expense.

To analyze the financial impact of purchased power, Standard & Poor's first calculates the net present value of future annual capacity payments (discounted at 10%). This represents a potential debt equivalent—the off-balance-sheet obligation that a utility incurs when it enters into a long-term purchased power contract. However, Standard

& Poor's adds to the utility's balance sheet only a portion of this amount, recognizing that such a contractual arrangement is not entirely the equivalent of debt. What percentage is added is a function of Standard & Poor's qualitative analysis of the specific contract and the extent to which market, operating, and regulatory risks are borne by the utility (the risk factor). For unconditional, take-or-pay contracts, the risk factor range is from 40%-80%, with the average hovering around 60%. A lower risk factor is typically assigned for system purchases from coal-fired utilities and a higher risk factor is usually designated for unit-specific nuclear purchases. The range for take-and-pay performance obligations is between 10%-50%.

Gas utilities

For gas distribution utilities, long-term supply adequacy obviously is critical, but the supply role has become even more important in credit analysis since the Federal Energy Regulatory Commission's Order 636 eliminated the interstate pipeline merchant business. This thrust gas supply responsibilities squarely on local gas distributors. Standard & Poor's has always believed distributor management has the expertise and wherewithal to perform the job well, but the risks are significant since gas costs are such a large percentage of total utility costs. In that regard, it is important for utilities to get preapprovals of supply plans by state regulators or at least keep the staff and commissioners well informed. To minimize risks, a well-run program would diversify gas sources among different producers or marketers, different gas basins in the U.S. and Canada, and different pipeline routes. Also, purchase contracts should be firm, with minimal take-or-pay provisions, and have prices tied to an industry index. A modest percentage of fixed-price gas is not unreasonable. Contracts, whether of gas purchases or pipeline capacity, should be intermediate term. Staggering contract expirations (preferably annually) provides an opportunity to be an active market player. A modest degree of reliance on spot purchases provides flexibility, as does the use of market-based storage. Gas storage and on-property gas resources such as liquefied natural gas or propane air are effective peak-day and peak-season supply management tools.

Since pipeline companies no longer buy and sell natural gas and are just common carriers, connections with varied reserve basins and many wells within those basins are of great importance. Diversity of sources helps offset the risks arising from the natural production declines eventually experienced by all reserve basins and individual wells. Moreover, such diversity can enhance a pipeline's attractiveness as a transporter of natural gas to distributors and end users seeking to buy the most economical gas available for their needs.

Water utilities

Nearly all water systems throughout the U.S. have ample long-term water supplies. Yet to gain comfort, Standard & Poor's assesses the production capability of treatment plants and the ability to pump water from underground aquifers in relation to the usage demands from consumers. Having adequate treated water storage facilities has become important in recent years and has helped many systems meet demands during peak summer periods. Of interest is whether the resources are owned by the utility or purchased from other utilities or local authorities. Owning properties with water rights provides more supply security. This is especially so in states like California where water allocations are being reduced, particularly since recent droughts and environmental issues have created alarm. Since the primary cost for water companies is treatment, it makes little difference whether raw water is owned or bought. In fact, compliance with federal and state water regulations is very high, and the overall cost to deliver treated water to consumers remains relatively affordable.

Asset concentration in the electric utility industry

In the electric industry, Standard & Poor's follows the operations of major generating facilities to assess if they are well managed or troubled. Significant dependence on one generating facility or a large financial investment in a single asset suggests high risk. The size or magnitude of a particular asset relative to total generation, net plant in service, and common equity is evaluated. Where substantial asset concentration exists, the financial profile of a company may experience wide swings depending on the asset's performance. Heavy asset concentration is most prevalent among utilities with costly nuclear units.

Earnings protection

In this category, pretax cash income coverage of all interest charges is the primary ratio. For this calculation, allowance for funds used during construction (AFUDC) is removed from income and interest expense. AFUDC and other such noncash items do not provide any protection for bondholders. To identify total interest expense, the analyst reclassifies certain operating expenses. The interest component of various off-balance-sheet obligations, such as leases and some purchased-power contracts, is included in interest expense. This provides the most direct indication of a utility's ability to service its debt burden.

While considerable emphasis in assessing credit protection is placed on coverage ratios, this measure does not provide the entire earnings protection picture. Also important are a company's earned returns on both equity and capital, measures that highlight a firm's earnings performance. Consideration is given to the interaction of embedded costs, financial leverage, and pretax return on capital.

Capital structure

Analyzing debt leverage goes beyond the balance sheet and covers quasi-debt items and elements of hidden financial leverage. Noncapitalized leases (including sale/lease-back obligations), debt guarantees, receivables financing, and purchased-power contracts are all considered debt equivalents and are reflected as debt in calculating capital

structure ratios. By making debt level adjustments, the analyst can compare the degree of leverage used by each utility company.

Furthermore, assets are examined to identify undervalued or overvalued items. Assets of questionable value are discounted to more accurately evaluate asset protection.

Some firms use short-term debt as a permanent piece of their capital structure. Short-term debt also is considered part of permanent capital when it is used as a bridge to permanent financing. Seasonal, self-liquidating debt is excluded from the permanent debt amount, but this situation is rare—with the exception of certain gas utilities. Given the long life of almost all utility assets, short-term debt may expose these companies to interest-rate volatility, remarketing risk, bank line backup risk, and regulatory exposure that cannot be readily offset. The lower cost of shorter-term obligations (assuming a positively sloped yield curve) is a positive factor that partially mitigates the risk of interest-rate variability. As a rule of thumb, a level of short-term debt that exceeds 10% of total capital is cause for concern.

Similarly, if floating-rate debt and preferred stock constitute over one-third of total debt plus preferred stock, this level is viewed as unusually high and may be cause for concern. It might also indicate that management is aggressive in its financial policies.

A layer of preferred stock in the capital structure is usually viewed as equity—since dividends are discretionary and the subordinated claim on assets provides a cushion for providers of debt capital. A preferred component of up to 10% is typically viewed as a permanent wedge in the capital structure of utilities. However, as rate-of-return regulation is phased out, preferred stock may be viewed by utilities—as many industrial firms would—as a temporary option for companies that are not current taxpayers that do not benefit from the tax deductibility of interest. Even now, floating-rate preferred and money market perpetual preferred are problematic; a rise in the rate due to deteriorating credit quality tends to induce a company to take out such preferred stock with debt. Structures that convey tax deductibility to preferred stock have become very popular and do generally afford such financings with equity treatment.

Cash flow adequacy

Cash flow adequacy relates to a company's ability to generate funds internally relative to its needs. It is a basic component of credit analysis because it takes cash to pay expenses, fund capital spending, pay dividends, and make interest and principal payments. Since both common and preferred dividend payments are important to maintain capital market access, Standard & Poor's looks at cash flow measures both before and after dividends are paid.

To determine cash flow adequacy, several quantitative relationships are examined. Emphasis is placed on cash flow relative to debt, debt service requirements, and capital spending. Cash flow adequacy is evaluated with respect to a firm's ability to meet all fixed charges, including capacity payments under purchased-power contracts. Despite the conditional nature of some contracts, the purchaser is obligated to pay a minimum capacity charge. The ratio used is funds from operations plus interest and capacity payments divided by interest plus capacity payments.

Financial flexibility/capital attraction

Financing flexibility incorporates a utility's financing needs, plans, and alternatives, as well as its flexibility to accomplish its financing program under stress without damaging creditworthiness. External funding capability complements internal cash flow. Especially since utilities are so capital intensive, a firm's ability to tap capital markets on an ongoing basis must be considered. Debt capacity reflects all the earlier elements: earnings protection, debt leverage, and cash flow adequacy. Market access at reasonable rates is restricted if a reasonable capital structure is not maintained and the company's financial prospects dim. The analyst also reviews indenture restrictions and the impact of additional debt on covenant tests.

Standard & Poor's assesses a company's capacity and willingness to issue common equity. This is affected by various factors, including the market-to-book ratio, dividend policy, and any regulatory restrictions regarding the composition of the capital structure.

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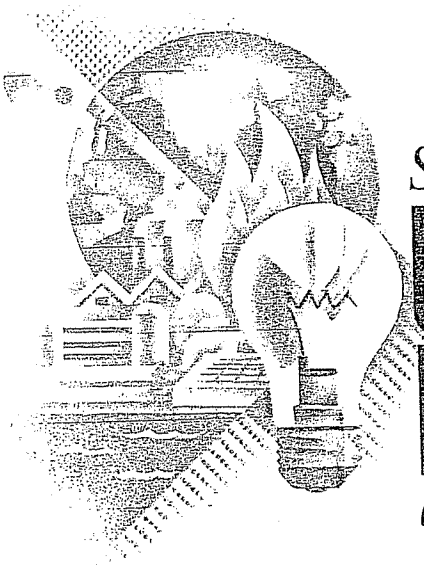

Standard & Poor's UTILITIES & PERSPECTIVES

GLOBAL UTILITIES RATING SERVICE

Last Week's Rating Reviews and Activity 14

Did You Know?
Average Motor Gasoline Retail Prices in U.S. Cities ... 14

Last Week's Financing Activity
Tesoro Petroleum's $625 Mil. Credit Facilities Are Rated 'BB' 15

Utility Credit Rankings
Electric/Gas/Water 16
International 20

Key Contacts 21

Feature Article
New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised 2

Utility Spotlight
Dynegy Holding's $1.3 Billion Credit Facility Is Rated 'BB-' 7

Special Report
Is the Refinancing Challenge Over for the U.S. Energy Merchant Sector? 8

News Comments
Houston Exploration's Rating Is Affirmed, Outlook Revised to Negative 11
Ratings on TransMontaigne Are Cut to 'BB-'; Off Watch, Outlook Negative 11
Forest Oil's Rating Is Lowered to 'BB-'; Off Watch, Outlook Stable 11
Southern Power's 'BBB+' Ratings Are Affirmed After Plant Sale 12
Suez Group's Ratings Are Affirmed; Outlook Revised to Stable 12

STANDARD
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New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised

Standard & Poor's Ratings Services has assigned new business profile scores to U.S. utility and power companies to better reflect the relative business risk among companies in the sector. Standard & Poor's also has revised its published risk-adjusted financial guidelines. The new business scores and financial guidelines do not represent a change to Standard & Poor's ratings criteria or methodology, and no ratings changes are anticipated from the new business profile scores or revised financial guidelines.

New Business Profile Scores and Revised Financial Guidelines

Standard & Poor's has always monitored changes in the industry and altered its business risk assessments accordingly. This is the first time since the 10-point business profile scale for U.S. investor-owned utilities was implemented that a comprehensive assessment of the benefits and the application of the methodology has been made. The principal purpose was to determine if the methodology continues to provide meaningful differentiation of business risk. The review indicated that while business profile scoring continues to provide analytical benefits, the complete range of the 10-point scale was not being utilized to the fullest extent.

Standard & Poor's has also revised the key financial guidelines that it uses as an integral part of evaluating the credit quality of U.S. utility and power companies. These guidelines were last updated in June 1999. The financial guidelines for three principal ratios (funds from operations (FFO) interest coverage, FFO to total debt, and total debt to total capital) have been broadened so as to be more flexible. Pretax interest cov-

Chart 1

Distribution of Business Profile Scores

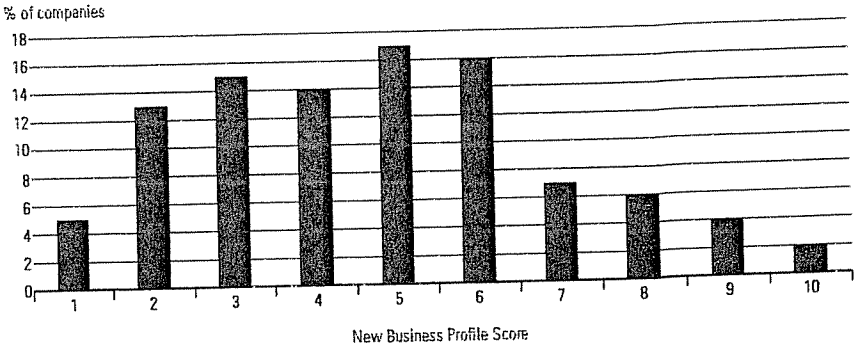
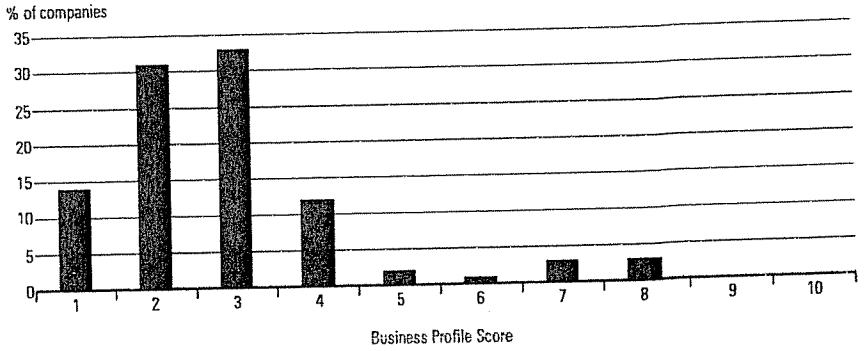


Chart 2

Transmission and Distribution—Water, Gas, and Electric



erage as a key credit ratio was eliminated.

Finally, Standard & Poor's has segmented the utility and power industry into sub-sectors based on the dominant corporate strategy that a company is pursuing. Standard & Poor's has published a new U.S. utility and power company ranking list that reflects these sub-sectors.

There are numerous benefits to the reassessment. Fuller utilization of the entire 10-point scale provides a superior relative ranking of qualitative business risk. A revision of the financial guidelines supports the goal of not causing rating changes from the recalibration of the business profiles. Classification of companies by sub-sectors will ensure greater comparability and consistency in ratings. The use of industry segmentation will also allow more in-depth statistical analysis of ratings distributions and rating changes.

The reassessment does not represent a change to Standard & Poor's criteria or methodology for determining ratings for utility and power companies. Each business profile score should be considered as the assignment of a new score; these scores do not represent improvement or deterioration in our assessment of an individual company's business risk relative to the previously assigned score. The financial guidelines continue to be risk-adjusted based on historical utility and industrial medians. Segmentation into industry sub-sectors does not imply that specific company characteristics will not weigh heavily into the assignment of a company's business profile score.

Results

Previously, 83% of U.S. utility and power business profile scores fell between '3' and '6', which clearly does not reflect the risk differentiation that exists in the utility and power industry today. Since the 10-point scale was introduced, the industry has transformed into a much less homogenous industry, where the divergence of business risk—particularly regarding management, strategy, and degree of competitive market exposure—has created a much wider spectrum of risk profiles. Yet over the same period, business profile scores actually converged more tightly around a median score of '4'. The new business pro-

Chart 3

Transmission Only—Electric, Gas, and Other

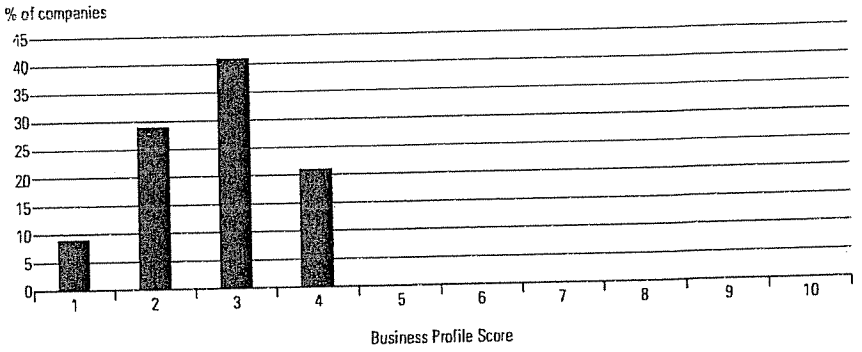
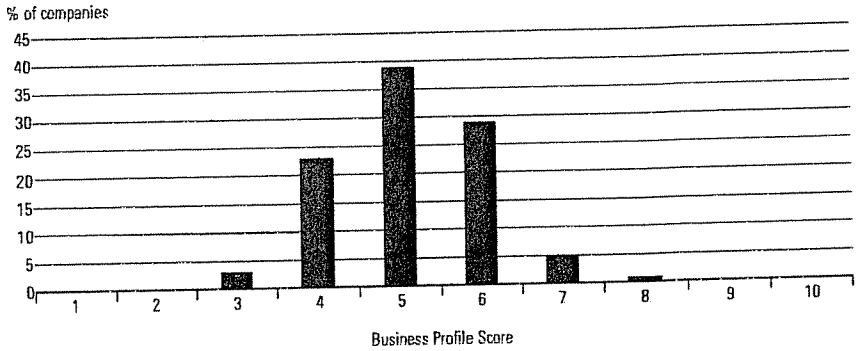


Chart 4

Integrated Electric, Gas, and Combination Utilities



file scores, as of June 2, are shown in Chart 1. The overall median business profile score is now '5'.

Table 1 contains the revised financial guidelines. It is important to emphasize that these metrics are only guidelines associated with expectations for various rating levels. Although credit ratio analysis is an important part of the ratings process, these three statistics are by no means the only critical financial measures that Standard & Poor's uses in its analytical process. We also analyze a wide array of financial ratios that do not have published guidelines for each rating category.

Again, ratings analysis is not driven solely by these financial ratios, nor has it ever been. In fact, the new financial guidelines that Standard & Poor's is incorporating for the specified rating categories reinforce the analytical framework whereby other factors can outweigh the achievement of otherwise acceptable financial ratios. These factors include:

- Effectiveness of liability and liquidity management;
- Analysis of internal funding sources;
- Return on invested capital;
- The execution record of stated business strategies;
- Accuracy of projected performance versus actual results, as well as the trend;
- Assessment of management's financial policies and attitude toward credit; and
- Corporate governance practices.

Charts 2 through 6 show business profile scores broken out by industry sub-sector. The five industry sub-sectors are:

- Transmission and distribution—Water, gas, and electric;
- Transmission only—Electric, gas, and other;
- Integrated electric, gas, and combination utilities;
- Diversified energy and diversified nonenergy; and
- Energy merchant/power developer/trading and marketing companies.

The average business profile scores for transmission and distribution companies and transmission-only companies are lower on the scale than the previous averages, while the average business profile scores for integrated utilities, diversified energy, and energy merchants and developers are higher.

Chart 5

Diversified Energy and Diversified Non-Energy

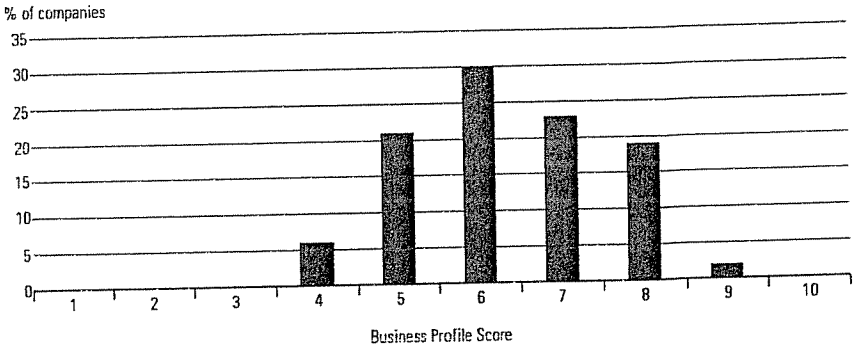
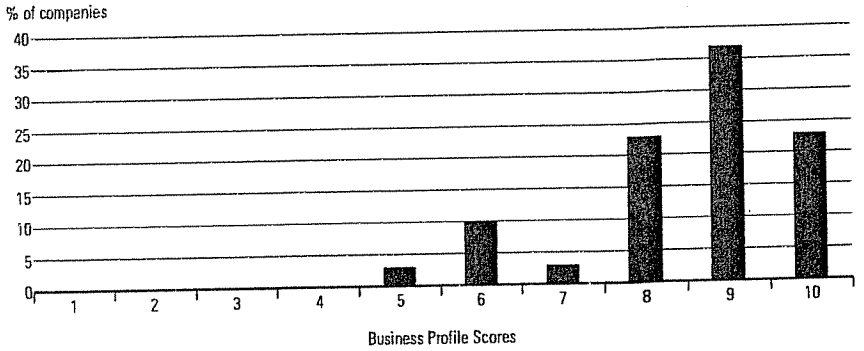


Chart 6

Energy Merchant/Developers/Trading and Marketing



See pages 16 to 19 for the company ranking list of business profile scores segmented by industry sub-sector and ranked in order of credit rating, outlook, business profile score, and relative strength.

Business Profile Score Methodology

Standard & Poor's methodology of determining corporate utility business risk is anchored in the assessment of certain specific characteristics that define the sector. We assign business profile scores to each of the rated companies in the utility and power sector on a 10-point scale, where '1' represents the lowest risk and '10' the highest risk. Business profile scores are assigned to all rated utility and power companies, whether they are holding companies, subsidiaries, or stand-alone corporations. For operating subsidiaries and stand-alone companies, the score is a bottom-up assessment. Scores for families of companies are a composite of the operating subsidiaries' scores. The actual credit rating of a company is analyzed, in part, by comparing the business profile score with the risk-adjusted financial guidelines.

For most companies, business profile scores are assessed using five categories; specifically, regulation, markets, operations, competitiveness, and management. The emphasis placed on each category may be influenced by the

Table 1

Revised Financial Guidelines

Funds from operations/interest coverage (x)

Business Profile	AA		A		BBB		BB	
1	3	2.5	2.5	1.5	1.5	1		
2	4	3	3	2	2	1		
3	4.5	3.5	3.5	2.5	2.5	1.5	1.5	1
4	5	4.2	4.2	3.5	3.5	2.5	2.5	1.5
5	5.5	4.5	4.5	3.8	3.8	2.8	2.8	1.8
6	6	5.2	5.2	4.2	4.2	3	3	2
7	8	6.5	6.5	4.5	4.5	3.2	3.2	2.2
8	10	7.5	7.5	5.5	5.5	3.5	3.5	2.5
9			10	7	7	4	4	2.8
10			11	8	8	5	5	3

Funds from operation/total debt (%)

Business Profile	AA		A		BBB		BB	
1	20	15	15	10	10	5		
2	25	20	20	12	12	8		
3	30	25	25	15	15	10	10	5
4	35	28	28	20	20	12	12	8
5	40	30	30	22	22	15	15	10
6	45	35	35	28	28	18	18	12
7	55	45	45	30	30	20	20	15
8	70	55	55	40	40	25	25	15
9			65	45	45	30	30	20
10			70	55	55	40	40	25

Total debt/total capital (%)

Business Profile	AA		A		BBB		BB	
1	48	55	55	60	60	70		
2	45	52	52	58	58	68		
3	42	50	50	55	55	65	65	70
4	38	45	45	52	52	62	62	68
5	35	42	42	50	50	60	60	65
6	32	40	40	48	48	58	58	62
7	30	38	38	45	45	55	55	60
8	25	35	35	42	42	52	52	58
9			32	40	40	50	50	55
10			25	35	35	48	48	52

dominant strategy of the company or other factors. For example, for a regulated transmission and distribution company, regulation may account for 30% to 40% of the business profile score because regulation can be the single-most important credit driver for this type of company. Conversely, competition, which may not exist for a transmission and distribution company, would provide a much lower proportion (e.g., 5% to 15%) of the business profile score.

For certain types of companies, such as power generators, power developers, oil and gas exploration and production companies, or nonenergy-related holdings, where these five components may not be appropriate, Standard & Poor's will use other, more appropriate methodologies. Some of these companies are assigned business profile scores that are useful only for relative ranking purposes.

As noted above, the business profile score for a parent or holding company is a composite of the business profile scores of its individual subsidiary companies. Again, Standard & Poor's does not apply rigid guidelines for determining the proportion or weighting that each subsidiary represents in the overall business profile score. Instead, it is determined based on a number of factors. Standard & Poor's will analyze each subsidiary's contribution to FFO, forecast capital expenditures, liquidity requirements, and other parameters, including the extent to which one subsidiary has higher growth. The weighting is determined case-by-case. ■

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PROXY GROUP OF SEVEN AUS UTILITY REPORTS WATER COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2001 - 2005, INCLUSIVE

	2005	2004	2003	2002	2001	
			(MILLIONS OF DOLLARS)			
CAPITALIZATION STATISTICS						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	$485.131	$448.894	$400.591	$347.740	$319.807	
SHORT-TERM DEBT	$25.714	$22.277	$27.772	$30.107	$26.285	
TOTAL CAPITAL EMPLOYED	$510.845	$471.171	$428.363	$377.848	$346.091	
INDICATED AVERAGE CAPITAL COST RATES (2)						
TOTAL DEBT	6.04 %	6.17 %	6.34 %	6.59 %	7.01 %	
PREFERRED STOCK	5.33	4.89	3.98	5.73	5.31	
						5 YEAR AVERAGE
CAPITAL STRUCTURE RATIOS						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	52.39 %	51.78 %	52.10 %	52.31 %	52.40 %	52.20 %
PREFERRED STOCK	0.34	0.37	0.44	0.49	0.66	0.46
COMMON EQUITY	47.27	47.85	47.46	47.20	46.94	47.34
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	53.92 %	53.97 %	55.30 %	54.99 %	55.37 %	54.71 %
PREFERRED STOCK	0.34	0.36	0.41	0.45	0.60	0.43
COMMON EQUITY	45.74	45.67	44.29	44.56	44.03	44.86
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
FINANCIAL STATISTICS						
FINANCIAL RATIOS - MARKET BASED						
EARNINGS / PRICE RATIO	3.52 %	4.10 %	3.56 %	4.70 %	5.15 %	4.21 %
MARKET / AVERAGE BOOK RATIO	252.26	229.23	230.45	221.04	210.95	228.79
DIVIDEND YIELD	2.91	3.20	3.24	3.52	3.73	3.32
DIVIDEND PAYOUT RATIO	70.74	80.14	98.29	76.01	75.23	80.97
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	8.84 %	9.26 %	8.28 %	10.16 %	10.61 %	9.43 %
FUNDS FROM OPERATIONS / INTEREST COVERAGE (3)	3.61 X	3.92 X	3.47 X	3.46 X	3.48 X	3.59 X
FUNDS FROM OPERATIONS / TOTAL DEBT (4)	15.28 %	17.56 %	14.96 %	15.58 %	16.51 %	15.98 %
TOTAL DEBT / TOTAL CAPITAL	53.92 %	53.97 %	55.30 %	54.99 %	55.37 %	54.71 %

See Page 2 for notes.

Proxy Group of Seven AUS Utility Reports Water Companies
Capitalization and Financial Statistics
2001-2005, Inclusive

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.

(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.

(3) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges divided by interest charges.

(4) Funds from operations (as defined in Note 3) as a percentage of total debt.

Selection Criteria:

The basis of selection was to include those water companies: 1) which are included in the Water Company Group of C. A. Turner Public Utility Reports (May 2006); 2) which have Value Line (Standard Edition) five-year EPS growth rate projections or Thomson FN / First Call consensus five-year EPS growth rate projections; and 3) which have more than 70% of their 2005 operating revenues derived from water operations.

The following six water companies met the above criteria:

American States Water Co.
Aqua America, Inc.
Artesian Resources, Inc.
California Water Service Group
Middlesex Water Company
Pennichuck Corporation
York Water Co.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database
Company Annual Forms 10K

Capital Structure Based upon Total Capital for
the Proxy Group of Seven AUS Utility Reports Water Companies
for the Years 2001 through 2005

	2005	2004	2003	2002	2001	5 YEAR AVERAGE
American States Water Co.						
Long-Term Debt	48.03 %	43.66 %	46.21 %	49.61 %	52.63 %	48.03 %
Short-Term Debt	4.82	8.55	11.22	7.10	4.27	7.19
Preferred Stock	0.00	0.00	0.00	0.00	0.40	0.08
Common Equity	47.15	47.79	42.57	43.29	42.70	44.70
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Aqua America, Inc.						
Long-Term Debt	48.68 %	50.03 %	49.35 %	50.36 %	47.67 %	49.22 %
Short-Term Debt	7.47	5.10	6.47	9.39	9.83	7.65
Preferred Stock	0.08	0.07	0.06	0.06	0.17	0.09
Common Equity	43.77	44.80	44.12	40.19	42.33	43.04
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Artesian Resources Corp.						
Long-Term Debt	60.30 %	55.85 %	54.79 %	53.82 %	49.44 %	54.84 %
Short-Term Debt	2.08	7.38	9.39	3.24	16.68	7.75
Preferred Stock	0.00	0.00	0.07	0.17	0.56	0.16
Common Equity	37.62	36.77	35.75	42.77	33.32	37.25
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
California Water Service Group						
Long-Term Debt	48.07 %	48.66 %	51.77 %	51.25 %	48.36 %	49.62 %
Short-Term Debt	0.00	0.00	1.22	7.42	5.11	2.75
Preferred Stock	0.61	0.61	0.66	0.71	0.81	0.68
Common Equity	51.32	50.73	46.35	40.62	45.72	46.95
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Middlesex Water Company						
Long-Term Debt	54.74 %	51.36 %	50.57 %	47.29 %	49.70 %	50.73 %
Short-Term Debt	1.68	4.86	6.42	9.47	7.43	5.97
Preferred Stock	1.67	1.79	2.09	2.18	2.28	2.00
Common Equity	41.91	41.99	40.92	41.06	40.59	41.29
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Pennichuck Corporation						
Long-Term Debt	47.60 %	44.14 %	45.85 %	47.21 %	47.26 %	46.41 %
Short-Term Debt	0.00	6.25	3.37	0.00	0.00	1.92
Preferred Stock	0.00	0.01	0.01	0.00	0.00	0.00
Common Equity	52.40	49.60	50.77	52.79	52.74	51.66
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
York Water Company						
Long-Term Debt	47.34 %	51.94 %	41.40 %	45.00 %	46.35 %	46.41 %
Short-Term Debt	6.65	0.00	9.07	3.77	2.83	4.46
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	46.01	48.06	49.53	51.23	50.82	49.13
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Seven AUS Water Companies						
Long-Term Debt	50.68 %	49.38 %	48.56 %	49.22 %	48.77 %	49.32 %
Short-Term Debt	3.24	4.59	6.74	5.77	6.60	5.39
Preferred Stock	0.34	0.36	0.41	0.45	0.60	0.43
Common Equity	45.74	45.67	44.29	44.56	44.03	44.86
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base
Company Annual Forms 10K (Sinking Fund Requirements)

PROXY GROUP OF FOUR VALUE LINE (STANDARD EDITION) WATER COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2001 - 2005, INCLUSIVE

	2005	2004	2003	2002	2001	
			(MILLIONS OF DOLLARS)			
CAPITALIZATION STATISTICS						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	$773.683	$719.252	$628.903	$541.882	$496.630	
SHORT-TERM DEBT	$41.376	$32.529	$39.728	$46.623	$37.917	
TOTAL CAPITAL EMPLOYED	$815.059	$751.781	$668.632	$588.505	$534.547	
INDICATED AVERAGE CAPITAL COST RATES (2)						
TOTAL DEBT	6.39 %	6.28 %	6.36 %	6.39 %	7.09 %	
PREFERRED STOCK	4.27	3.38	2.63	3.73	4.34	
						5 YEAR AVERAGE
CAPITAL STRUCTURE RATIOS						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	49.45 %	49.42 %	51.43 %	55.35 %	53.70 %	51.87 %
PREFERRED STOCK	0.22	0.24	0.40	0.39	0.47	0.34
COMMON EQUITY	50.33	50.34	48.17	44.26	45.83	47.79
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	50.93 %	51.13 %	53.69 %	58.05 %	55.96 %	53.95 %
PREFERRED STOCK	0.22	0.25	0.39	0.38	0.45	0.34
COMMON EQUITY	48.85	48.62	45.92	41.57	43.59	45.71
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
FINANCIAL STATISTICS						
FINANCIAL RATIOS - MARKET BASED						
EARNINGS / PRICE RATIO	3.88 %	3.88 %	4.12 %	4.96 %	4.81 %	4.33 %
MARKET / AVERAGE BOOK RATIO	248.19	222.69	220.49	223.08	227.57	228.40
DIVIDEND YIELD	2.42	2.79	2.91	3.10	3.11	2.87
DIVIDEND PAYOUT RATIO	61.18	71.81	74.09	61.40	66.93	67.08
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	9.19 %	8.38 %	9.19 %	10.91 %	10.83 %	9.70 %
FUNDS FROM OPERATIONS / INTEREST COVERAGE (3)	4.16 X	4.40 X	3.81 X	3.67 X	3.61 X	3.93 X
FUNDS FROM OPERATIONS / TOTAL DEBT (4)	19.61 %	20.38 %	17.79 %	15.81 %	16.85 %	18.09 %
TOTAL DEBT / TOTAL CAPITAL	50.93 %	51.13 %	53.69 %	58.05 %	55.96 %	53.95 %

See Page 2 for notes.

Proxy Group of Four Value Line (Standard Edition) Water Companies
Capitalization and Financial Statistics
2001-2005, Inclusive

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.

(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.

(3) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges divided by interest charges.

(4) Funds from operations (as defined in Note 3) as a percentage of total debt.

Selection Criteria:

The basis of selection was to include those water companies: 1) which are included in the Value Line (Standard Edition).

The following four water companies met the above criteria:

American States Water Co.
Aqua America, Inc.
California Water Service Group
Southwest Water Company

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database
Company Annual Forms 10K

Capital Structure Based upon Total Capital for
the Proxy Group of Four Value Line (Standard Edition) Water Companies
for the Years 2001 through 2005

	2005	2004	2003	2002	2001	5 YEAR AVERAGE
American States Water Co.						
Long-Term Debt	48.03 %	43.66 %	46.21 %	49.61 %	52.63 %	48.03 %
Short-Term Debt	4.82	8.55	11.22	7.10	4.27	7.19
Preferred Stock	0.00	0.00	0.00	0.00	0.40	0.08
Common Equity	47.15	47.79	42.57	43.29	42.70	44.70
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Aqua America, Inc.						
Long-Term Debt	48.68 %	50.03 %	49.35 %	50.36 %	47.67 %	49.22 %
Short-Term Debt	7.47	5.10	6.47	9.39	9.83	7.65
Preferred Stock	0.08	0.07	0.06	0.06	0.17	0.09
Common Equity	43.77	44.80	44.12	40.19	42.33	43.04
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
California Water Service Group						
Long-Term Debt	48.07 %	48.66 %	51.77 %	51.25 %	48.36 %	49.62 %
Short-Term Debt	0.00	0.00	1.22	7.42	5.11	2.75
Preferred Stock	0.61	0.61	0.66	0.71	0.81	0.68
Common Equity	51.32	50.73	46.35	40.62	45.72	46.95
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Southwest Water Company						
Long-Term Debt	46.67 %	48.53 %	48.50 %	57.07 %	55.97 %	51.35 %
Short-Term Debt	0.00	0.00	0.00	0.00	0.00	0.00
Preferred Stock	0.17	0.28	0.85	0.74	0.41	0.49
Common Equity	53.16	51.19	50.65	42.19	43.62	48.16
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Four Value Line (Std. Ed.) Water Companies						
Long-Term Debt	47.86 %	47.72 %	48.96 %	52.07 %	51.16 %	49.55 %
Short-Term Debt	3.07	3.41	4.73	5.98	4.80	4.40
Preferred Stock	0.22	0.25	0.39	0.38	0.45	0.34
Common Equity	48.85	48.62	45.92	41.57	43.59	45.71
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base
Company Annual Forms 10K (Sinking Fund Requirements)

Exhibit No. ___
Schedule PMA-5

Carolina Water Service, Inc.
Hypothetical Example of the Inadequacy of
A DCF Return Rate Related to Book Value
When Market Value is Greater / Less than Book Value

Line No.		1 Market Value	2 Book Value with Market to Book Ratio of 180%	3 Book Value with Market to Book Ratio of 80%
1.	Per Share	$ 24.00	$ 13.33	$ 30.00
2.	DCF Cost Rate (1)	10.00%	10.00%	10.00%
3.	Return in Dollars	$ 2.400	$ 1.333	$ 3.000
4.	Dividends (2)	$ 0.840	$ 0.840	$ 0.840
5.	Growth in Dollars	$ 1.560	$ 0.493	$ 2.160
6.	Return on Market Value	10.00%	5.55% (3)	12.50% (4)
7.	Rate of Growth on Market Value	6.50% (5)	2.05% (6)	9.00% (7)

Notes:
(1) Comprised of 3.5% dividend yield and 6.5% growth.
(2) $24.00 * 3.5% yield = $0.840.
(3) $1.333 / $24.00 market value = 5.55%.
(4) $3.000 / $24.00 market value = 12.50%.
(5) Expected rate of growth per market based DCF model.
(6) Actual rate of growth when DCF cost rate is applied to book value ($1.333 possible earnings - $0.840 dividends = $0.493 for growth / $24.00 market value = 2.05%).
(7) Actual rate of growth when DCF cost rate is applied to book value ($3.000 possible earnings - $0.840 dividends = $2.160 for growth / $24.00 market value = 9.00%).

Exhibit No. ___
Schedule PMA-6

Carolina Water Service, Inc.
Indicated Common Equity Cost Rate Through Use of the
Single Stage Discounted Cash Flow Model for
the Proxy Group of Seven AUS Utility Reports Water Companies and the
Proxy Group of Four Value Line (Standard Edition) Water Companies

Based upon Historical and Projected Growth in DPS, EPS, and BR+SV

	1	2	3	4	5
	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)
Proxy Group of Seven AUS Utility Reports Water Companies					
American States Water Co.	2.4 %	0.1 %	2.5 %	4.4 %	6.9 %
Aqua America, Inc.	1.8	0.1	1.9	8.7	10.6
Artesian Resources Corp.	3.0	0.1	3.1	6.9	10.0
California Water Services Group	2.9	0.1	3.0	3.8	6.8
Middlesex Water Company	3.7	0.0	3.7	2.5	6.2
Pennichuck Corp.	3.1	0.1	3.2	6.7	9.9
York Water Company	2.6	0.1	2.7	6.3	9.0
Average	2.8 %	0.1 %	2.9 %	5.6 %	9.9 % (6)
Proxy Group of Four Value Line (Standard Edition) Water Companies					
American States Water Co.	2.4 %	0.1 %	2.5 %	4.4 %	6.9 %
Aqua America, Inc.	1.8	0.1	1.9	8.7	10.6
California Water Services Group	2.9	0.1	3.0	3.8	6.8
Southwest Water Company	2.3	0.1	2.4	9.4	11.8
Average	2.4 %	0.1 %	2.5 %	6.6 %	11.2 % (6)

Based upon Projected Growth in EPS

	1	2	3	4	5
	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)
Proxy Group of Seven AUS Utility Reports Water Companies					
American States Water Co.	2.4 %	0.1 %	2.5 %	6.3 %	8.8 %
Aqua America, Inc.	1.8	0.1	1.9	10.3	12.2
Artesian Resources Corp.	3.0	0.2	3.2	11.5	14.7
California Water Services Group	2.9	0.1	3.0	5.8	8.8
Middlesex Water Company	3.7	0.1	3.8	3.5	7.3
Pennichuck Corp.	3.1	0.1	3.2	8.0	11.2
York Water Company	2.6	0.1	2.7	7.8	10.5
Average	2.8 %	0.1 %	2.9 %	7.6 %	9.8 % (6)
Proxy Group of Four Value Line (Standard Edition) Water Companies					
American States Water Co.	2.4 %	0.1 %	2.5 %	6.3 %	8.8 %
Aqua America, Inc.	1.8	0.1	1.9	10.3	12.2
California Water Services Group	2.9	0.1	3.0	5.8	8.8
Southwest Water Company	2.3	0.1	2.4	11.7	14.1
Average	2.4 %	0.1 %	2.5 %	8.5 %	8.8 % (6) (7)

Conclusion	
Proxy Group of Seven AUS Utility Reports Water Companies	9.9 %
Proxy Group of Four Value Line (Standard Edition) Water Companies	10.0 %

Notes:

(1) From Schedule PMA-7 of this Exhibit.

(2) This reflects a growth rate component equal to one-half the conclusion of growth rate (from page 1 of Schedule PMA-9 of this Exhibit) x Column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., 2.4% x (1/2 x 4.4%) = 0.1%

(3) Column 1 + Column 2.

(4) From page 1 Schedule PMA-9 of this Exhibit.

(5) Column 3 + Column 4

(6) Includes only those indicated common equity cost rates which are greater than 8.7%, i.e., 200 basis points above the prospective yield on A rated Moody's public utility bonds of 6.7% (from page 1 of Schedule PMA-10 of this Exhibit).

(7) Excludes Southwest Water Company's DCF results of 13.6% because in Ms. Ahern's opinion it is unlikely that a water company would be authorized a return rate on common equity of 12.0% or greater in the immediate future.

Exhibit No. ___
Schedule PMA-7

Carolina Water Service, Inc.
Derivation of Dividend Yield for Use in the
Discounted Cash Flow Model

	Dividend Yield		
	Spot (5/24/2006) (1)	Average of Last 3 Months (2)	Average Dividend Yield (3)
Proxy Group of Seven AUS Utility Reports Water Companies			
American States Water Co.	2.4 %	2.3 %	2.4 %
Aqua America, Inc.	1.9	1.7	1.8
Artesian Resources Corp.	3.1	2.8	3.0
California Water Services Group	3.2	2.6	2.9
Middlesex Water Company	3.7	3.7	3.7
Pennichuck Corp.	3.2	2.9	3.1
York Water Company	2.5	2.6	2.6
Average	2.9 %	2.7 %	2.8 %
Proxy Group of Four Value Line (Standard Edition) Water Companies			
American States Water Co.	2.4 %	2.3 %	2.4 %
Aqua America, Inc.	1.9	1.7	1.8
California Water Services Group	3.2	2.6	2.9
Southwest Water Company	3.2	1.3	2.3
Average	2.7 %	2.0 %	2.4 %

Notes: (1) The spot dividend yield is the current annualized dividend per share divided by the spot market price on 5/24/06.

(2) The average 3-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the three months ended April 30, 2006.

(3) Equal weight has been given to the 3-month average and spot dividend yield. This provides recognition of current conditions, but does not place undue emphasis thereon.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus
Research Insight Database
finance.yahoo.com

Exhibit No. ___
Schedule PMA-8

Carolina Water Service, Inc.
Current Institutional Holdings (1) and Individual Holdings (2) for
the Proxy Group of Seven AUS Utility Reports Water Companies,
the Proxy Group of Four Value Line (Standard Edition) Water Companies

	1 May 2006 Percentage of Institutional Holdings (1)	2 May 2006 Percentage of Individual Holdings (2)
Proxy Group of Seven AUS Utility Reports Water Companies		
American States Water Co.	36.0 %	64.0 %
Aqua America	30.0	70.0
Artesian Resources Corp.	NA	NA
California Water Service Group	29.0	71.0
Middlesex Water Company	16.0	84.0
Pennichuck Corp.	32.0	68.0
York Water Company	8.0	92.0
Average	25.2 %	74.8 %
Proxy Group of Four Value Line Water Companies		
American States Water Co.	36.0 %	64.0 %
Aqua America	30.0	70.0
California Water Service Group	25.9	71.0
Southwest Water Company	32.0	68.0
Average	31.0 %	69.0 %

Notes: (1) (1 - column 1).

Source of Information: finance.yahoo.com

Carolina Water Service, Inc.
Historical and Projected Growth

	1	2	3	4	5	6		7	8	9	10	11	12	13
	Value Line Historical Five Year Growth Rate (1)		Five Year Historical BR + SV (2)	Value Line Projected 2003-05 to 2009-'11 Growth Rate (1)		ThomsonFN / First Call Mean Consensus Projected Five Year Growth Rate		Average Projected Five Year Growth Rate in EPS (3)	Projected Five Year BR + SV (4)	Range of Growth Rates			Average of all Growth Rates	Average of Midpoint and Average of all Growth Rates (9)
	DPS	EPS		DPS	EPS	EPS	No. of Est.			Low	High	Midpoint		
Proxy Group of Seven AUS Utility Reports Water Companies														
American States Water Co.	1.0 %	(1.0) %	4.4 %	1.0 %	8.0 %	4.5 %	[2]	6.3 %	6.2 %	1.0 % (8)	8.0 % (8	4.5 %	4.2 % (8)	4.4 %
Aqua America, Inc.	6.5	8.5	7.6	10.0	11.0	9.6	[5]	10.3	6.6	6.5	11.0	8.8	8.5	8.7
Artesian Resources Corp.	3.7 (5)	4.1 (5)	5.5	NA	NA	11.5	[2]	11.5	NA	3.7	11.5	7.6	6.2	6.9
California Water Services Group	1.0	(4.0)	3.7	1.0	4.5	7.0	[3]	5.8	4.5	1.0 (8)	7.0 (8)	4.0	3.6 (8)	3.8
Middlesex Water Company	2.0	1.0	2.4	NA	NA	3.5	[1]	3.5	NA	1.0 (8)	3.5 (8)	2.3	2.6 (8)	2.5
Pennichuck Corp.	5.1 (5)	(17.9) (5)	7.1	NA	NA	8.0	[1]	8.0	NA	5.1 (8)	8.0 (8)	6.6	6.7 (8)	6.7
York Water Company	(9.5)	6.9 (5)	4.4	NA	NA	7.8	[2]	7.8	NA	4.4	7.8	6.1	6.4	6.3
Average	3.2 %	5.1 % (8)	5.0 %	4.0 %	7.3 %	7.4 %		7.6 %	5.8 %	3.2 %	8.1 %	5.7 %	5.5 %	5.6 %
Proxy Group of Four Value Line (Standard Edition) Water Companies														
American States Water Co.	1.0 %	(1.0) %	4.4 %	1.0 %	8.0 %	4.5 %	[2]	6.3 %	6.2 %	1.0 % (8)	8.0 % (8	4.5 %	4.2 % (8)	4.4 %
Aqua America, Inc.	6.5	8.5	7.6	10.0	11.0	9.6	[5]	10.3	6.6	6.5	11.0	8.8	8.5	8.7
California Water Services Group	1.0	(4.0)	3.7	1.0	4.5	7.0	[3]	5.8	4.5	1.0 (8)	7.0 (8)	4.0	3.6 (8)	3.8
Southwest Water Company	10.0	1.5	11.5	8.0	18.0	5.3	[3]	11.7	7.8	1.5	18.0	9.8	8.9	9.4
Average	4.6 %	5.0 % (8)	6.8 %	5.0 %	10.4 %	6.6 %		8.5 %	6.3 %	2.5 %	11.0 %	6.8 %	6.3 %	6.6 %

Notes:
(1) As shown on pages 8 through 13 of this Schedule. Historical growth rates are five-year compound growth rates.
(2) From page 2 of this Schedule.
(3) Average of Columns 5 and 6.
(4) From page 6 of this Schedule.
(5) Calculated using the same methodology as Value Line Investment Survey, i.e., three-year base periods ending 2004.
(6) Average of Columns 1, 2, 3, 4, 5, 6, and 8.
(7) From Column 7.
(8) Excludes negatives.
(9) Average of Column 11 and Column 12.

Source of Information: Value Line Investment Survey, April 28, 2006
ThomsonFN First Call Earnings, ec.thomsonfn.com, updated May 20, 2006

Carolina Water Service, Inc.
Calculation of Historical BR + SV

	1 BR (1)	2 S Factor (2)	3 V Factor (3)	4 SV (4)	5 BR + SV (5)
Proxy Group of Seven AUS Utility Reports Water Companies					
American States Water Co.	3.4 %	2.2 %	43.9 %	1.0 %	4.4 %
Aqua America, Inc.	5.5	3.1	68.0	2.1	7.6
Artesian Resources Corp.	2.6	6.3	45.3	2.9	5.5
California Water Services Group	1.6	4.1	51.1	2.1	3.7
Middlesex Water Company	0.8	2.8	58.3	1.6	2.4
Pennichuck Corp.	3.7	6.6	51.7	3.4	7.1
York Water Company	2.5	2.9	63.8	1.9	4.4
Average	2.9 %	4.0 %	54.6 %	2.1 %	5.0 %
Proxy Group of Four Value Line (Standard Edition) Water Companies					
American States Water Co.	3.4 %	2.2 %	43.9 %	1.0 %	4.4 %
Aqua America, Inc.	5.5	3.1	68.0	2.1	7.6
California Water Services Group	1.6	4.1	51.1	2.1	3.7
Southwest Water Company	5.5	11.1	53.9	6.0	11.5
Average	4.0 %	5.1 %	54.2 %	2.8 %	6.8 %

Notes:
(1) From column 6, page 3 of this Schedule.
(2) From column 12, page 4 of this Schedule.
(3) From column 7, page 5 of this Schedule.
(4) Column 2 * column 3.
(5) Column 1 + column 4.

Carolina Water Service, Inc.
Historical Internal Growth Rate (1), i.e., BR, for
the Proxy Group of Six AUS Utility Reports Water Companies and the
Proxy Group of Four Value Line (Standard Edition) Water Companies
for the Years 2001-2005

	1	2	3	4	5	6
	2005	2004	2003	2002	2001	Five-Year Average 2000-2004 Internal Growth Rate, i.e., BR
Proxy Group of Seven AUS Utility Reports Water Companies						
American States Water Co.						
Common Equity Return Rate	10.38 %	7.99 %	5.59 %	9.83 %	10.37 %	
Retention Ratio	43.59	25.17	(12.98)	35.04	35.65	
Internal Growth Rate (1)	4.52	2.01	(0.73)	3.44	3.70	3.4 % (2)
Aqua America, Inc.						
Common Equity Return Rate	11.69 %	11.39 %	12.30 %	13.92 %	13.34 %	
Retention Ratio	43.90	42.75	43.61	45.22	42.95	
Internal Growth Rate (1)	5.13	4.87	5.36	6.29	5.73	5.5
Artesian Resources Corp.						
Common Equity Return Rate	8.93 %	8.18 %	7.41 %	9.67 %	9.80 %	
Retention Ratio	31.08	25.80	19.24	34.96	31.35	
Internal Growth Rate (1)	2.78	2.11	1.43	3.38	3.07	2.6
California Water Services Group						
Common Equity Return Rate	9.31 %	9.72 %	8.68 %	9.56 %	7.49 %	
Retention Ratio	25.81	22.97	8.79	10.13	(14.22)	
Internal Growth Rate (1)	2.40	2.23	0.76	0.97	(1.07)	1.6 (2)
Middlesex Water Company						
Common Equity Return Rate	8.45 %	9.37 %	8.17 %	10.10 %	9.37 %	
Retention Ratio	6.49	9.95	(6.51)	13.33	5.88	
Internal Growth Rate (1)	0.55	0.93	(0.53)	1.35	0.55	0.8 (2)
Pennichuck Corp.						
Common Equity Return Rate	1.26 %	6.03 %	4.12 %	7.67 %	12.20 %	
Retention Ratio	(409.85)	(13.46)	(61.19)	16.96	49.81	
Internal Growth Rate (1)	(5.16)	(0.81)	(2.52)	1.30	6.08	3.7 (2)
York Water Company						
Common Equity Return Rate	11.85 %	12.17 %	11.66 %	10.37 %	11.73 %	
Retention Ratio	24.70	25.86	21.04	12.32	21.97	
Internal Growth Rate (1)	2.93	3.15	2.45	1.28	2.58	2.5
Average						2.9 %
Proxy Group of Four Value Line (Standard Edition) Water						
American States Water Co.						
Common Equity Return Rate	10.38 %	7.99 %	5.59 %	9.83 %	10.37 %	
Retention Ratio	43.59	25.17	(12.98)	35.04	35.65	
Internal Growth Rate (1)	4.52	2.01	(0.73)	3.44	3.70	3.4 % (2)
Aqua America, Inc.						
Common Equity Return Rate	11.69 %	11.39 %	12.30 %	13.92 %	13.34 %	
Retention Ratio	43.90	42.75	43.61	45.22	42.95	
Internal Growth Rate (1)	5.13	4.87	5.36	6.29	5.73	5.5
California Water Services Group						
Common Equity Return Rate	9.31 %	9.72 %	8.68 %	9.56 %	7.49 %	
Retention Ratio	25.81	22.97	8.79	10.13	(14.22)	
Internal Growth Rate (1)	2.40	2.23	0.76	0.97	(1.07)	1.6 (2)
Southwest Water Company						
Common Equity Return Rate	5.38 %	4.40 %	10.20 %	10.32 %	12.12 %	
Retention Ratio	42.00	21.88	64.23	64.02	67.92	
Internal Growth Rate (1)	2.26	0.96	6.55	6.61	8.23	5.5
Average						4.0 %

Notes: (1) The internal growth rate is calculated by multiplying the common equity return rate by the retention ratio (100% minus the dividend payout ratio). All data are on a consolidated basis.

(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database

Carolina Water Service, Inc.

Calculation of Five Year Average Growth in Common Shares Outstanding (1), i.e., S Factor

	1 2000 Common Shares Outstanding (1)	2 00-01 Growth	3 2001 Common Shares Outstanding (1)	4 01-02 Growth	5 2002 Common Shares Outstanding (1)	6 02-03 Growth	7 2003 Common Shares Outstanding (1)	8 03-04 Growth	9 2004 Common Shares Outstanding (1)	10 04-05 Growth	11 2005 Common Shares Outstanding (1)	12 Five Year Average Common Share Growth
Proxy Group of Seven AUS Utility Reports Water Companies												
American States Water Co.	15.120	0.0 %	15.120	0.4 %	15.181	0.2 %	15.212	10.1 %	16.752	0.3 %	16.798	2.2 %
Aqua America, Inc.	111.825	1.9	113.977	(0.7)	113.195	9.1	123.452	3.0	127.180	1.4	128.969	3.1 (2)
Artesian Resources Corp.	3.020	1.3	3.060	26.2	3.863	1.0	3.901	1.4	3.956	1.5	4.014	6.3
California Water Services Group	15.146	0.2	15.182	0.0	15.182	11.5	16.932	8.5	18.367	0.1	18.390	4.1
Middlesex Water Company	10.096	0.7	10.168	1.8	10.356	2.0	10.567	7.5	11.359	2.0	11.584	2.8
Pennichuck Corp.	3.132	1.7	3.184	0.1	3.188	0.2	3.195	0.8	3.219	30.2	4.190	6.6
York Water Company	6.010	5.0	6.308	0.9	6.365	0.6	6.419	7.3	6.887	0.7	6.933	2.9
Average												4.0 %
Proxy Group of Four Value Line (Standard Edition) Water Companies												
American States Water Co.	15.120	0.0 %	15.120	0.4 %	15.181	0.2 %	15.212	10.1 %	16.752	0.3 %	16.798	2.2 %
Aqua America, Inc.	111.825	1.9	113.977	(0.7)	113.195	9.1	123.452	3.0	127.180	1.4	128.969	3.1 (2)
California Water Services Group	15.146	0.2	15.182	0.0	15.182	11.5	16.932	8.5	18.367	0.1	18.390	4.1
Southwest Water Company	13.172	2.5	13.499	(3.6)	13.012	18.4	15.403	25.9	19.395	8.9	21.129	11.1 (2)
Average												5.1 %

Notes: (1) Year-end shares outstanding.
(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database

Carolina Water Service, Inc.
Calculation of the Premium/Discount of a
Company's Stock Price Relative to its Book Value, i.e., V Factor

	1	2	3	4	5	6	7
	2001 Market to Book Ratio (1)	2002 Market to Book Ratio (1)	2003 Market to Book Ratio (1)	2004 Market to Book Ratio (1)	2005 Market to Book Ratio (1)	Five Year Average Market to Book Ratio	V Factor (2)
Proxy Group of Seven AUS Utility Reports Water Companies							
American States Water Co.	174.8 %	180.6 %	180.3 %	164.3 %	191.5 %	178.3 %	43.9 %
Aqua America, Inc.	303.5	289.8	295.6	291.4	383.8	312.8	68.0
Artesian Resources Corp.	163.8	162.1	184.5	192.8	211.1	182.9	45.3
California Water Services Group	197.4	181.6	199.8	212.6	231.6	204.6	51.1
Middlesex Water Company	236.9	232.9	247.9	241.7	238.9	239.7	58.3
Pennichuck Corp.	185.4	218.9	218.2	214.3	197.9	206.9	51.7
York Water Company	214.9	281.5	286.9	287.4	311.0	276.3	63.8
Average						228.8 %	54.6 %
Proxy Group of Four Value Line (Standard Edition) Water Companies							
American States Water Co.	174.8 %	180.6 %	180.3 %	164.3 %	191.5 %	178.3 %	43.9 %
Aqua America, Inc.	303.5	289.8	295.6	291.4	383.8	312.8	68.0
California Water Services Group	197.4	181.6	199.8	212.6	231.6	204.6	51.1
Southwest Water Company	234.6	240.3	206.2	222.5	181.5	217.0	53.9
Average						228.2 %	54.2 %

Notes: (1) Market to Book Ratio = average of yearly high-low market price divided by the average of beginning and ending year's balance of book common equity per share.
(2) (1 - (100 / column 6)).

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database

Carolina Water Service, Inc.
Calculation of Projected BR + SV

	1	2	3	4	5	6	7	8	9	10	11
	Common Shares Outstanding (1) (000,000)			Projected 2009 - 2011 (1)							
	Actual 2005	Projected 2009-2011	S Factor (2)	High Stock Price	Low Stock Price	Book Value	Average Stock Price (3)	V Factor (4)	SV (5)	BR (6)	BR + SV (7)
Proxy Group of Seven AUS Utility Reports Water Companies											
American States Water Co.	16.80	20.50	4.1 %	40.00	30.00	20.00	$35.00	42.9 %	1.8 %	4.4 %	6.2 %
Aqua America, Inc.	128.97	134.00	0.8	35.00	20.00	9.05	27.50	67.1	0.5	6.1	6.6
Artesian Resources Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California Water Services Group	18.39	22.00	3.6	40.00	30.00	20.45	35.00	41.6	1.5	3.0	4.5
Middlesex Water Company	11.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pennichuck Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
York Water Company	6.93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average			2.8 %					50.5 %	1.3 %	4.5 %	5.8 %
Proxy Group of Four Value Line (Standard Edition) Water											
American States Water Co.	16.80	20.50	4.1 %	$40.00	$30.00	$20.00	$35.00	42.9 %	1.8 %	4.4 %	6.2 %
Aqua America, Inc.	128.97	134.00	0.8	35.00	20.00	9.05	27.50	67.1	0.5	6.1	6.6
California Water Services Group	18.39	22.00	3.6	40.00	30.00	20.45	35.00	41.6	1.5	3.0	4.5
Southwest Water Company	22.33	24.00	1.5	25.00	16.00	8.75	20.50	57.3	0.9	6.9	7.8
Average			2.5 %					52.2 %	1.2 %	5.1 %	6.3 %

NA = Not Available

Notes:
(1) From pages 8 through 13 of this Schedule.
(2) The S Factor is the six or five year compound growth rate between the 2005 and 2010 (mid-point of 2009-2011 projection) common shares outstanding.
(3) The Average Stock Price is the average of column 4 and column 5.
(4) (1 - (column 6 / column 7))
(5) Column 3 * column 8.
(6) From page 9, column 14 of this Schedule.
(7) Column 9 + column 10.

Source of Information: Value Line Investment Survey, April 28, 2006

Carolina Water Service, Inc.
Projected Internal Growth Rate

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2005			2009-2011					2009-2011					
	Common Equity (%) (1)	Total Capital ($ mill) (1)	Common Equity ($ mill) (2)	Common Equity (%) (1)	Total Capital ($ mill) (1)	Common Equity ($ mill) (3)	Annual Common Equity Growth Rate (4)	ROE Adjustment Factor (5)	Return on Common Equity (1)	Return on Average Common Equity (6)	EPS (1)	DPS (1)	Retention Ratio (7)	Projected Internal Growth (8)
Proxy Group of Seven AUS Utility Reports Water Companies														
American States Water Co.	49.60 %	$532.50	$264.12	49.00 %	$850.00	$408.00	9.09 %	1.04 %	9.00 %	9.36 %	$1.80	$0.96	46.7 %	4.4 %
Aqua America, Inc.	48.00	1,690.40	811.39	49.00	2,475.00	1,212.75	8.37	1.04	13.00	13.52	1.20	0.66	45.0	6.1
Artesian Resources Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California Water Services Group	51.40	571.60	293.80	50.00	900.00	450.00	8.90	1.04	9.00	9.36	1.80	1.22	32.2	3.0
Middlesex Water Company	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pennichuck Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
York Water Company	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average														4.5 %
Proxy Group of Four Value Line (Standard Edition) Water Companies														
American States Water Co.	49.60 %	$532.50	$264.12	48.00 %	$850.00	$408.00	9.09 %	1.04 %	9.00 %	9.36 %	$1.80	$0.96	46.7 %	4.4 %
Aqua America, Inc.	48.00	1,690.40	811.39	49.00	2,475.00	1,212.75	8.37	1.04	13.00	13.52	1.20	0.66	45.0	6.1
California Water Services Group	51.40	571.60	293.80	50.00	900.00	450.00	8.90	1.04	9.00	9.36	1.80	1.22	32.2	3.0
Southwest Water Company	55.10	262.90	144.86	56.00	375.00	210.00	7.71	1.04	9.50	9.88	0.95	0.29	69.5	6.9
Average														5.1 %

NA = Not Available

Notes:
(1) From pages 8 through 13 of this Schedule.
(2) Column 1 * column 2.
(3) Column 4 * column 5.
(4) Five year compound growth rate in common equity from 2005 to 2009-2011 or ((((column 6 / column 3) ^ (1/5)) - 1)).
(5) 2 * ((1 + column 7) / (2 + column 7)) .
(6) Column 8 * column 9.
(7) 1 - (column 12 / column 11).
(8) Column 10 * column 13.

Source of Information: Value Line Investment Survey, April 28, 2008

AMER. STATES WATER NYSE-AWR

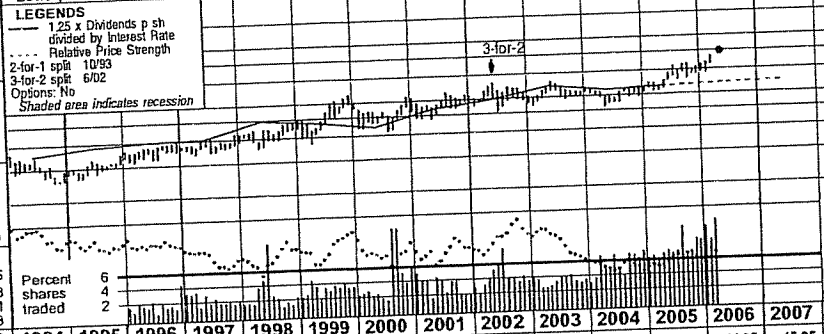
RECENT PRICE 39.70 | P/E RATIO 27.2 (Trailing: 33.1 Median: 16.0) | RELATIVE P/E RATIO 1.42 | DIV'D YLD 2.3% | VALUE LINE

TIMELINESS 3 Raised 3/24/06
SAFETY 3 New 2/4/00
TECHNICAL 3 Lowered 11/18/05
BETA .70 (1.00 = Market)

High:	14.0	16.1	17.1	19.5	26.5	25.3	26.4	29.0	29.0	26.8	34.6	39.8
Low:	10.5	12.5	13.5	14.1	14.8	16.7	19.0	20.3	21.6	20.8	24.3	30.3

Target Price Range 2009 | 2010 | 2011

LEGENDS
— 1.25 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 10/93
3-for-2 split 6/02
Options: No
Shaded area indicates recession



2009-11 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(Nil)	3%
Low	30	(-25%)	-4%

Insider Decisions

	J	J	A	S	O	N	D	J	F
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	1	0	0	0	0	0	0

Institutional Decisions

	2Q2005	3Q2005	4Q2005
to Buy	42	54	48
to Sell	41	33	41
Hld's(000)	6199	6302	6273

% TOT. RETURN 3/06

	THIS STOCK	VL ARITH. INDEX
1 yr	52.3	20.7
3 yr	71.7	114.0
5 yr.	100.1	66.6

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	© VALUE LINE PUB., INC.	09-11
9.58	9.15	10.10	9.27	10.43	11.03	11.37	11.44	11.02	12.91	12.17	13.06	13.78	13.98	13.61	14.06	*14.85*	*15.35*	Revenues per sh	*17.50*
1.49	1.78	1.81	1.67	1.68	1.75	1.75	1.85	2.04	2.26	2.20	2.53	2.54	2.08	2.23	2.22	*2.85*	*2.90*	"Cash Flow" per sh	*3.45*
.94	1.19	1.15	1.11	.95	1.03	1.13	1.04	1.08	1.19	1.28	1.35	1.34	.78	1.05	1.33	*1.45*	*1.55*	Earnings per sh A	*1.80*
.72	.73	.77	.79	.80	.81	.82	.83	.84	.85	.86	.87	.87	.88	.89	.90	*.91*	*.91*	Div'd Decl'd per sh B■	*.96*
2.53	2.77	2.31	1.90	2.43	2.19	2.40	2.58	3.11	4.30	3.03	3.18	2.68	3.76	5.03	4.24	*4.00*	*4.10*	Cap'l Spending per sh	*4.50*
7.54	8.39	8.85	9.95	10.07	10.29	11.01	11.24	11.48	11.82	12.74	13.22	14.05	13.97	15.01	15.72	*17.15*	*17.80*	Book Value per sh	*20.00*
9.43	9.91	9.96	11.71	11.77	11.77	13.33	13.44	13.44	13.44	15.12	15.12	15.18	15.21	16.75	16.80	*17.50*	*18.25*	Common Shs Outst'g C	*20.50*
10.2	8.8	10.6	13.4	12.8	11.6	12.6	14.5	15.5	17.1	15.9	16.7	18.3	31.9	23.2	21.7	*Bold figures are*		Avg Ann'l P/E Ratio	*19.5*
.76	.56	.64	.79	.84	.78	.79	.84	.81	.97	1.03	.86	1.00	1.82	1.23	1.14	*Value Line*		Relative P/E Ratio	*1.25*
7.5%	7.0%	6.3%	5.3%	6.6%	6.7%	5.8%	5.5%	5.0%	4.2%	4.2%	3.9%	3.6%	3.5%	3.6%	3.1%	*estimates*		Avg Ann'l Div'd Yield	*2.7%*
						151.5	153.8	148.1	173.4	184.0	197.5	209.2	212.7	228.0	236.2	*260*	*280*	Revenues ($mill)	*350*
						13.5	14.1	14.6	16.1	18.0	20.4	20.3	11.9	16.5	22.5	*26.0*	*29.0*	Net Profit ($mill)	*37.0*
						43.3%	41.1%	40.9%	46.0%	45.7%	43.0%	38.9%	43.5%	37.4%	45.1%	*43.0%*	*42.0%*	Income Tax Rate	*42.0%*
						--	--	--	--	--	--	--	--	--	--	*Nil*	*Nil*	AFUDC % to Net Profit	*Nil*
						41.9%	43.0%	43.6%	51.0%	47.5%	54.9%	52.0%	52.0%	47.7%	50.4%	*50.5%*	*51.0%*	Long-Term Debt Ratio	*52.0%*
						57.3%	56.3%	55.7%	48.4%	51.9%	44.7%	48.0%	48.0%	52.3%	49.6%	*49.5%*	*49.0%*	Common Equity Ratio	*48.0%*
						256.0	268.4	277.1	328.2	371.1	447.6	444.4	442.3	480.4	532.5	*600*	*665*	Total Capital ($mill)	*850*
						357.8	383.6	414.8	449.6	509.1	539.8	563.3	602.3	664.2	713.2	*785*	*835*	Net Plant ($mill)	*1000*
						6.9%	6.9%	7.0%	6.6%	6.4%	6.1%	6.5%	4.6%	5.2%	5.8%	*6.0%*	*6.0%*	Return on Total Cap'l	*6.0%*
						9.0%	9.2%	9.4%	10.0%	9.2%	10.1%	9.5%	5.6%	6.6%	8.5%	*8.5%*	*9.0%*	Return on Shr. Equity	*9.0%*
						9.0%	9.2%	9.4%	10.1%	9.3%	10.1%	9.5%	5.6%	6.6%	8.5%	*8.5%*	*9.0%*	Return on Com Equity	*9.0%*
						2.4%	1.8%	2.1%	2.9%	3.0%	3.6%	3.3%	NMF	1.0%	2.8%	*3.5%*	*4.0%*	Retained to Com Eq	*4.5%*
						73%	80%	78%	72%	68%	65%	65%	113%	84%	67%	*62%*	*57%*	All Div'ds to Net Prof	*52%*

CAPITAL STRUCTURE as of 12/31/05
Total Debt $296.0 mill. Due in 5 Yrs $3.2 mill.
LT Debt $268.4 mill. LT Interest $18.0 mill.
(Total interest coverage: 2.2x)

Leases, Uncapitalized: None
Pension Assets-12/05 $56.6 mill.
Oblig. $83.2 mill.
Pfd Stock None. Pfd Div'd None.

Common Stock 16,797,952 shs.

MARKET CAP: $675 million (Small Cap)

CURRENT POSITION ($MILL.)	2003	2004	12/31/05
Cash Assets	12.8	4.3	13.0
Receivables	11.8	14.3	13.3
Inventory (Avg Cst)	1.4	1.5	1.4
Other	32.4	32.9	41.2
Current Assets	58.4	53.0	68.9
Accts Payable	18.8	18.2	19.7
Debt Due	56.8	45.9	27.6
Other	20.3	22.2	30.3
Current Liab.	95.90	86.3	77.6
Fix. Chg. Cov.	237%	246%	325%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '03-'05 to '09-'11
Revenues	3.5%	3.0%	*3.5%*
"Cash Flow"	3.0%	2.0%	*6.0%*
Earnings	--	-1.0%	*8.0%*
Dividends	1.0%	1.0%0	*1.0%*
Book Value	4.0%	4.5%	*5.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2003	46.7	51.8	63.7	50.5	212.7
2004	46.7	59.3	69.0	53.0	228.0
2005	49.8	60.5	68.1	57.8	236.2
2006	*55.0*	*67.0*	*76.0*	*62.0*	*260*
2007	*60.0*	*72.0*	*81.0*	*67.0*	*280*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2003	.20	.19	.51	d.12	.78
2004	.08	.30	.52	.15	1.05
2005	.22	.34	.47	.30	1.33
2006	*.24*	*.37*	*.55*	*.29*	*1.45*
2007	*.27*	*.39*	*.57*	*.32*	*1.55*

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2002	.217	.217	.217	.221	.87
2003	.221	.221	.221	.221	.88
2004	.221	.221	.221	.225	.89
2005	.225	.225	.225	.225	.90
2006	.225				

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Company, it supplies water to 75 communities in 10 counties. Service areas include the greater metropolitan areas of Los Angeles and Orange Counties. The company also provides electric utility services to approximately 23,000 customers in the city of Big Bear Lake and in areas of San Bernardino County. Acquired Chaparral City Water of Arizona (10/00); 11,400 customers. Has roughly 515 employees. Off. & dir. own 3.1% of common stock (4/06 Proxy). Chairman: Lloyd Ross. President & CEO: Floyd Wicks. Incorporated: CA. Add.: 630 East Foothill Boulevard, San Dimas, CA 91773. Tel.: 909-394-3600. Web: www.aswater.com.

American States Water ought to post solid earnings growth this year . . . Although we think that better weather conditions will play a big role, the real growth driver should continue to be an improving regulatory environment. Indeed, the California Public Utilities Commission (CPUC), which is in charge of supervising local utilities, has undergone a significant facelift in recent months. What many thought to be antagonists of utilities was replaced with more business-friendly members. The changes paint a favorable backdrop for AWR going forward and ought to help it post earnings of $1.45 this year. The CPUC recently approved rate increases for Region II and Region I customer service areas of AWR's GSWC unit effective January 1, 2006. The rate hikes add more than $5.6 million in annual revenues.

. . . and next. Meanwhile, AWR has filed a new general rate case for Region II, requesting $14.9 million increase in revenues based on a 11.2% ROE, effective January, 2007. Although a favorable decision is not a given, we think that the recent rulings augur well for AWR. Thus, we are introducing a 2007 share-net estimate of $1.55, representing 7% growth.

Nevertheless, we look for bottom-line growth to become negligible in 2008. Despite a better regulatory environment, AWR must continue to contend with ballooning infrastructure costs. It will likely be forced to tap equity and debt markets to make the changes, due to its strapped cash position. We remain concerned that such financing activity will dilute earnings and could potentially even keep AWR from making acquisitions.

Most investors will want to avoid these shares. They are untimely for the coming six to 12 months and hold limited 3- to 5-year appreciation potential at their current quote. AWR shares have appreciated roughly 20% since our January review. Meanwhile, there are more attractive income vehicles elsewhere. That said, investors should note that AWR continues to make headway in its attempt to increase its business with the military. Further contract wins could provide another much-needed avenue of revenue growth and even prove our projections modest.

Andre J. Costanza *April 28, 2006*

(A) Primary earnings. Excludes nonrecurring gains: '91, 73¢; '92, 13¢; '04, 14¢; '05, 25¢. Quarterly earnings may not sum due to change in share count. Next earnings report due early May.
(B) Dividends historically paid in early March, June, September, December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for splits.

Company's Financial Strength	B+
Stock's Price Stability	80
Price Growth Persistence	80
Earnings Predictability	60

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AQUA AMERICA NYSE-WTR

RECENT PRICE 25.63 | P/E RATIO 34.6 (Trailing: 36.1 Median: 23.0) | RELATIVE P/E RATIO 1.80 | DIV'D YLD 1.7% | VALUE LINE

TIMELINESS 4 Lowered 3/17/06
SAFETY 3 Lowered 8/1/03
TECHNICAL 3 Raised 4/28/06
BETA .80 (1.00 = Market)

High:	4.1	5.7	8.5	11.5	11.5	12.0	14.8	15.0	16.8	18.5	29.2	29.8	
Low:	3.3	3.9	4.4	7.2	7.6	6.3	9.4	9.6	11.8	14.2	17.5	25.3	

Target Price Range 2009 | 2010 | 2011

2009-11 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+35%)	10%
Low	20	(-20%)	-4%

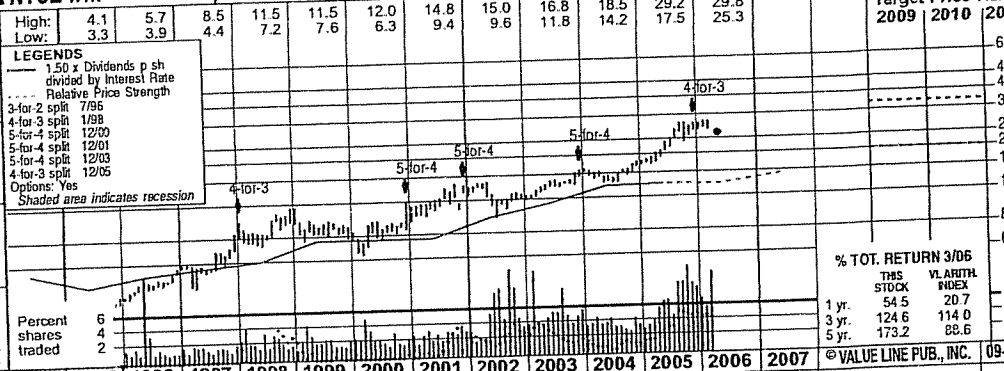
Insider Decisions

	J	J	A	S	O	N	D	J	F
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	1	2	3	2	1	2	2
to Sell	0	0	0	3	3	2	1	2	1

Institutional Decisions

	2Q2005	3Q2005	4Q2005
to Buy	116	124	112
to Sell	64	73	123
Hld's(000)	36632	37964	37756

LEGENDS
— 1.50 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
3-for-2 split 7/96
4-for-3 split 1/98
5-for-4 split 12/00
5-for-4 split 12/01
5-for-4 split 12/03
4-for-3 split 12/05
Options: Yes
Shaded area indicates recession



% TOT. RETURN 3/06

	THIS STOCK	VL ARITH. INDEX
1 yr.	54.5	20.7
3 yr.	124.6	114.0
5 yr.	173.2	88.6

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	© VALUE LINE PUB., INC.	09-11
2.02	2.14	1.82	1.70	1.82	1.84	1.86	2.02	2.09	2.41	2.46	2.70	2.85	2.97	3.48	3.85	4.05	4.40	Revenues per sh	5.80
.43	.45	.39	.42	.42	.47	.50	.56	.61	.72	.76	.86	.94	.96	1.09	1.21	1.30	1.45	"Cash Flow" per sh	1.85
.24	.25	.24	.24	.26	.29	.30	.34	.40	.42	.47	.51	.54	.57	.64	.71	.77	.86	Earnings per sh A	1.20
.19	.19	.20	.21	.21	.22	.23	.24	.26	.27	.28	.30	.32	.35	.37	.40	.44	.49	Div'd Decl'd per sh B■	.66
.76	.54	.60	.47	.46	.52	.48	.58	.82	.90	1.16	1.09	1.20	1.32	1.54	1.84	1.90	2.15	Cap'l Spending per sh	2.60
2.10	2.07	2.09	2.29	2.41	2.46	2.69	2.84	3.21	3.42	3.85	4.15	4.36	5.34	5.89	6.30	6.75	7.20	Book Value per sh	9.05
40.64	41.42	51.20	59.40	59.77	63.74	65.75	67.47	72.20	106.80	111.82	113.97	113.19	123.45	127.18	128.97	130.00	131.00	Common Shs Outst'g C	134.00
10.2	10.8	12.5	14.4	13.5	12.0	15.6	17.8	22.5	21.2	18.2	23.6	23.6	24.5	25.1	31.8	Bold figures are		Avg Ann'l P/E Ratio	23.0
.76	.69	.76	.85	.89	.80	.98	1.03	1.17	1.21	1.18	1.21	1.29	1.40	1.33	1.70	Value Line		Relative P/E Ratio	1.55
7.7%	7.2%	6.8%	5.9%	6.0%	6.2%	4.9%	3.9%	2.9%	3.0%	3.3%	2.5%	2.5%	2.5%	2.3%	1.8%	estimates		Avg Ann'l Div'd Yield	2.4%
						122.5	136.2	151.0	257.3	275.5	307.3	322.0	367.2	442.0	496.8	525	575	Revenues ($mill)	775
						19.8	23.2	28.8	45.0	50.7	58.5	62.7	67.3	80.0	91.2	100	115	Net Profit ($mill)	160
						41.4%	40.6%	40.5%	38.4%	38.9%	39.3%	38.5%	39.3%	39.4%	38.4%	39.0%	39.0%	Income Tax Rate	39.0%
						--	--	--	--	--	--	--	--	2.9%	2.6%	2.5%	2.5%	AFUDC % to Net Profit	2.0%
						54.1%	54.4%	52.7%	52.9%	52.0%	52.2%	54.2%	51.4%	50.0%	52.0%	51.0%	51.0%	Long-Term Debt Ratio	51.0%
						44.0%	44.8%	46.6%	46.7%	47.8%	47.7%	45.8%	48.6%	50.0%	48.0%	49.0%	49.0%	Common Equity Ratio	49.0%
						401.7	427.2	496.6	782.7	901.1	990.4	1076.2	1355.7	1497.3	1690.4	1785	1925	Total Capital ($mill)	2475
						502.9	534.5	609.8	1135.4	1251.4	1368.1	1490.8	1824.3	2069.8	2280.0	2450	2635	Net Plant ($mill)	3280
						6.8%	7.4%	7.6%	7.6%	7.4%	7.8%	7.6%	6.4%	6.7%	6.9%	7.0%	7.5%	Return on Total Cap'l	8.0%
						10.7%	11.9%	12.3%	12.2%	11.7%	12.3%	12.7%	10.2%	10.7%	11.2%	11.5%	12.0%	Return on Shr. Equity	13.0%
						11.2%	12.0%	12.4%	12.3%	11.7%	12.4%	12.7%	10.2%	10.7%	11.2%	11.5%	12.0%	Return on Com Equity	13.0%
						2.8%	3.6%	4.5%	4.3%	4.7%	5.1%	5.2%	4.2%	4.6%	4.9%	5.0%	5.5%	Retained to Com Eq	6.0%
						75%	70%	64%	65%	60%	59%	59%	59%	57%	56%	57%	56%	All Div'ds to Net Prof	55%

CAPITAL STRUCTURE as of 12/31/05
Total Debt $1041.5 mill. Due in 5 Yrs $280.0 mill.
LT Debt $878.4 mill. LT Interest $50.0 mill.
(Total interest coverage: 3.8x) (48% of Cap'l)

Pension Assets $117.7 mill. Oblig. $179.7 mill.

Pfd Stock None

Common Stock 129,205,090 shares as of 2/17/06

MARKET CAP: $3.3 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2003	2004	12/31/05
Cash Assets	39.2	13.1	11.9
Receivables	62.3	64.5	62.7
Inventory (AvgCst)	5.8	6.9	7.8
Other	5.1	5.6	7.6
Current Assets	112.4	90.1	90.0
Accts Payable	32.3	23.5	55.5
Debt Due	135.8	135.3	163.1
Other	63.9	58.6	44.7
Current Liab.	232.0	217.4	263.3
Fix. Chg. Cov.	344%	364%	377%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '03-'05 to '09-'11
Revenues	7.0%	8.0%	9.0%
"Cash Flow"	9.5%	9.5%	9.0%
Earnings	9.0%	8.5%	11.0%
Dividends	6.0%	6.5%	10.0%
Book Value	9.5%	11.0%	8.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2003	80.5	83.4	102.1	101.2	367.2
2004	99.8	106.5	120.3	115.4	442.0
2005	114.0	123.1	136.8	122.9	496.8
2006	120	130	140	135	525
2007	130	140	155	150	575

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2003	.11	.14	.18	.14	.57
2004	.13	.14	.20	.17	.64
2005	.15	.17	.22	.17	.71
2006	.15	.17	.25	.20	.77
2007	.17	.19	.29	.21	.86

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2002	.08	.08	.08	.084	.32
2003	.084	.084	.084	.09	.34
2004	.09	.09	.09	.098	.37
2005	.098	.098	.098	.108	.40
2006	.108				

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately 2.5 million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Divested three of four non-water businesses in '91; telemarketing group in '93; and others. Acquired AquaSource, 7/03; Consumers Water, 4/99; and others. Water supply revenues '05: residential, 59%; commercial, 15%; industrial & other, 26%. Officers and directors own 1.2% of the common stock (4/06 Proxy). Chairman & Chief Executive Officer: Nicholas DeBenedictis. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Telephone: 610-525-1400. Internet: www.aquaamerica.com.

Aqua America's stock is trading near its all-time high valuation multiple. Shares of the company rose 50% in 2005, a rather unusual gain for a utilities stock, especially water utility. These stocks are historically known for their slow yet steady performance, but they have been real high flyers over the past year. Aqua is poised for healthy share-net advances this year and next, but its current stock quotation may already include these advances. We outline the company's growth prospects below to see if WTR's current valuation is sustainable.

Earnings growth in 2006 will probably be back-end loaded. Aqua has a large volume of rate cases that have recently been filed, and several more are coming. In total, the company is awaiting judgment on over $65 million of rate hikes. The figure consists of rate filings in Pennsylvania ($38.8 million), Indiana ($5.5 million), New Jersey ($4.1 million), Florida ($4.0 million), and several other states. The majority of these rate increases will likely come in the second half of 2006, so we estimate flat share-earnings comparisons during the first half of the year.

A ravenous appetite for acquisitions should fuel profit growth in the coming years. Aqua is the largest investor-owned water utility in the United States. Using its good financial position, the company is able to purchase numerous smaller businesses in the fragmented water services industry. Management recently indicated that Aqua's acquisition pipeline is robust, and it is seeing a greater number of municipalities being offered for sale. Municipalities are good acquisition targets since they are often run less efficiently than most of Aqua's other operations. This means, although cash outflows will probably be high during the early years, as the company brings the new water systems up to par, future synergistic savings should make up for the initial losses.

We do not recommend these untimely shares to investors, given their current quotation. Projected earnings growth for the coming 3- to 5-years does not seem high enough to warrant the stock's lofty valuation. Moreover, the equity's current yield is out of line with historical norms.

Praneeth Satish *April 28, 2006*

(A) Primary shares outstanding through '96; diluted thereafter. Excl. nonrec. gains (losses): '90, (38¢); '91, (34¢); '92, (38¢); '99, (11¢); '00, 2¢; '01, 2¢; '02, 5¢; '03, 4¢. Excl. gain from disc. operations: '96, 2¢. Next earnings report due early May. (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	95
Earnings Predictability	100

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CALIFORNIA WATER NYSE-CWT

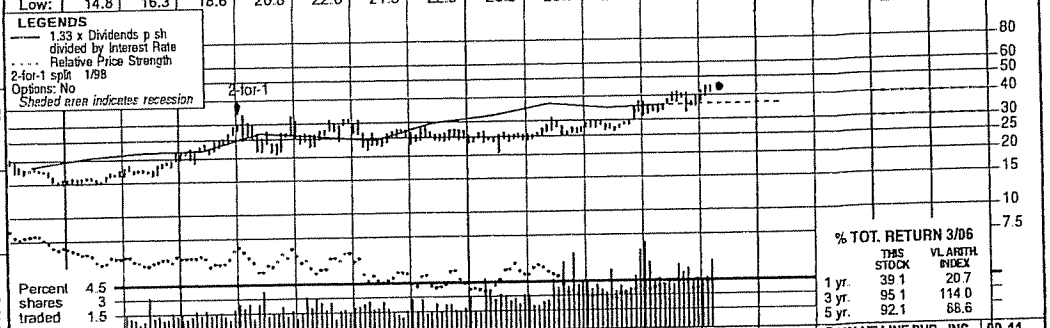
RECENT PRICE 44.60 | P/E RATIO 26.4 (Trailing: 30.3 Median: 19.0) | RELATIVE P/E RATIO 1.38 | DIV'D YLD 2.6% | VALUE LINE

TIMELINESS 4 Raised 11/4/05
SAFETY 2 Lowered 8/11/95
TECHNICAL 3 Raised 4/14/06
BETA .75 (1.00 = Market)

High:	17.6	21.9	29.6	33.8	32.0	31.4	28.6	26.9	31.4	37.9	42.1	45.7
Low:	14.8	16.3	18.6	20.8	22.6	21.5	22.9	20.5	23.7	26.1	31.2	36.8

Target Price Range 2009 | 2010 | 2011

LEGENDS
—— 1.33 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 1/98
Options: No
Shaded area indicates recession



2009-11 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(-10%)	Nil
Low	30	(-35%)	-6%

Insider Decisions

	J	J	A	S	O	N	D	J	F
to Buy	0	0	1	0	0	0	0	0	0
Options	0	0	5	2	0	0	0	0	1
to Sell	1	0	5	2	0	0	0	0	2

Institutional Decisions

	2Q2005	3Q2005	4Q2005
to Buy	48	38	39
to Sell	24	39	32
Hld's(000)	4744	4897	4959

% TOT. RETURN 3/06

	THIS STOCK	VL ARITH. INDEX
1 yr.	39.1	20.7
3 yr.	95.1	114.0
5 yr.	92.1	68.6

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	© VALUE LINE PUB., INC.	09-11
10.93	11.18	12.29	13.34	12.59	13.17	14.48	15.48	14.76	15.96	16.16	16.26	17.33	16.37	17.18	17.44	17.30	18.70	Revenues per sh	21.60
1.97	1.98	1.92	2.25	2.02	2.07	2.50	2.92	2.60	2.75	2.52	2.20	2.65	2.51	2.83	3.04	3.00	3.40	"Cash Flow" per sh	3.60
1.25	1.21	1.09	1.35	1.22	1.17	1.51	1.63	1.45	1.53	1.31	.94	1.25	1.21	1.46	1.47	1.70	1.75	Earnings per sh A	1.80
.87	.90	.93	.96	.99	1.02	1.04	1.06	1.07	1.09	1.10	1.12	1.12	1.12	1.13	1.14	1.15	1.16	Div'd Decl'd per sh B ■	1.22
2.36	3.03	3.09	2.53	2.26	2.17	2.83	2.61	2.74	3.44	2.45	4.09	5.82	4.39	3.73	5.14	5.00	4.50	Cap'l Spending per sh	4.00
10.04	10.35	10.51	10.90	11.56	11.72	12.22	13.00	13.38	13.43	12.90	12.95	13.12	14.44	15.66	15.98	16.70	17.50	Book Value per sh C	20.45
11.38	11.38	11.38	11.38	12.49	12.54	12.62	12.62	12.62	12.94	15.15	15.18	15.18	16.93	18.37	18.39	19.00	19.50	Common Shs Outst'g D	22.00
10.4	11.2	14.1	13.6	14.1	13.7	11.9	12.6	17.8	17.8	19.6	27.1	19.8	22.1	20.1	24.9	Bold figures are		Avg Ann'l P/E Ratio	19.0
.77	.72	.86	.80	.92	.92	.75	.73	.93	1.01	1.27	1.39	1.08	1.26	1.06	1.30	Value Line		Relative P/E Ratio	1.25
6.7%	6.6%	6.1%	5.2%	5.8%	6.4%	5.8%	4.6%	4.2%	4.0%	4.3%	4.4%	4.5%	4.2%	3.9%	3.1%	estimates		Avg Ann'l Div'd Yield	3.5%

CAPITAL STRUCTURE as of 12/31/05
Total Debt $275.2 mill. Due in 5 Yrs $5.3 mill.
LT Debt $274.1 mill. LT Interest $19.0 mill.

(LT interest earned: 2.4x; total int. cov.: 2.4x)

Pension Assets-12/05 $70.2 mill.
Oblig. $103.2 mill.
Pfd Stock $3.5 mill. Pfd Div'd $.15 mill.
139,000 shares, 4.4% cumulative ($25 par).

Common Stock 18,405,386 shs as of 3/6/06
MARKET CAP: $750 million (Small Cap)

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007		09-11
182.8	195.3	186.3	206.4	244.6	246.8	263.2	277.1	315.6	320.7	345	365			Revenues ($mill)	475
19.1	23.3	18.4	19.9	20.0	14.4	19.1	19.4	26.0	27.2	33.0	35.0			Net Profit ($mill)	40.0
38.9%	37.4%	36.4%	37.9%	42.3%	39.4%	39.7%	39.9%	39.6%	42.4%	41.0%	40.5%			Income Tax Rate	40.0%
--	--	--	--	--	--	--	10.3%	--	--	Nil	Nil			AFUDC % to Net Profit	Nil
47.4%	45.4%	44.2%	46.9%	48.9%	50.3%	55.3%	50.2%	48.6%	48.0%	48.5%	49.0%			Long-Term Debt Ratio	49.5%
51.4%	53.5%	54.7%	52.0%	50.2%	48.8%	44.0%	49.1%	50.8%	51.4%	51.0%	50.5%			Common Equity Ratio	50.0%
299.9	306.7	308.6	333.8	388.8	402.7	453.1	498.4	565.9	571.6	625	675			Total Capital ($mill)	900
443.6	460.4	478.3	515.4	582.0	624.3	697.0	759.5	800.3	856.7	925	950			Net Plant ($mill)	1125
8.3%	9.4%	7.8%	7.8%	6.8%	5.3%	5.9%	5.6%	6.1%	6.4%	6.0%	6.5%			Return on Total Cap'l	5.5%
12.1%	13.9%	10.7%	11.2%	10.0%	7.2%	9.4%	7.8%	8.9%	9.1%	8.5%	10.5%			Return on Shr. Equity	9.0%
12.3%	14.1%	10.8%	11.4%	10.1%	7.2%	9.5%	7.9%	9.0%	9.3%	9.0%	10.5%			Return on Com Equity	9.0%
3.8%	6.0%	2.8%	3.5%	1.8%	NMF	1.0%	.7%	2.1%	2.1%	3.5%	4.0%			Retained to Com Eq	3.0%
69%	58%	74%	70%	82%	119%	90%	91%	77%	77%	78%	63%			All Div'ds to Net Prof	67%

CURRENT POSITION ($MILL.)	2003	2004	12/31/05
Cash Assets	2.9	18.8	9.5
Other	40.6	51.6	42.7
Current Assets	43.5	70.4	52.2
Accts Payable	23.8	19.8	36.1
Debt Due	7.3	--	1.1
Other	32.5	36.4	39.6
Current Liab.	63.6	57.2	76.8
Fix. Chg. Cov.	218%	309%	361%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '03-'05 to '09-'11
Revenues	3.0%	2.0%	3.5%
"Cash Flow"	2.5%	-0.5%	4.5%
Earnings	0.5%	-4.0%	4.5%
Dividends	1.5%	1.0%	1.0%
Book Value	2.5%	1.5%	5.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2003	51.3	68.0	88.2	69.6	277.1
2004	60.2	88.9	97.1	69.4	315.6
2005	60.3	81.5	101.1	77.8	320.7
2006	65.0	95.0	105	80.0	345
2007	70.0	100	110	85.0	365

Cal-endar	EARNINGS PER SHARE A E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2003	d.05	.30	.53	.41	1.21
2004	.08	.59	.59	.20	1.46
2005	.03	.41	.71	.32	1.47
2006	.10	.55	.72	.33	1.70
2007	.11	.57	.73	.34	1.75

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2002	.28	.28	.28	.28	1.12
2003	.281	.281	.281	.281	1.12
2004	.283	.283	.283	.283	1.13
2005	.285	.285	.285	.285	1.14
2006	.2875				

BUSINESS: California Water Service Group provides regulated and nonregulated water service to over 2 million people (456,700 customers) in 75 communities in California, Washington, and New Mexico. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired National Utility Company (5/04); Rio Grande Corp. (11/00). Revenue breakdown, '05: residential, 69%; business, 18%; public authorities, 5%; industrial, 4%; other, 4%. '05 reported deprec. rate: 3.6%. Has about 840 employees. Chairman: Robert W. Foy. President & CEO: Peter C. Nelson. Inc.: Delaware. Address: 1720 North First Street, San Jose, California 95112-4598. Telephone: 408-367-8200. Internet: www.calwater.com.

California Water Service Group should bounce back handsomely this year. Extremely wet weather stymied earnings growth in 2005. However, we expect more-normalized conditions going forward. Moreover, the company should continue to benefit from recent changes at the California Public Utilities Commission (CPUC). Indeed, the CPUC, which is in charge of overseeing local utilities, has undergone sweeping personnel changes in recent months. The new constituents appear to be more business-friendly than the previous board members, handing down more timely and favorable rate case decisions of late. The company has a number of rate case filings still pending. Its general rate case for eight districts, representing roughly a quarter of its customer base is the most prominent. The case, which was filed in August, is requesting $11 million in 2006 and $6 million in 2007. The recent developments paint a favorable picture for CWT. In all, we expect CWT to post profits of $1.70 a share this year.

We expect earnings growth to slow considerably in 2007, though. The costs of maintaining well and pipeline infrastructures continue to increase at a rapid pace and will likely remain high for the foreseeable future, given the growing demands of the EPA on drinking water purification standards. However, CWT does not currently have the means to meet these expenses and will ultimately have to look to equity and debt markets in order to do so. As a result, we look for bottom-line growth to moderate to 3% next year and flatten out after that.

CWT shares will probably not appeal to most. The stock is ranked 4 (Below Average) for Timeliness and does not stand out for 3- to 5- year appreciation potential either, based on the capital constraints that we envision out to 2009-2011. Meanwhile, its dividend yield is not as appealing as it once was given the stock's recent price appreciation and the alternative income vehicles that are currently on the market.

That said, this issue may pique the interest of more-conservative investors looking to add a steady stream of income to their portfolios. CWT is ranked 2 (Above Average) for Safety.

Andre J. Costanza *April 28, 2006*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (7¢); '01, 4¢; 02, 8¢. Next earnings report due late July.
(B) Dividends historically paid in mid-Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. deferred charges. In '05: $63.9 mill., $3.47/sh.
(D) In millions, adjusted for split.
(E) May not total due to change in shares.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	95
Earnings Predictability	65

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MIDDLESEX WATER NDQ–MSEX

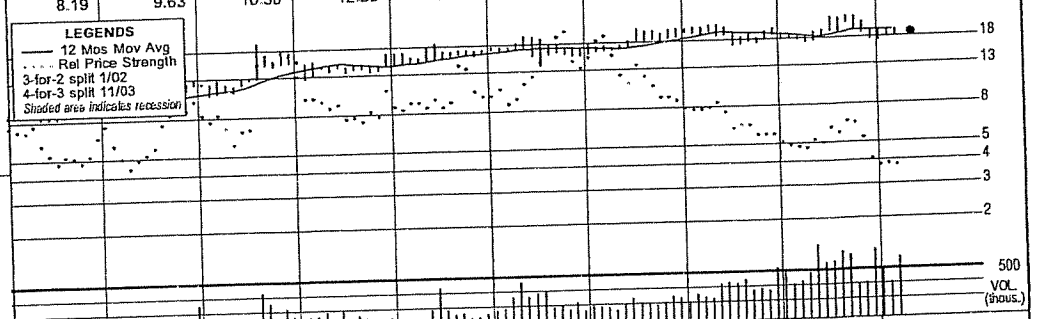
RECENT PRICE 18.90 | TRAILING P/E RATIO 26.6 | RELATIVE P/E RATIO 1.28 | DIV'D YLD 3.6% | VALUE LINE

	1997	1998	1999	2000	2001	2002	2003	2004	2005	
High	11.25	12.88	19.75	16.97	18.73	20.04	21.23	21.81	23.47	19.72
Low	8.19	9.63	10.50	12.50	14.69	13.73	15.77	16.65	17.07	17.03

RANKS

PERFORMANCE 3 Average
Technical 3 Average
SAFETY 3 Average
BETA .75 (1.00 = Market)

Financial Strength B+
Price Stability 85
Price Growth Persistence 75
Earnings Predictability 70



© VALUE LINE PUBLISHING, INC.	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006/2007
SALES PER SH	4.72	4.39	5.35	5.39	5.87	5.98	6.12	6.25	6.44	
"CASH FLOW" PER SH	1.02	1.02	1.19	.99	1.18	1.20	1.15	1.28	1.33	
EARNINGS PER SH	.67	.71	.76	.51	.66	.73	.61	.73	.71	.74 A-B/.77 C
DIV'DS DECL'D PER SH	.57	.58	.60	.61	.62	.63	.65	.66	.67	
CAP'L SPENDING PER SH	1.20	2.68	2.33	1.32	1.25	1.59	1.87	2.63	2.18	
BOOK VALUE PER SH	6.00	6.80	6.95	6.98	7.11	7.39	7.60	8.38	8.60	
COMMON SHS OUTST'G (MILL)	8.54	9.82	10.00	10.11	10.17	10.36	10.48	11.36	11.58	
AVG ANN'L P/E RATIO	13.4	15.2	17.6	28.7	24.6	23.5	30.0	26.4	27.4	25.5/24.5
RELATIVE P/E RATIO	.77	.79	1.00	1.87	1.26	1.28	1.71	1.39	1.46	
AVG ANN'L DIV'D YIELD	6.3%	5.4%	4.4%	4.2%	3.8%	3.7%	3.5%	3.4%	3.5%	
SALES ($MILL.)	40.3	43.1	53.5	54.5	59.6	61.9	64.1	71.0	74.6	
OPERATING MARGIN	37.2%	37.0%	33.9%	32.2%	47.2%	47.1%	44.0%	44.4%	44.4%	
DEPRECIATION ($MILL)	3.1	3.8	4.3	4.9	5.3	5.0	5.6	6.4	7.2	
NET PROFIT ($MILL)	5.9	6.5	7.9	5.3	7.0	7.8	6.6	8.4	8.5	
INCOME TAX RATE	34.9%	31.5%	28.8%	33.1%	34.8%	33.3%	32.8%	31.1%	27.6%	
NET PROFIT MARGIN	14.5%	15.1%	14.7%	9.7%	11.7%	12.5%	10.3%	11.9%	11.4%	
WORKING CAP'L ($MILL)	d2.9	14.6	6.8	d2.7	d.9	d9.3	d13.3	d11.8	d4.5	
LONG-TERM DEBT ($MILL)	52.9	78.0	82.3	81.1	88.1	87.5	97.4	115.3	128.2	
SHR. EQUITY ($MILL)	56.2	71.7	74.6	74.7	76.4	80.6	83.7	99.2	103.6	
RETURN ON TOTAL CAP'L	6.8%	5.7%	6.4%	4.9%	5.6%	6.0%	5.0%	5.1%	5.0%	
RETURN ON SHR. EQUITY	10.4%	9.1%	10.6%	7.1%	9.1%	9.6%	7.9%	8.5%	8.2%	
RETAINED TO COM EQ	1.7%	1.8%	2.5%	NMF	.5%	1.3%	NMF	.9%	.5%	
ALL DIV'DS TO NET PROF	85%	81%	78%	121%	94%	87%	106%	90%	94%	

Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.

[A]No. of analysts changing earn. est. in last 15 days: 0 up, 0 down, consensus 5-year earnings growth 3.5% per year. [B]Based upon one analyst's estimate. [C]Based upon one analyst's estimate.

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	4.5%	3.0%
"Cash Flow"	3.5%	3.5%
Earnings	1.0%	-2.5%
Dividends	2.0%	1.5%
Book Value	3.5%	2.5%

Fiscal Year	QUARTERLY SALES ($mill.) 1Q	2Q	3Q	4Q	Full Year
12/31/03	15.0	16.0	17.6	15.5	64.1
12/31/04	15.9	17.8	19.8	17.5	71.0
12/31/05	16.7	18.4	20.8	18.7	74.6
12/31/06					

Fiscal Year	EARNINGS PER SHARE 1Q	2Q	3Q	4Q	Full Year
12/31/02	.12	.18	.24	.19	.73
12/31/03	.11	.17	.22	.11	.61
12/31/04	.09	.16	.29	.19	.73
12/31/05	.12	.16	.26	.17	.71
12/31/06	.12	.17	.27		

Cal-endar	QUARTERLY DIVIDENDS PAID 1Q	2Q	3Q	4Q	Full Year
2003	.161	.161	.161	.165	.65
2004	.165	.165	.165	.168	.66
2005	.168	.168	.168	.17	.67
2006	.17				

INSTITUTIONAL DECISIONS

	2Q'05	3Q'05	4Q'05
to Buy	19	20	11
to Sell	16	15	21
Hld's(000)	1771	1938	1707

ASSETS ($mill.)	2003	2004	12/31/05
Cash Assets	3.0	4.0	3.0
Receivables	5.7	9.9	11.8
Inventory (Avg cost)	1.4	1.2	1.3
Other	4.3	.9	.9
Current Assets	14.4	16.0	17.0
Property, Plant & Equip, at cost	278.4	308.4	343.0
Accum Depreciation	47.5	52.0	55.0
Net Property	230.9	256.4	288.0
Other	17.9	26.7	19.4
Total Assets	263.2	299.1	324.4
LIABILITIES ($mill.)			
Accts Payable	4.8	6.0	6.0
Debt Due	13.6	12.1	6.9
Other	9.3	9.7	9.6
Current Liab	27.7	27.8	21.5

LONG-TERM DEBT AND EQUITY as of 12/31/05

Total Debt $134.1 mill. Due in 5 Yrs. $16.0 mill.
LT Debt $128.2 mill.
Including Cap. Leases None
(55% of Cap'l)
Leases, Uncapitalized Annual rentals None

Pension Liability $6.7 mill. in '05 vs. $5.5 mill. in '04

Pfd Stock $4.0 mill. Pfd Div'd Paid $.2 mill.
(2% of Cap'l)

Common Stock 11,584,499 shares
(43% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: Middlesex Water Company, through its subsidiaries, engages in the ownership and operation of regulated water utility systems in central and southern New Jersey, and in Delaware, as well as a regulated wastewater utility in southern New Jersey. Its New Jersey water utility system (the Middlesex System) provides water services to retail customers in central New Jersey. The Middlesex System also provides water service under contract to municipalities in central New Jersey. The company operates the water supply system and wastewater system for the city of Perth Amboy in New Jersey in partnership with its subsidiary, Utility Service Affiliates (Perth Amboy), Inc. Its other New Jersey subsidiaries provide water and wastewater services to residents in Southampton Township. In January, the company named Dennis W. Doll president and CEO. Has 220 employees. Chairman: J. Richard Tompkins. Inc.: NJ. Address: 1500 Ronson Road, P.O. Box 1500, Iselin, NJ 08830. Tel.: (732) 634-1500. Internet: http://www.middlesexwater.com.

A.Z.

April 28, 2006

TOTAL SHAREHOLDER RETURN
Dividends plus appreciation as of 3/31/2006

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
10.24%	-14.14%	8.06%	26.24%	49.04%

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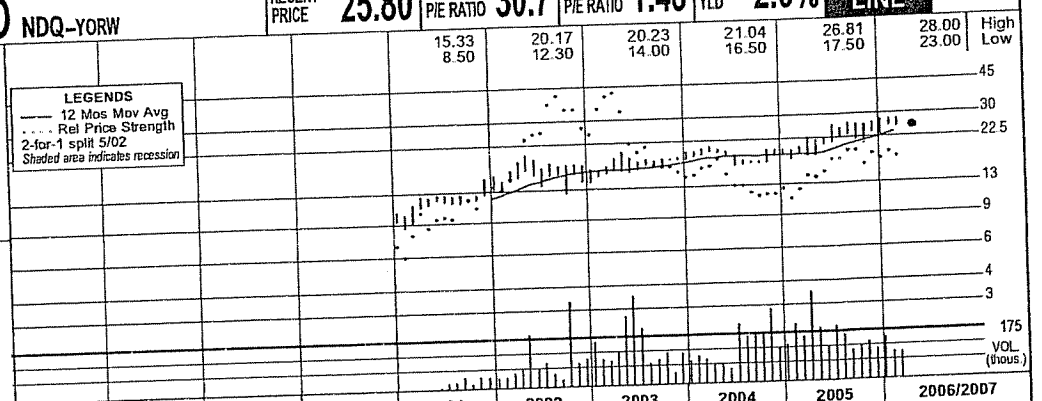
YORK WATER CO NDQ-YORW

RECENT PRICE 25.80 | TRAILING P/E RATIO 30.7 | RELATIVE P/E RATIO 1.48 | DIV'D YLD 2.6% | VALUE LINE

	1997	1998	1999	2000	2001	2002	2003	2004	2005	
High					15.33	20.17	20.23	21.04	26.81	28.00
Low					8.50	12.30	14.00	16.50	17.50	23.00



RANKS

PERFORMANCE	3	Average
Technical	3	Average
SAFETY	3	Average
BETA .50		(1.00 = Market)

Financial Strength	B+
Price Stability	60
Price Growth Persistence	NMF
Earnings Predictability	NMF

© VALUE LINE PUBLISHING, INC.	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006/2007
REVENUES PER SH	–	–	–	–	3.08	3.07	3.25	3.27	3.87	
"CASH FLOW" PER SH	–	–	–	–	.88	.86	.97	.98	1.18	.94 A,B/NA
EARNINGS PER SH	–	–	–	–	.65	.60	.70	.73	.84	
DIV'D DECL'D PER SH	–	–	–	–	.51	.53	.55	.59	.64	
CAP'L SPENDING PER SH	–	–	–	–	1.12	.99	1.61	3.76	2.53	
BOOK VALUE PER SH	–	–	–	–	5.69	5.85	6.08	6.98	7.27	
COMMON SHS OUTST'G (MILL)	–	–	–	–	6.31	6.36	6.42	6.89	6.93	
AVG ANN'L P/E RATIO	–	–	–	–	17.9	26.9	24.5	25.7	26.3	27.4/NA
RELATIVE P/E RATIO	–	–	–	–	.92	1.47	1.40	1.36	1.40	
AVG ANN'L DIV'D YIELD	–	–	–	–	4.3%	3.3%	3.2%	3.1%	2.9%	
REVENUES ($MILL)	–	–	–	18.5	19.4	19.6	20.9	22.5	26.8	
NET PROFIT ($MILL)	–	–	–	3.8	4.0	3.8	4.4	4.8	5.8	
INCOME TAX RATE	–	–	–	35.7%	35.8%	34.9%	34.8%	36.7%	36.7%	
AFUDC % TO NET PROFIT	–	–	–	–	2.2%	3.7%	–	–	–	
LONG-TERM DEBT RATIO	–	–	–	50.2%	47.7%	46.7%	43.4%	42.5%	44.1%	
COMMON EQUITY RATIO	–	–	–	49.8%	52.3%	53.3%	56.6%	57.5%	55.9%	
TOTAL CAPITAL ($MILL)	–	–	–	65.2	68.6	69.9	69.0	83.6	90.3	
NET PLANT ($MILL)	–	–	–	97.0	102.3	106.7	116.5	140.0	155.3	
RETURN ON TOTAL CAP'L	–	–	–	7.9%	7.9%	7.4%	8.5%	7.6%	8.4%	
RETURN ON SHR. EQUITY	–	–	–	11.6%	11.2%	10.2%	11.4%	10.0%	11.6%	
RETURN ON COM EQUITY	–	–	–	11.6%	11.2%	10.2%	11.4%	10.0%	11.6%	
RETAINED TO COM EQ	–	–	–	2.5%	2.5%	1.3%	2.6%	2.1%	3.0%	
ALL DIV'DS TO NET PROF	–	–	–	78%	78%	68%	77%	79%	74%	

Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.

[A]No. of analysts changing earn. est. in last 15 days: 0 up, 0 down, consensus 5-year earnings growth 7.0% per year. [B]Based upon one analyst's estimate.

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Revenues	–	18.5%
"Cash Flow"	–	20.5%
Earnings	–	15.0%
Dividends	-9.5%	7.5%
Book Value	–	4.0%

Fiscal Year	QUARTERLY SALES ($mill.) 1Q	2Q	3Q	4Q	Full Year
12/31/03	4.8	5.0	5.8	5.3	20.9
12/31/04	5.3	5.5	5.6	6.1	22.5
12/31/05	6.2	6.7	7.2	6.7	26.8
12/31/06					

Fiscal Year	EARNINGS PER SHARE 1Q	2Q	3Q	4Q	Full Year
12/31/02	.14	.15	.18	.13	.60
12/31/03	.12	.16	.24	.18	.70
12/31/04	.18	.16	.18	.21	.73
12/31/05	.18	.21	.25	.20	.84
12/31/06	.21	.24	.25		

Cal-endar	QUARTERLY DIVIDENDS PAID 1Q	2Q	3Q	4Q	Full Year
2003	.135	.135	.135	.135	.54
2004	.145	.145	.145	.145	.58
2005	.156	.156	.156	.156	.62
2006	.168	.168			

INSTITUTIONAL DECISIONS

	2Q'05	3Q'05	4Q'05
to Buy	5	8	10
to Sell	4	4	3
Hld's(000)	445	476	517

ASSETS ($mill.)	2003	2004	12/31/05
Cash Assets	.0	.2	.0
Receivables	3.2	3.7	3.8
Inventory	.6	.7	.8
Other	.3	.4	.5
Current Assets	4.1	5.0	5.1
Property, Plant & Equip, at cost	139.1	164.3	182.4
Accum Depreciation	22.6	24.3	27.1
Net Property	116.5	140.0	155.3
Other	6.9	11.1	11.9
Total Assets	127.5	156.1	172.3
LIABILITIES ($mill.)			
Accts Payable	1.7	1.8	2.6
Debt Due	9.9	16.3	19.3
Other	2.4	3.1	2.8
Current Liab	14.0	21.2	24.7

LONG-TERM DEBT AND EQUITY as of 12/31/05

Total Debt $59.2 mill. Due in 5 Yrs. $26.5 mill.
LT Debt $39.8 mill.
Including Cap. Leases $7.0 mill.
(44% of Cap'l)

Leases, Uncapitalized Annual rentals None

Pension Liability $3.9 mill. in '05 vs. $3.0 mill. in '04

Pfd Stock None Pfd Div'd Paid None

Common Stock 6,933,330 shares
(56% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: York Water Company engages in the impounding, purification, and distribution of water in York County, Pennsylvania. As of December 31, 2005, the company had two reservoirs, Lake Williams and Lake Redman, which together held approximately 2.23 billion gallons of water. It supplies water for residential, commercial, industrial, and other customers. As of the above date, the company served approximately 55,731 customers in 34 municipalities in York County. Has 97 employees. Chairman: William Morris. Inc.: PA. Address: 130 East Market Street, York, PA 17405. Tel.: (717) 845-3601. Internet: http://www.yorkwater.com.

A.Z.

April 28, 2006

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 3/31/2006

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
2.50%	3.25%	41.89%	70.06%	154.30%

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SOUTHWEST WATER NDQ-SWWC

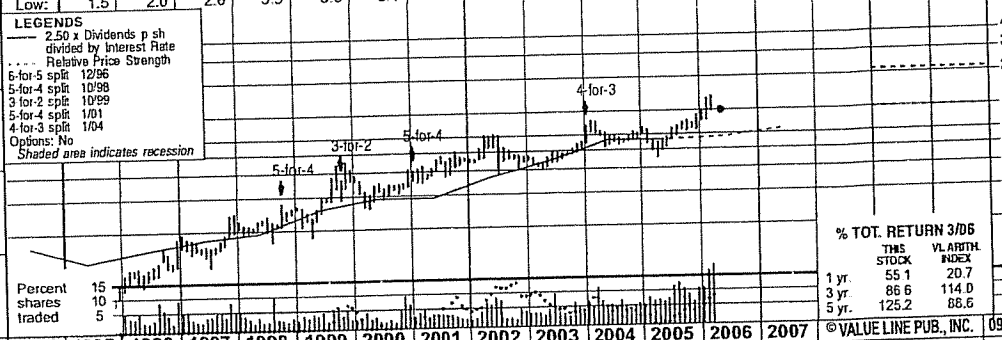
RECENT PRICE 16.00 | P/E RATIO 40.0 (Trailing: 47.1 Median: 19.0) | RELATIVE P/E RATIO 2.08 | DIV'D YLD 1.3% | VALUE LINE

TIMELINESS 4 Lowered 3/24/06
SAFETY 3 New 10/26/05
TECHNICAL 3 Lowered 2/24/06
BETA .70 (1.00 = Market)

High:	2.1	3.7	5.0	5.6	9.2	8.3	10.2	12.4	11.2	14.3	15.2	19.1
Low:	1.5	2.0	2.6	3.5	3.6	5.1	6.9	7.6	8.1	10.3	9.0	14.0

Target Price Range 2009 | 2010 | 2011

LEGENDS
— 2.50 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
6-for-5 split 12/96
5-for-4 split 10/98
3-for-2 split 10/99
5-for-4 split 1/01
4-for-3 split 1/04
Options: No
Shaded area indicates recession



2009-11 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	25	(+55%)	13%
Low	16	(Nil)	2%

Insider Decisions

	J	J	A	S	O	N	D	J	F
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	3	1	1	1	0	0	0
to Sell	0	0	1	2	1	1	1	1	1

Institutional Decisions

	2Q2005	3Q2005	4Q2005
to Buy	28	39	31
to Sell	16	15	39
Hld's(000)	5044	5706	6376

% TOT. RETURN 3/06

	THIS STOCK	VL ARITH. INDEX
1 yr.	55.1	20.7
3 yr.	86.6	114.0
5 yr.	125.2	88.6

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	© VALUE LINE PUB., INC.	09-11
3.58	3.34	3.77	4.03	4.20	4.84	5.31	5.61	5.63	6.16	7.49	8.15	9.12	10.70	9.23	9.10	9.35	10.00	Revenues per sh	13.35
.46	.28	.44	.38	.38	.44	.46	.53	.59	.65	.76	.87	.86	.91	.67	.78	.85	1.00	"Cash Flow" per sh	1.45
.22	.02	.19	.08	.09	.12	.15	.21	.25	.31	.38	.42	.39	.44	.23	.34	.42	.51	Earnings per sh A	.95
.18	.18	.18	.14	.08	.08	.09	.09	.10	.11	.13	.14	.15	.16	.18	.20	.22	.24	Div'd Decl'd per sh B	.29
.50	.39	.42	.60	.72	.84	.95	.74	.79	.53	.55	1.06	1.78	1.14	1.26	1.66	1.50	1.50	Cap'l Spending per sh	1.90
2.57	2.41	2.42	2.31	2.31	2.45	2.40	2.52	2.70	3.05	3.44	3.84	4.27	4.90	6.17	6.49	6.70	6.95	Book Value per sh D	8.75
11.48	11.60	11.80	11.97	12.13	11.74	12.45	12.65	12.83	13.12	13.99	14.17	14.35	16.17	20.36	22.33	23.00	23.00	Common Shs Outst'g C	24.00
14.2	NMF	14.5	35.8	22.3	14.6	16.5	16.9	17.2	19.6	17.0	19.8	24.8	21.2	NMF	35.5	Bold figures are		Avg Ann'l P/E Ratio	21.0
1.05	NMF	.88	2.11	1.46	.98	1.03	.97	.89	1.12	1.11	1.01	1.35	1.21	NMF	1.90	Value Line		Relative P/E Ratio	1.40
5.7%	5.5%	6.6%	4.7%	4.2%	4.7%	3.4%	2.7%	2.3%	1.8%	2.0%	1.7%	1.5%	1.7%	1.5%	1.6%	estimates		Avg Ann'l Div'd Yield	1.5%
						66.2	71.0	72.2	80.9	104.7	115.5	130.8	173.0	188.0	203.2	215	230	Revenues ($mill)	320
						1.9	2.6	3.4	4.2	5.4	6.2	6.0	7.2	4.5	7.3	9.0	11.0	Net Profit ($mill)	20.0
						41.8%	41.6%	39.5%	39.0%	37.0%	36.0%	34.9%	35.9%	36.1%	36.0%	36.0%	36.0%	Income Tax Rate	36.0%
						--	--	--	--	--	14.4%	3.2%	--	11.0%	9.5%	10.0%	10.0%	AFUDC % to Net Profit	8.5%
						50.2%	47.9%	48.7%	45.2%	48.8%	51.4%	56.7%	47.9%	47.9%	44.7%	44.5%	47.5%	Long-Term Debt Ratio	44.0%
						48.9%	51.3%	50.5%	54.1%	50.7%	48.2%	42.9%	51.8%	52.0%	55.1%	55.5%	52.5%	Common Equity Ratio	56.0%
						61.1	62.2	68.5	73.9	95.0	113.0	142.8	152.8	242.0	262.9	280	305	Total Capital ($mill)	375
						91.4	102.1	109.2	113.7	157.8	171.1	203.9	219.5	302.6	344.8	395	455	Net Plant ($mill)	695
						5.5%	6.8%	7.1%	7.6%	7.6%	7.6%	5.8%	6.2%	3.1%	4.1%	4.5%	5.0%	Return on Total Cap'l	6.5%
						6.3%	8.0%	9.5%	10.3%	11.1%	11.4%	9.7%	9.0%	3.6%	5.0%	6.0%	7.0%	Return on Shr. Equity	9.5%
						6.3%	8.1%	9.6%	10.4%	11.1%	11.4%	9.7%	9.1%	3.6%	5.0%	6.0%	7.0%	Return on Com Equity	9.5%
						2.9%	4.5%	6.0%	7.0%	7.8%	7.8%	6.3%	5.8%	.8%	2.1%	2.5%	3.0%	Retained to Com Eq	6.0%
						55%	45%	38%	33%	31%	32%	36%	36%	78%	58%	56%	55%	All Div'ds to Net Prof	35%

CAPITAL STRUCTURE as of 12/31/05
Total Debt $127.1 mill. Due in 5 Yrs $45.0 mill.
LT Debt $117.6 mill. LT Interest $7.0 mill.
(Total interest coverage: 2.4x) (45% of Cap'l)

Leases, Uncapitalized: Annual rentals $6.7 mill.
Pension Liability None

Pfd Stock $461,000 Pfd Div'd $24,000

Common Stock 22,325,961 shs.
as of 3/8/06
MARKET CAP: $350 million (Small Cap)

CURRENT POSITION ($MILL.)	2003	2004	12/31/05
Cash Assets	5.4	1.9	3.0
Receivables	19.8	23.9	26.5
Inventory (Avg Cst)	--	1.9	--
Other	10.2	17.6	18.2
Current Assets	35.4	45.3	47.7
Accts Payable	11.4	12.3	10.0
Debt Due	2.7	3.4	9.5
Other	17.3	20.0	21.1
Current Liab.	31.4	35.7	40.6

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '03-'05 to '09-'11
Revenues	8.5%	8.5%	5.5%
"Cash Flow"	7.0%	3.5%	10.5%
Earnings	13.5%	1.5%	18.0%
Dividends	6.0%	10.0%	8.0%
Book Value	9.5%	14.0%	7.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2003	36.1	41.5	51.4	44.0	173.0
2004	39.8	45.7	55.0	47.5	188.0
2005	45.2	51.3	54.7	52.0	203.2
2006	50.0	55.0	60.0	50.0	215
2007	54.0	60.0	63.0	53.0	230

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2003	d.01	.13	.21	.11	.44
2004	--	.13	.12	d.02	.23
2005	d.01	.15	.14	.06	.34
2006	.02	.16	.16	.08	.42
2007	.04	.18	.19	.10	.51

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2002	.038	.038	.038	.038	.15
2003	.042	.042	.042	.046	.17
2004	.046	.046	.046	.050	.19
2005	.048	.048	.048	.052	.20
2006	.052	.052			

BUSINESS: Southwest Water Company provides a broad range of services including water production, treatment and distribution; wastewater collection and treatment; utility billing and collection; utility infrastructure construction management; and public works services. It operates out of two groups, Utility (39% of 2005 revenues) and Services (61%). Utility owns and manages rate-regulated public water utilities in California, New Mexico, Oklahoma, and Texas. Services does mostly maintenance work on a contract basis. Off. & dir. own 8.2% of com. shs.; T. Rowe Price, 5.8% (4/06 proxy). Chrmn & CEO: Anton C. Garnier. Inc.: DE. Addr.: One Wilshire Building, 624 S. Grand Avenue, Ste. 2900, Los Angeles, CA 90017. Tel.: 213-929-1800. Internet: www.southwestwater.com.

Southwest Water Company is getting improvements from both of its operating segments. The Utility Group has been benefiting from favorable weather and customer growth in New Mexico and Texas. Moreover, the Services Group rebounded, swinging from a slight loss in 2004 to a $3.6 million profit in 2005. Consequently, we look for healthy 24% and 21% share-net gains in 2006 and 2007.

The Utility Group will likely generate 40% of Southwest's revenues and about two-thirds of its earnings in 2006. Changes on the regulatory front in California and a recent acquisition should fuel profit growth here in the years to come. California Governor Schwarzenegger nominated two candidates to fill vacant spots on the California Public Utilities Commission (CPUC) early last year. These nominees bring with them a more utilities-friendly approach towards regulatory matters than their predecessors. As a result, we expect Southwest will have an easier time winning new rate cases in the region. The first of such rate decisions, under the new CPUC, has already been filed. The company is seeking an 11% return on equity, as compared to its current allowed return on equity of 9.8%. The outcome of this decision will power earnings in 2006 and beyond. Meanwhile, the purchase of Monarch Utilities in mid-2004 is helping to increase customer growth in New Mexico and Texas. Continued top-line expansion should come from recently filed rate increases in Texas that will likely take effect within the next few months.

The Services Group is benefiting from a recent acquisition. Services rise to the black can be attributed to new contracts, increased project work, and the acquisition of an Alabama wastewater system. Margins in the Services Group have been, and will likely remain, thin in the coming years, but the wastewater addition will probably help improve the situation. The Alabama system isn't regulated by a state agency, and hence allows for some rate flexibility in the future.

These untimely shares have limited long-term appeal. Current valuations seem high, causing our projections to indicate an uninspiring total return over the coming 3 to 5 years.

Praneeth Satish *April 28, 2006*

(A) Diluted earnings. Excludes nonrecurring gains (losses): '00, (3¢); '01, (5¢); '02, 1¢; '05, (23¢). Next earnings report due early May.
(B) Dividends historically paid in late January, April, July, and October.
(C) In millions, adjusted for splits.
(D) Includes intangibles. In 2005: $35.9 million, $1.61/share.

Company's Financial Strength	B
Stock's Price Stability	80
Price Growth Persistence	90
Earnings Predictability	60

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Carolina Water Service, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Seven AUS Utility Reports Water	Proxy Group of Four Value Line (Standard Edition) Water Companies
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	6.2 %	6.2 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	0.5 (2)	0.5 (2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	6.7 %	6.7 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.0 (3)	0.0 (3)
5.	Adjusted Prospective Bond Yield	6.7	6.7
6.	Equity Risk Premium (4)	4.1	4.2
7.	Risk Premium Derived Common Equity Cost Rate	10.8 %	10.9 %

Notes:
(1) Derived in Note (3) on page 6 of this Schedule.
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.46%, rounded to 0.5% from page 4 of this Schedule.
(3) No adjustment necessary as the average Moody's bond rating of the proxy group is A2.
(4) From page 5 of this Schedule.

Carolina Water Service, Inc.
Comparison of Bond Ratings and Business Profile for
the Proxy Group of Seven AUS Utility Reports Water Companies and
the Proxy Group of Four Value Line (Standard Edition) Water Companies

	April 2006 Moody's Bond Rating		April 2006 Standard & Poor's Bond Rating				Standard & Poor's Business Position / Profile (2)
	Bond Rating	Numerical Weighting (1)	Bond Rating	Numerical Weighting (1)	Credit Rating	Numerical Weighting (1)	
Proxy Group of Seven AUS Utility Reports Water Companies							
American States Water Co. (3)	A2	6	A-	7	A-	7	3.0
Aqua America, Inc. (4)	NR	- -	AA-	4	A+	5	2.0
Artesian Resources Corp.	NR	- -	NR	- -	NR	- -	- -
California Water Service Group (5)	A2	6	NR	- -	A+	5	3.0
Middlesex Water Company	NR	- -	A	6	A-	7	3.0
Pennichuck Corp.	NR	- -	NR	- -	NR	- -	- -
York Water Company	NR	- -	A	6	A-	7	2.0
Average	A2	6.0	A	5.8	A	6.2	2.6
Proxy Group of Four Value Line (Standard Edition) Water							
American States Water Co. (3)	A2	6	A-	7	A-	7	3.0
Aqua America, Inc. (4)	NR	- -	AA-	4	A+	5	2.0
California Water Service Group (5)	A2	6	NR	- -	A+	5	3.0
Southwest Water Company	NR	- -	NR	- -	NR	- -	- -
Average	A2	6.0	A+ / A	5.5	A	5.7	2.7

Notes:
(1) From page 3 of this Schedule.
(2) From Standard & Poor's U.S. Utilities and Power Ranking List, May 19, 2006
(3) Ratings and business profile are those of Golden State Water Company
(4) Ratings and business profile are those of Aqua Pennsylvania, Inc.
(5) Ratings and business profile are those of California Water Service Company.

Source of Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Carolina Water Service, Inc.
Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-

Moody's
Comparison of Interest Rate Trends
for the Twelve Months Ending April 2006 (1)

Years	Corporate Bonds	Public Utility Bonds			Spread - Corporate v. Public Utility Bonds			Spread - Public Utility Bonds	
	Aaa Rated	Aa Rated	A Rated	Baa Rated	Aa (Pub. Util.) over Aaa (Corp.)	A (Pub. Util.) over Aaa (Corp.)	Baa (Pub. Util.) over Aaa (Corp.)	A over Aa	Baa over A
May-05	5.15 %	5.39 %	5.53 %	5.88 %					
June-05	4.96	5.05	5.40	5.70					
July-05	5.06	5.18	5.51	5.81					
August-05	5.09	5.23	5.50	5.80					
September-05	5.13	5.27	5.52	5.83					
October-05	5.34	5.50	5.79	6.08					
November-05	5.42	5.59	5.88	6.19					
December-05	5.38	5.55	5.80	6.14					
January-06	5.29	5.50	5.75	6.06					
February-06	5.35	5.55	5.82	6.11					
March-06	5.52	5.71	5.98	6.26					
April-06	5.84	6.02	6.29	6.54					
Average of Last 3 Months	5.57 %	5.76 %	6.03 %	6.30 %	0.19 %	0.46 %	0.73 %	0.27 %	0.27 %
Increase over the twelve months ended April 2006.	0.69 %	0.63 %	0.76 %	0.66 %					

Notes: (1) All yields are distributed yields.

Source of Information: Mergent Bond Record, May 2006, Vol. 73, No. 5

Carolina Water Service, Inc.
Judgment of Equity Risk Premium for
the Proxy Group of Seven AUS Utility Reports Water Companies and
the Proxy Group of Four Value Line (Standard Edition) Water Companies

Line No.		Proxy Group of Seven AUS Utility Reports Water Companies	Proxy Group of Four Value Line (Standard Edition) Water Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	3.9 %	4.1 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	4.2	4.2
3.	Average equity risk premium	4.1 %	4.2 %

Notes: (1) From page 6 of this Schedule.
(2) From page 8 of this Schedule.

Carolina Water Service, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
the Proxy Group of Seven AUS Utility Reports Water Companies and
the Proxy Group of Four Value Line (Standard Edition) Water Companies

Line No.		Proxy Group of Seven AUS Utility Reports Water	Proxy Group of Four Value Line (Standard Edition) Water Companies
1.	Arithmetic mean total return rate on the Standard & Poor's 500 Composite Index - 1926-2005 (1)	12.3 %	12.3 %
2.	Arithmetic mean yield on Aaa and Aa Corporate Bonds 1926-2005 (2)	(6.1)	(6.1)
3.	Historical Equity Risk Premium	6.2 %	6.2 %
4.	Forecasted 3-5 year Total Annual Market Return (3)	11.1 %	11.1 %
5.	Prospective Yield an Aaa Rated Corporate Bonds (4)	(6.2)	(6.2)
6.	Forecasted Equity Risk Premium	4.9 %	4.9 %
7	Average of Historical and Forecasted Equity Risk Premium (5)	5.6 %	5.6 %
8.	Adjusted Value Line Beta (6)	0.70	0.74
9.	Beta Adjusted Equity Risk Premium	3.9 %	4.1 %

Notes: (1) From Stocks, Bonds, Bills and Inflation - 2006 Yearbook Valuation Edition, Ibbotson Associates, Inc., Chicago, IL, 2006.

(2) From Moody's Industrial Manual and Mergent Bond Record Monthly Update

(3) From page 3 of Schedule PMA-11 of this Exhibit.

(4) Average forecast based upon six quarterly estimates of Aaa rated corporate bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated June 1, 2006 (see page 7 of this Schedule). The estimates are detailed below.

Second Quarter 2006	6.0 %
Third Quarter 2006	6.2
Fourth Quarter 2006	6.3
First Quarter 2007	6.3
Second Quarter 2007	6.3
Third Quarter 2007	6.2
Average	6.2 %

(5) Average of the Historical Equity Risk Premium of 6.2% from Line No. 3 and the Forecasted Equity Risk Premium of 4.9% from Line No. 6 ((6.2% + 4.9%) / 2 = 5.6%).

(5) From page 9 of this Schedule.

Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

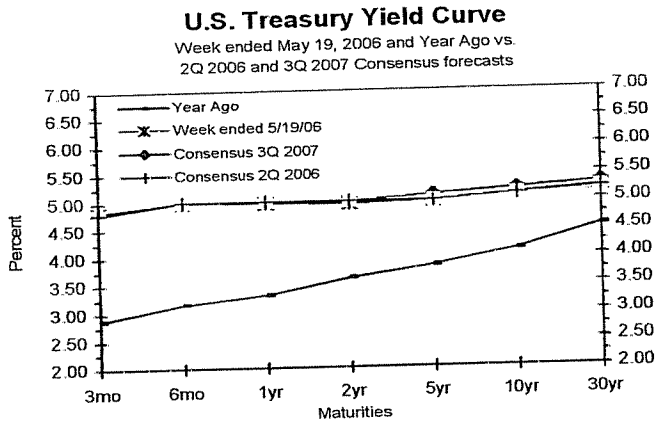
Interest Rates	History: Average For Week Ending May 19	May 12	May 5	Apr. 28	Average For Month Apr.	Mar.	Feb.	Latest Q 1Q 2006
Federal Funds Rate	5.00	4.84	4.83	4.74	4.79	4.59	4.49	4.46
Prime Rate	8.00	7.79	7.75	7.75	7.75	7.53	7.50	7.43
LIBOR, 3-mo.	5.21	5.19	5.16	5.12	5.07	4.92	4.76	4.75
Commercial Paper, 1-mo.	4.96	4.94	4.91	4.87	4.80	4.61	4.47	4.48
Treasury bill, 3-mo.	4.83	4.86	4.82	4.78	4.72	4.63	4.54	4.50
Treasury bill, 6-mo.	5.00	5.02	4.99	4.94	4.90	4.79	4.69	4.65
Treasury bill, 1 yr.	4.98	5.01	4.98	4.94	4.90	4.77	4.68	4.63
Treasury note, 2 yr.	4.96	4.99	4.94	4.92	4.89	4.73	4.67	4.60
Treasury note, 5 yr.	5.00	5.03	5.00	4.95	4.90	4.72	4.57	4.55
Treasury note, 10 yr.	5.11	5.14	5.14	5.07	4.99	4.72	4.57	4.57
Treasury note, 30 yr.	5.22	5.22	5.22	5.15	5.06	4.73	4.54	4.64
Corporate Aaa bond	5.96	5.97	5.99	5.93	5.84	5.53	5.35	5.39
Corporate Baa bond	6.76	6.74	6.75	6.73	6.68	6.41	6.27	6.31
State & Local bonds	4.58	4.63	4.63	4.59	4.58	4.44	4.41	4.41
Home mortgage rate	6.60	6.58	6.59	6.58	6.51	6.32	6.25	6.24

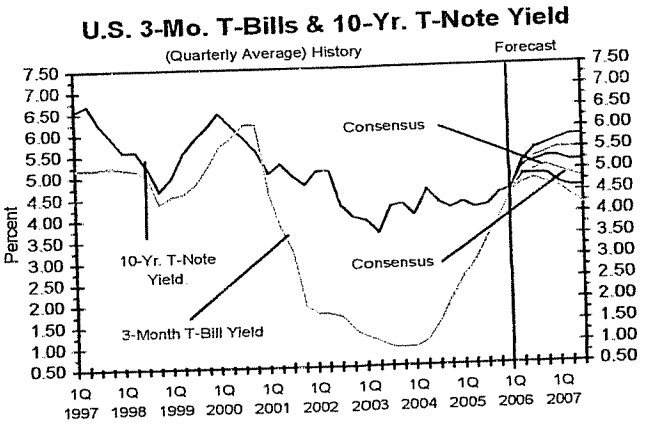
Key Assumptions	History: 2Q 2004	3Q 2004	4Q 2004	1Q 2005	2Q 2005	3Q 2005	4Q 2005	1Q 2006
Major Currency Index	88.0	86.5	81.9	81.3	83.5	84.7	85.8	84.9
Real GDP	3.5	4.0	3.3	3.8	3.3	4.1	1.7	5.3
GDP Price Index	3.9	1.5	2.7	3.1	2.6	3.3	3.5	3.3
Consumer Price Index	3.9	2.1	3.6	2.3	3.8	5.5	3.3	2.2

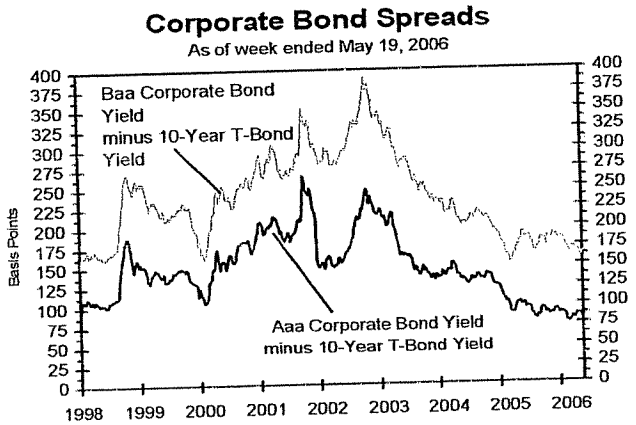
Consensus Forecasts-Quarterly Avg.	2Q 2006	3Q 2006	4Q 2006	1Q 2007	2Q 2007	3Q 2007
	4.9	5.1	5.2	5.2	5.0	4.9
	7.9	8.1	8.2	8.2	8.1	7.9
	5.1	5.3	5.4	5.3	5.2	5.1
	4.9	5.2	5.3	5.2	5.1	5.0
	4.8	5.0	5.1	5.0	4.9	4.8
	5.0	5.1	5.2	5.2	5.1	5.0
	5.0	5.2	5.2	5.2	5.1	5.0
	5.0	5.1	5.2	5.1	5.1	5.0
	5.0	5.2	5.2	5.2	5.1	5.1
	5.1	5.2	5.3	5.3	5.2	5.2
	5.2	5.3	5.4	5.4	5.4	5.3
	6.0	6.2	6.3	6.3	6.3	6.2
	6.9	7.1	7.2	7.2	7.2	7.1
	4.8	5.0	5.0	5.1	5.1	5.0
	6.6	6.8	6.8	6.8	6.8	6.8

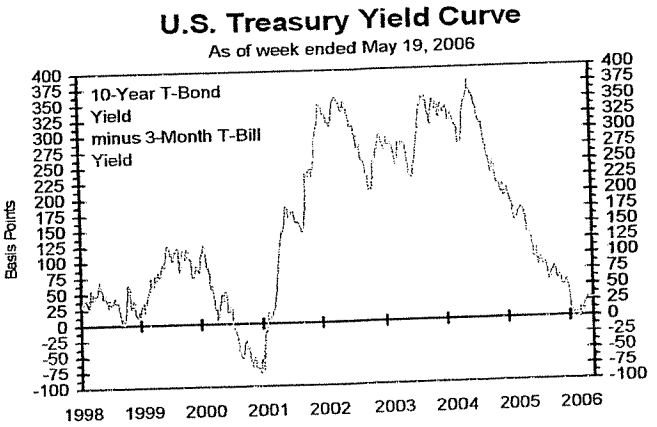
Consensus Forecasts-Quarterly Avg.	2Q 2006	3Q 2006	4Q 2006	1Q 2007	2Q 2007	3Q 2007
	82.4	81.8	81.1	80.4	79.8	79.7
	3.2	3.0	2.9	2.9	3.0	3.0
	2.8	2.4	2.3	2.4	2.3	2.2
	3.7	2.5	2.4	2.5	2.4	2.4

[1]Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Definitions reported here are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and4.64 GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).









Carolina Water Service, Inc.
Derivation of Mean Equity Risk Premium Based on a Study
Using Holding Period Returns of Public Utilities

Line No.		Over A Rated Public Utility Bonds AUS Consultants - Utility Services Study (1)
		1
Time Period		1928-2003 (3)
1.	Arithmetic Mean Holding Period Returns (2): Standard & Poor's Public Utility Index	10.8 %
2.	Arithmetic Mean Yield on: A Rated Public Utility Bonds	(6.6)
3.	Equity Risk Premium	4.2 %

Notes: (1) S&P Public Utility Index and Moody's Public Utility Bond Average Annual Yields 1928-2003, (US Consultants - Utility Services, 2004).

(2) Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

(3) Latest available at time of preparation.

Carolina Water Service, Inc.
Value Line Adjusted Betas for
the Proxy Group of Seven AUS Utility Reports Water Companies and
the Proxy Group of Four Value Line (Standard Edition) Water Companies

	Value Line Adjusted Beta
Proxy Group of Seven AUS Utility Reports Water Companies	
American States Water Co.	0.70
Aqua America, Inc.	0.80
Artesian Resources, Corp.	NA
California Water Service Group	0.75
Middlesex Water Company	0.75
Pennichuck Corp.	NA
York Water Company	0.50
Average	0.70
Proxy Group of Four Value Line (Standard Edition) Water Companies	
American States Water Co.	0.70
Aqua America, Inc.	0.80
California Water Service Group	0.75
Southwest Water Company	0.70
Average	0.74

NA = Not Available

Source of Information: Value Line Investment Survey, April 28, 2006
Standard Edition and Small and Mid-Cap Edition

Carolina Water Service, Inc.
of the Capital Asset Pricing Model for
the Proxy Group of Seven AUS Utility Reports Water Companies and the
Proxy Group of Four Value Line (Standard Edition) Water Companies

Line No.		Proxy Group of Seven AUS Utility Reports Water Companies	Proxy Group of Four Value Line (Standard Edition) Water Companies
1.	Traditional Capital Asset Pricing Model (1)	10.2 %	10.1 %
2.	Empirical Capital Asset Pricing Model (1)	10.3 %	10.5 %
3.	Conclusion	10.3 %	10.3 %

Notes: (1) From page 2 of this Exhbiit.

Carolina Water Service, Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model

	1 Value Line Adjusted Beta	2 Company-Specific Risk Premium Based on Market Premium of 6.5% (1)	3 CAPM Result Including Risk-Free Rate of 5.3% (2)
Traditional Capital Asset Pricing Model (3)			
Proxy Group of Seven AUS Utility Reports Water Companies			
American States Water Co.	0.70	4.6 %	9.9 %
Aqua America, Inc.	0.80	5.2	10.5
Artesian Resources Corp.	NA	NA	NA
California Water Service Group	0.75	4.9	10.2
Middlesex Water Company	0.75	4.9	10.2
Pennichuck Corp.	NA	NA	NA
York Water Company	0.50	3.3	8.6
Average	0.70	4.6 %	10.2 % (4)
Proxy Group of Four Value Line (Standard Edition) Water Companies			
American States Water Co.	0.70	4.6 %	9.9 %
Aqua America, Inc.	0.80	5.2	10.5
California Water Service Group	0.75	4.9	10.2
Southwest Water Company	0.70	4.6	9.9
Average	0.74	4.8 %	10.1 % (4)
Empirical Capital Asset Pricing Model (5)			
Proxy Group of Seven AUS Utility Reports Water Companies			
American States Water Co.	0.70	5.0 %	10.3 %
Aqua America, Inc.	0.80	5.5	10.8
Artesian Resources Corp.	NA	NA	NA
California Water Service Group	0.75	5.3	10.6
Middlesex Water Company	0.75	5.3	10.6
Pennichuck Corp.	NA	NA	NA
York Water Company	0.50	4.1	9.4
Average	0.70	5.0 %	10.3 % (4)
Proxy Group of Four Value Line (Standard Edition) Water Companies			
American States Water Co.	0.70	5.0 %	10.3 %
Aqua America, Inc.	0.80	5.5	10.8
California Water Service Group	0.75	5.3	10.6
Southwest Water Company	0.70	5.0	10.3
	0.74	5.2 %	10.5 % (4)

See page 3 for notes.

Carolina Water Service, Inc.
Development of the Market-Required Rate of Return on Common Equity Using
the Capital Asset Pricing Model for
the Proxy Group of Seven AUS Utility Reports Water Companies and the
Proxy Group of Four Value Line (Standard Edition) Water Companies
Adjusted to Reflect a Forecasted Risk-Free Rate and Market Return

Notes:

(1) From the three previous month-end (Mar. '06 – May '06), as well as a recently available (May 26, 2006), Value Line Summary & Index, a forecasted 3-5 year total annual market return of 11.1% can be derived by averaging the 3-month and spot forecasted total 3-5 year total appreciation, converting it into an annual market appreciation and adding the Value Line average forecasted annual dividend yield.

The 3-5 year average total market appreciation of 44% produces a four-year average annual return of 9.54% ($(1.42^{25}) - 1$). When the average annual forecasted dividend yield of 1.59% is added, a total average market return of 11.13% (1.59% + 9.54%), rounded to 11.1%, is derived.

The 3-month and spot forecasted total market return of 11.1% minus the risk-free rate of 5.3% (developed in Note 2) is 5.8% (11.1 - 5.3%). The Ibbotson Associates calculated market premium of 7.1% for the period 1926-2005 results from a total market return of 12.3% less the average income return on long-term U.S. Government Securities of 5.2% (12.3% - 5.2% = 7.1%). This is then averaged with the 5.8% Value Line market premium resulting in a 6.45%, rounded to 6.5%, market premium. The 6.5% market premium is then multiplied by the beta in column 1 of page 2 of this Schedule.

(2) Average forecast based upon six quarterly estimates of 30-year Treasury Note yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated June 1, 2006 (see page 7 of Schedule PMA-10 of this Exhibit). The estimates are detailed below:

	30-Year Treasury Note Yield
Second Quarter 2006	5.2%
Third Quarter 2006	5.3
Fourth Quarter 2006	5.4
First Quarter 2007	5.4
Second Quarter 2007	5.4
Third Quarter 2007	5.3
Average	5.3%

(3) The traditional Capital Asset Pricing Model (CAPM) is applied using the following formula:

$R_S = R_F + \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

(4) Includes only those indicated common equity cost rates which are above 8.7%, i.e., 200 basis points above the prospective yield of 6.7% on A rated Moody's public utility bonds (page 1 of Schedule PMA-10 of this Exhibit).

(5) The empirical CAPM is applied using the following formula:

$R_S = R_F + .25 (R_M - R_F) + .75 \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk-Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

Source of Information: Value Line Summary & Index
Blue Chip Financial Forecasts, June 1, 2006
Value Line Investment Survey, April 28, 2006, Standard Edition and Small and Mid-Cap Edition
Stocks, Bonds, Bills and Inflation – Valuation Edition 2006 Yearbook,
Ibbotson Associates, Inc., Chicago, IL

Carolina Water Service, Inc.
Comparable Earnings Analysis
for a Proxy Group of Eighty-Six Non-Utility Companies Comparable to the
Proxy Group of Seven AUS Utility Reports Water Companies (1)

Proxy Group of Eighty-Six Non-Utility Companies Comparable to the Proxy Group of Seven AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2001	2002	2003	2004	2005	5-year Average (2) Percent	5-year Average (2) Student's T-Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's T-Statistic
21st Century Ins. Group	0.85	0.75	3.5231	0.1000	3.7 %	7.4 %	8.5 %	9.8 %	10.8 % E	8.0 %	(0.84)	9.5 %	(1.12)
ABM Industries Inc.	0.80	0.68	3.3957	0.0964	12.5	12.1	8.2	9.5	10.2	10.5	(0.65)	13.5	(0.43)
Abbott Labs.	0.85	0.72	3.1868	0.0905	32.5	30.4	26.6	24.6	27.1	28.2	0.72	23.0	1.21
Allergan Inc.	0.90	0.80	3.5067	0.0996	27.1	24.5	42.4	33.2	28.9	31.2	0.95	16.0	-
Alliant Techsystems	0.75	0.62	3.7629	0.1069	15.5	27.0	28.8	22.4	20.5 E	22.8	0.30	15.0	(0.17)
Allied Capital Corp.	0.85	0.75	3.4656	0.0984	14.8	14.7	10.0	12.6	33.3	17.1	(0.14)	21.5	0.95
Altria Group	0.85	0.70	3.3508	0.0952	43.6	48.3	36.7	30.7	29.9	37.8 (4)	1.47	26.5	1.81
AmerisourceBergen	0.75	0.60	3.7290	0.1143	4.9	10.8	11.2	10.8	8.3	9.2	(0.75)	9.5	(1.12)
Annaly Mortgage Mgmt.	0.80	0.65	3.6208	0.1028	13.8	20.3	15.7	14.6	4.9	13.9	(0.39)	16.5	0.09
Archer Daniels Midl'd	0.75	0.56	3.1908	0.0906	6.1	6.8	6.2	9.7	10.9	7.9	(0.85)	12.5	(0.60)
Arrow Int'l	0.65	0.42	3.1862	0.0905	14.3	13.1	13.3	12.5	8.3	12.3	(0.51)	11.0	(0.86)
Ball Corp.	0.85	0.76	3.2283	0.0917	21.0	32.3	29.4	27.7	34.4	29.0	0.78	23.0	1.21
Barnes Group	0.85	0.71	3.4484	0.0979	9.6	13.0	10.3	10.8	13.5	11.4	(0.58)	13.5	(0.43)
Biomet	0.75	0.61	3.5658	0.1013	17.2	20.4	22.3	22.5	24.8	21.4	0.19	22.5	1.12
Blyth Inc.	0.80	0.66	3.4440	0.0978	16.5	16.9	17.0	19.0	10.5 E	16.0	(0.22)	12.5	(0.60)
Bob Evans Farms	0.85	0.70	3.4054	0.0967	12.5	13.4	11.4	5.7	6.5 E	9.9	(0.70)	10.5	(0.95)
Brinker Int'l	0.85	0.71	3.8433	0.1091	16.1	17.0	16.1	20.7	18.0	17.6	(0.10)	18.5	0.43
Brown & Brown	0.85	0.73	3.7677	0.1070	30.8	21.2	22.2	20.6	19.7	22.9	0.31	16.5	0.09
Buckle (The)Inc.	0.85	0.76	3.8019	0.1080	14.1	12.1	11.3	13.0	17.3	13.6	(0.41)	9.5	(1.12)
Casey's Gen'l Stores	0.85	0.71	3.4351	0.0975	8.6	9.8	8.3	9.1	11.5 E	9.5	(0.73)	12.0	(0.69)
Church & Dwight	0.55	0.29	3.3497	0.0951	19.1	19.4	17.9	15.9	17.6	18.0	(0.07)	13.5	(0.43)
Coca-Cola Bottling	0.65	0.44	3.2207	0.0915	38.5	69.0	58.5	33.9	30.5	46.1 (4)	2.11	36.0 (4)	3.45
Corn Products Int'l	0.80	0.64	3.2773	0.0931	6.7	7.6	8.3	8.7	7.4	7.7	(0.87)	10.5	(0.95)
Costco Wholesale	0.90	0.78	3.5492	0.1008	12.3	12.3	11.0	11.6	11.1	11.7	(0.56)	11.0	(0.86)
Curtiss-Wright	0.70	0.52	3.4567	0.0982	11.6	10.1	10.9	11.3	11.8	11.1	(0.60)	12.0	(0.69)
DaVita Inc.	0.80	0.66	3.7395	0.1062	19.5	210.3	53.2	41.5	25.5 E	70.0 (4)	3.96	19.0	0.52
Del Monte Foods	0.65	0.46	3.5397	0.1005	200.8	14.1	16.6	12.6	12.5 E	51.3 (4)	2.51	11.0	(0.86)
Dionex Corp.	0.85	0.77	3.3471	0.0950	24.5	21.0	19.7	22.6	24.9	22.5	0.28	24.8	1.52
Edwards Lifesciences	0.75	0.55	3.4088	0.0968	13.7	15.4	15.2	16.6	18.1	15.8	(0.24)	16.0	-
Energizer Holdings	0.75	0.56	3.6033	0.1023	13.2	26.4	21.0	45.5	63.2	33.9	1.16	22.5	1.12
Fisher Scientific	0.85	0.72	3.7910	0.1077	235.6	72.4	24.9	6.9	10.6 E	70.1 (4)	3.97	11.0	(0.86)
Gallagher (Arthur J.)	0.90	0.77	3.3440	0.0950	33.7	26.5	26.7	24.8	22.4	26.8	0.61	22.0	1.03
Gen'l Dynamics	0.80	0.69	3.1049	0.0882	20.8	20.2	16.8	16.8	19.9	18.9	-	14.5	(0.26)
HCA Inc.	0.60	0.36	3.8324	0.1088	21.9	21.9	21.5	28.3	29.3 E	24.6	0.44	19.0	0.52
Hancock Holding	0.80	0.64	3.0464	0.0865	9.7	12.0	12.6	12.5	15.7	12.5	(0.50)	15.0	(0.17)
Harland (John H.)	0.75	0.55	3.5941	0.1021	19.3	22.4	21.9	20.1	23.7	21.5	0.20	17.5	0.26
Health Mgmt. Assoc.	0.70	0.54	3.6704	0.1042	15.6	18.3	17.3	16.4	15.4	16.6	(0.18)	14.5	(0.26)
Int'l Speedway 'A'	0.80	0.64	3.1350	0.0890	8.5	17.1	15.0	14.7	15.3	14.1	(0.37)	11.0	(0.86)
Interactive Data	0.90	0.79	3.2189	0.0914	0.7	9.2	9.5	9.4	11.0	8.0	(0.84)	10.5	(0.95)
Invacare Corp.	0.85	0.70	3.2402	0.0920	15.8	13.5	11.6	10.0	7.2	11.6	(0.57)	11.5	(0.78)
Kellwood Co.	0.90	0.80	3.6013	0.1023	7.8	9.2	11.3	9.7	7.5	9.1	(0.76)	9.5	(1.12)
Kimball Int'l 'B'	0.80	0.69	3.8100	0.1082	8.2	5.8	1.3	5.0	4.5	5.0	(1.08)	10.5	(0.95)
Lance Inc.	0.75	0.58	3.7230	0.1057	13.4	11.0	13.1	12.5	11.4	12.3	(0.51)	17.0	0.17
Lauder (Estee)	0.90	0.81	3.3464	0.0950	20.3	15.8	18.7	21.7	25.6	20.4	0.12	35.0 (4)	3.28
Lawson Products	0.75	0.55	3.8212	0.1085	8.7	7.7	9.7	11.9	11.6 E	9.9	(0.70)	13.0	(0.52)
Lilly (Eli)	0.85	0.73	3.0962	0.0879	42.4	32.7	28.6	28.1	29.1	32.2	1.03	27.5 (4)	1.98
Lincoln Elec Hldgs.	0.85	0.73	3.3496	0.0951	16.8	17.2	11.7	14.8	17.4	15.6	(0.26)	15.5	(0.09)
Lockheed Martin	0.70	0.53	3.0337	0.0861	10.8	18.0	15.6	18.0	21.8	16.8	(0.16)	19.0	0.52
MacDermid Inc.	0.85	0.76	3.5851	0.1018	9.1	17.0	20.3	17.5	15.1	15.8	(0.24)	16.5	0.09
Mattel Inc.	0.70	0.53	3.4555	0.0981	20.5	24.6	24.9	21.3	23.1	22.9	0.31	22.0	1.03
Matthews Int'l	0.75	0.56	3.4272	0.0973	21.0	21.1	17.5	18.0	17.9	19.1	0.02	14.5	(0.26)
Medtronic Inc.	0.80	0.63	3.0829	0.0875	23.0	21.8	22.0	21.7	22.0 E	22.1	0.25	20.5	0.78
NIKE Inc. 'B'	0.85	0.77	3.2980	0.0937	16.9	17.4	16.5	19.8	21.5	18.8	(0.01)	15.0	(0.17)
Newell Rubbermaid	0.90	0.81	3.4928	0.0992	13.1	20.5	20.2	21.6	25.8	20.2	0.10	21.5	0.95
Northrop Grumman	0.70	0.53	3.0576	0.0868	5.5	4.8	4.8	6.4	7.4	5.8	(1.02)	12.0	(0.69)
Owens & Minor	0.80	0.68	3.4624	0.0983	15.8	18.1	13.1	13.1	13.0	14.6	(0.33)	14.0	(0.34)
Pacific Cap. Bancorp	0.85	0.74	3.2025	0.0909	17.2	20.2	19.0	19.1	15.5	18.2	(0.05)	8.0	(1.38)
Pactiv Corp.	0.90	0.79	3.2092	0.0911	9.8	24.5	21.7	19.7	17.7	18.7	(0.02)	17.0	0.17
Papa John's Int'l	0.75	0.62	3.2151	0.0913	24.2	38.4	23.0	28.0	28.6	28.4	0.74	16.0	-
People's Bank	0.80	0.67	2.9669	0.0842	2.6	5.9	6.4	7.8	9.7	6.5	(0.96)	13.0	(0.52)
Pepsi Bottling Group	0.75	0.57	3.8480	0.1093	17.5	23.5	22.4	23.4	22.8	21.9	0.23	23.5	1.29
PepsiAmericas Inc.	0.75	0.62	2.9806	0.0846	6.3	9.4	9.8	10.8	12.0	9.7	(0.71)	10.5	(0.95)
RLI Corp.	0.70	0.54	3.0123	0.0855	9.0	8.4	10.6	10.3	13.5 E	10.4	(0.66)	12.5	(0.60)
Raicorp Holdings	0.55	0.26	3.3820	0.0960	9.9	12.3	13.0	15.0	13.8	12.8	(0.47)	12.5	(0.60)
Regis Corp.	0.90	0.81	3.4472	0.0979	15.6	15.8	15.4	15.3	13.6	15.1	(0.29)	14.5	(0.26)
Ruddick Corp.	0.80	0.69	3.0460	0.0865	10.8	12.3	12.1	11.8	11.3	11.7	(0.56)	12.0	(0.69)

Exhibit No. ____
Schedule PMA-12
Page 1 of 6

Carolina Water Service, Inc.
Comparable Earnings Analysis
for a Proxy Group of Eighty-Six Non-Utility Companies Comparable to the
Proxy Group of Seven AUS Utility Reports Water Companies (1)

Proxy Group of Eighty-Six Non-Utility Companies Comparable to the Proxy Group of Seven AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2001	2002	2003	2004	2005		5-year Average (2) Percent	Student's T-Statistic	5-Year Projected (3) Percent	Student's T-Statistic
Selective Ins. Group	0.85	0.76	3.1344	0.0890	4.5	6.1	7.7	12.8	15.0		9.2	(0.75)	15.0	(0.17)
Sensient Techn.	0.85	0.70	3.3617	0.0955	15.1	16.2	13.4	11.5	9.1		13.1	(0.45)	9.5	(1.12)
ServiceMaster Co.	0.80	0.69	3.0081	0.0854	9.4	14.0	19.4	17.4	17.1		15.5	(0.26)	19.5	0.60
Smucker (J.M.)	0.70	0.50	3.0276	0.0860	12.2	9.3	10.0	8.9	8.5	E	9.8	(0.71)	10.0	(1.03)
Sonic Corp.	0.70	0.53	3.6416	0.1034	19.4	20.7	19.7	18.8	19.8		19.6	0.05	15.0	(0.17)
Speedway Motorsports	0.75	0.61	3.7060	0.1052	12.9	12.5	12.4	12.7	14.1		12.9	(0.47)	11.5	(0.78)
St. Jude Medical	0.90	0.79	3.8290	0.1087	17.2	17.5	21.2	17.6	14.0	E	17.5	(0.11)	14.5	(0.26)
Standex Int'l	0.90	0.81	3.3976	0.0965	14.5	11.4	11.1	13.5	14.4		13.0	(0.46)	14.5	(0.26)
Stryker Corp.	0.80	0.64	3.1848	0.0904	25.7	23.8	21.0	21.3	22.1		22.8	0.30	27.0	1.90
Tennant Co.	0.90	0.78	3.1424	0.0892	3.1	8.0	8.5	8.5	11.9		8.0	(0.84)	12.5	(0.60)
Thornburg Mtg.	0.75	0.60	3.2295	0.0917	11.0	14.4	14.2	13.0	12.8		13.1	(0.45)	12.0	(0.69)
Topps Co.	0.85	0.71	3.6904	0.1048	14.7	8.6	6.0	5.9	2.6		7.6	(0.88)	10.5	(0.95)
UnitedHealth Group	0.65	0.42	3.3475	0.0951	23.5	30.5	35.6	24.1	8.6		24.5	0.43	31.0 (4)	2.59
Varian Medical Sys.	0.85	0.72	3.8171	0.1084	17.2	19.8	23.2	27.3	31.3		23.8	0.38	23.5	1.29
Wabtec Corp.	0.80	0.67	3.3741	0.0958	9.1	8.8	9.0	10.3	15.2		10.5	(0.65)	16.0	-
Walgreen Co.	0.80	0.65	2.9638	0.0842	16.7	16.3	18.1	16.5	17.5		16.6	(0.18)	18.0	0.34
Waste Connections	0.90	0.77	3.6082	0.1025	10.3	12.8	12.2	10.9	12.2		11.7	(0.56)	15.5	(0.09)
Wendy's Int'l	0.75	0.55	3.4248	0.0973	18.8	15.1	13.4	13.6	12.0		14.8	(0.33)	12.0	(0.69)
West Pharmac. Svcs.	0.75	0.60	3.7306	0.1059	11.8	8.4	10.6	13.6	13.0	E	11.1	(0.60)	14.0	(0.34)
Zimmer Holdings	0.75	0.61	3.6768	0.1127	242.4	70.4	9.3	15.2	16.5		70.8 (4)	4.02	14.5	(0.26)
Average for the Non-Utility Group	0.79	0.65	3.4137	0.0971										
Average for the Proxy Group of Seven AUS Utility Reports Water Companies	0.70	0.52	3.4130 (5)	0.0969							16.2%		15.2%	
Mean												15.7% (6)		
Conclusion (6)											13.8%		13.6%	
Conservative Mean (7)												13.7% (8)		
Conservative Conclusion (8)														

See pages 5 and 6 for notes.

Exhibit No. ___
Schedule PMA-12
Page 2 of 6

Carolina Water Service, Inc.
Comparable Earnings Analysis
for a Proxy Group of Ninety-Four Non-Utility Companies Comparable to the
Proxy Group of Four Value Line (Standard Edition) Water Companies (9)

Proxy Group of Ninety-Four Non-Utility Companies Comparable to the Proxy Group of Four Value Line (Standard Edition) Water Companies (9)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2001	2002	2003	2004	2005	5-year Average (2) Percent	5-year Average (2) Student's T-Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's T-Statistic
21st Century Ins. Group	0.85	0.75	3.5231	0.1000	3.7 %	7.4 %	8.5 %	9.8 %	10.8 % E	8.0 %	(1.03)	9.5 %	(1.16)
ABM Industries Inc.	0.80	0.68	3.3957	0.0964	12.5	12.1	8.2	9.5	10.2	10.5	(0.77)	13.5	(0.52)
Abbott Labs.	0.85	0.72	3.1868	0.0905	32.5	30.4	26.6	24.6	27.1	28.2	1.07	23.0	0.98
Aflac Inc.	0.90	0.82	3.0905	0.0878	12.7	12.9	14.8	15.7	16.3	14.5	(0.35)	17.0	0.03
Alexander & Baldwin	0.95	0.86	2.8403	0.0807	9.5	8.0	10.0	11.2	11.7	10.1	(0.81)	12.5	(0.68)
Allergan Inc.	0.90	0.80	3.5067	0.0996	27.1	24.5	42.4	33.2	28.9	31.2	1.39	16.0	(0.13)
Allied Capital Corp.	0.85	0.75	3.4656	0.0984	14.8	14.7	10.0	12.6	33.3	17.1	(0.08)	21.5	0.75
Altria Group	0.85	0.70	3.3508	0.0952	43.6	48.3	36.7	30.7	29.9	37.8 (4)	2.07	26.5	1.54
Annaly Mortgage Mgmt.	0.80	0.65	3.6208	0.1028	13.8	20.3	15.7	14.6	4.9	13.9	(0.42)	16.5	(0.05)
Archer Daniels Midl'd	0.75	0.56	3.1908	0.0906	6.1	6.8	6.2	9.7	10.9	7.9	(1.04)	12.5	(0.68)
Arrow Int'l	0.65	0.42	3.1862	0.0905	14.3	13.1	13.3	12.5	8.3	12.3	(0.58)	11.0	(0.92)
Ball Corp.	0.85	0.76	3.2283	0.0917	21.0	32.3	29.4	27.7	34.4	29.0	1.16	23.0	0.98
Bard (C.R.)	0.75	0.59	2.9825	0.0841	18.2	20.1	19.5	19.3	21.5	19.7	0.19	21.5	0.75
Barnes Group	0.85	0.71	3.4484	0.0979	9.6	13.0	10.3	10.8	13.5	11.4	(0.68)	13.5	(0.52)
Becton Dickinson	0.80	0.62	2.8442	0.0808	18.8	19.3	19.6	22.0	22.9	20.5	0.27	19.5	0.43
Biomet	0.75	0.61	3.5658	0.1013	17.2	20.4	22.3	22.5	24.8	21.4	0.36	22.5	0.90
Blyth Inc.	0.80	0.66	3.4440	0.0978	16.5	16.9	17.0	19.0	10.5 E	16.0	(0.20)	12.5	(0.68)
Bob Evans Farms	0.85	0.70	3.4054	0.0967	12.5	13.4	11.4	5.7	6.5 E	9.9	(0.83)	10.5	(1.00)
CLARCOR Inc.	0.95	0.85	2.8944	0.0822	15.3	14.8	14.7	14.9	15.8	15.1	(0.29)	13.0	(0.60)
Casey's Gen'l Stores	0.85	0.71	3.4351	0.0975	8.6	9.8	8.3	9.1	11.5 E	9.5	(0.88)	12.0	(0.76)
ChoicePoint Inc.	0.95	0.86	3.4836	0.0989	16.3	19.1	16.1	15.0	15.9	16.5	(0.15)	13.5	(0.52)
Coca-Cola Bottling	0.65	0.44	3.2207	0.0915	38.5	69.0	56.5	33.9	30.5	46.1 (4)	2.94	36.0 (4)	3.05
Corn Products Int'l	0.80	0.64	3.2773	0.0931	6.7	7.6	8.3	8.7	7.4	7.7	(1.06)	10.5	(1.00)
Costco Wholesale	0.90	0.78	3.5492	0.1008	12.3	12.3	11.0	11.6	11.1	11.7	(0.65)	11.0	(0.92)
Cullen/Frost Bankers	0.90	0.77	2.8993	0.0823	13.1	17.4	16.9	17.2	16.8	16.3	(0.17)	20.0	0.51
Curtiss-Wright	0.70	0.52	3.4567	0.0982	11.6	10.1	10.9	11.3	11.8	11.1	(0.71)	12.0	(0.76)
Del Monte Foods	0.65	0.46	3.5397	0.1005	200.8	14.1	16.6	12.6	12.5 E	51.3 (4)	3.48	11.0	(0.92)
Dentsply Int'l	0.70	0.50	2.8366	0.0805	18.0	17.5	15.4	13.6	17.4	16.4	(0.16)	14.0	(0.44)
Dionex Corp.	0.85	0.77	3.3471	0.0950	24.5	21.0	19.7	22.6	24.9	22.5	0.48	24.8	1.27
Donaldson Co.	0.95	0.85	2.9817	0.0847	23.7	22.7	21.3	19.4	21.1	21.6	0.39	16.5	(0.05)
Edwards Lifesciences	0.75	0.55	3.4088	0.0968	13.7	15.4	15.2	16.6	18.1	15.8	(0.22)	16.0	(0.13)
Energizer Holdings	0.75	0.56	3.6033	0.1023	13.2	26.4	21.0	45.5	63.2	33.9	1.67	22.5	0.90
Fannie Mae	0.85	0.73	2.9445	0.0836	29.0	38.6	31.7	26.0 E	21.5 E	29.4	1.20	11.5	(0.84)
Gallagher (Arthur J.)	0.90	0.77	3.3440	0.0950	33.7	26.5	26.7	24.8	22.4	26.8	0.93	22.0	0.83
Gen'l Dynamics	0.80	0.69	3.1049	0.0882	20.8	20.2	16.8	16.8	19.9	18.9	0.10	14.5	(0.37)
Golden West Fin'l	0.90	0.77	2.9482	0.0837	11.6	16.1	18.8	18.8	14.4	15.9	(0.21)	13.0	(0.60)
Graco Inc.	0.90	0.84	2.9370	0.0834	37.6	30.8	51.1	47.1	43.7	42.1 (4)	2.52	34.0 (4)	2.73
HCC Insurance Hldgs.	0.95	0.86	2.8467	0.0808	7.7	12.6	13.7	11.8	11.0 E	11.4	(0.68)	12.0	(0.76)
HNI Corp.	0.80	0.69	2.8273	0.0803	15.2	14.1	13.8	17.1	23.6	16.8	(0.11)	18.0	0.19
Hancock Holding	0.80	0.64	3.0464	0.0865	9.7	12.0	12.6	12.5	15.7	12.5	(0.56)	15.0	(0.29)
Harland (John H.)	0.75	0.55	3.5941	0.1021	19.3	22.4	21.9	20.1	23.7	21.5	0.38	17.5	0.11
Health Mgmt. Assoc.	0.70	0.54	3.6704	0.1042	15.6	18.3	17.3	16.4	15.4	16.6	(0.14)	14.5	(0.37)
Hillenbrand Inds.	0.75	0.57	2.8672	0.0814	17.7	19.8	21.1	17.5	18.8	19.0	0.11	18.0	0.19
Hospitality Properties	0.90	0.83	2.8265	0.0803	8.2	8.7	7.0	7.5	7.0	7.7	(1.06)	8.5	(1.32)
IHOP Corp.	0.95	0.85	3.5735	0.1015	12.9	11.2	11.1	12.0	15.0 E	12.4	(0.57)	11.5	(0.84)
Int'l Speedway 'A'	0.80	0.64	3.1350	0.0890	8.5	17.1	15.0	14.7	15.3	14.1	(0.40)	11.0	(0.92)
Interactive Data	0.90	0.79	3.2189	0.0914	0.7	9.2	9.5	9.4	11.0	8.0	(1.03)	10.5	(1.00)
Invacare Corp.	0.85	0.70	3.2402	0.0920	15.8	13.5	11.6	10.0	7.2	11.6	(0.66)	11.5	(0.84)
Kellwood Co.	0.90	0.80	3.6013	0.1023	7.8	9.2	11.3	9.7	7.5	9.1	(0.92)	9.5	(1.16)
Lancaster Colony	0.80	0.63	2.8709	0.0815	19.6	16.6	16.1	13.4	13.0	15.7	(0.23)	14.0	(0.44)
Lauder (Estee)	0.90	0.81	3.3464	0.0950	20.3	15.8	18.7	21.7	25.6	20.4	0.26	35.0 (4)	2.89
Lilly (Eli)	0.85	0.73	3.0962	0.0879	42.4	32.7	28.6	28.1	29.1	32.2	1.49	27.5	1.70
Lincoln Elec Hldgs.	0.85	0.73	3.3496	0.0951	16.8	17.2	11.7	14.8	17.4	15.6	(0.24)	15.5	(0.21)
Liz Claiborne	0.90	0.84	2.8650	0.0814	19.1	18.5	17.7	17.3	15.9	17.7	(0.02)	13.0	(0.60)
Lockheed Martin	0.70	0.53	3.0337	0.0861	10.8	18.0	15.6	18.0	21.8	16.8	(0.11)	19.0	0.35
MacDermid Inc.	0.85	0.76	3.5851	0.1018	9.1	17.0	20.3	17.5	15.1	15.8	(0.22)	16.5	(0.05)
Mattel Inc.	0.70	0.53	3.4555	0.0981	20.5	24.6	24.9	21.3	23.1	22.9	0.52	22.0	0.83
Matthews Int'l	0.75	0.56	3.4272	0.0973	21.0	21.1	17.5	18.0	17.9	19.1	0.13	14.5	(0.37)
Medtronic Inc.	0.80	0.63	3.0829	0.0875	23.0	21.8	22.0	21.7	22.0 E	22.1	0.44	20.5	0.59
NIKE Inc. 'B'	0.85	0.77	3.2980	0.0937	16.9	17.4	18.5	19.8	21.5	18.8	0.09	15.0	(0.29)
Newell Rubbermaid	0.90	0.81	3.4928	0.0992	13.1	20.5	20.2	21.6	25.8	20.2	0.24	21.5	0.75
Northrop Grumman	0.70	0.53	3.0576	0.0868	5.5	4.8	4.8	6.4	7.4	5.8	(1.26)	12.0	(0.76)
OSI Restaurant Partners	0.90	0.84	2.9857	0.0848	15.0	15.6	16.9	14.5	14.0 E	15.2	(0.28)	16.5	(0.05)
Occidental Petroleum	0.90	0.83	2.9420	0.0835	23.6	16.2	20.3	25.4	26.5 E	22.4	0.47	17.5	0.11
Owens & Minor	0.80	0.68	3.4624	0.0983	15.8	18.1	13.1	13.1	13.0	14.6	(0.34)	14.0	(0.44)
Pacific Cap. Bancorp	0.85	0.74	3.2025	0.0909	17.2	20.2	19.0	19.1	15.5	18.2	0.03	8.0	(1.40)

Carolina Water Service, Inc.
Comparable Earnings Analysis
for a Proxy Group of Ninety-Four Non-Utility Companies Comparable to the
Proxy Group of Four Value Line (Standard Edition) Water Companies (9)

Proxy Group of Ninety-Four Non-Utility Companies Comparable to the Proxy Group of Four Value Line (Standard Edition) Water Companies (9)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2001	2002	2003	2004	2005	5-year Average (2) Percent	5-year Average (2) Student's T-Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's T-Statistic
Packaging Corp.	0.85	0.76	2.9087	0.0826	14.0	6.1	5.3	8.4	7.7	8.3	(1.00)	19.5	0.43
Pactiv Corp.	0.90	0.79	3.2092	0.0911	9.8	24.5	21.7	19.7	17.7	18.7	0.08	17.0	0.03
Papa John's Int'l	0.75	0.62	3.2151	0.0913	24.2	38.4	23.0	28.0	28.6	28.4	1.09	16.0	(0.13)
People's Bank	0.80	0.67	2.9669	0.0842	2.6	5.9	6.4	7.8	9.7	6.5	(1.19)	13.0	(0.60)
PepsiAmericas Inc.	0.75	0.62	2.9806	0.0846	6.3	9.4	9.8	10.8	12.0	9.7	(0.85)	10.5	(1.00)
Pfizer Inc.	0.90	0.79	2.9314	0.0832	45.6	47.9	19.5	23.6	22.9	31.9	1.46	23.0	0.98
RLI Corp.	0.70	0.54	3.0123	0.0855	9.0	8.4	10.6	10.3	13.5 E	10.4	(0.78)	12.5	(0.68)
Regis Corp.	0.90	0.81	3.4472	0.0979	15.6	15.8	15.4	15.3	13.6	15.1	(0.29)	14.5	(0.37)
Republic Services	0.70	0.54	2.8689	0.0815	12.1	12.6	11.3	12.7	16.0 E	12.9	(0.52)	20.5	0.59
Ruddick Corp.	0.80	0.69	3.0460	0.0865	10.8	12.3	12.1	11.8	11.3	11.7	(0.65)	12.0	(0.76)
Sara Lee Corp.	0.60	0.38	2.9283	0.0832	99.9	63.8	59.1	43.1	36.8	60.5 (4)	4.44	35.5 (4)	2.97
Scotts Miracle-Gro	0.90	0.82	3.0051	0.0853	3.1	17.0	14.3	11.5	9.8	11.1	(0.71)	15.0	(0.29)
Selective Ins. Group	0.85	0.76	3.1344	0.0890	4.5	6.1	7.7	12.8	15.0	9.2	(0.91)	15.0	(0.29)
Sensient Techn.	0.85	0.70	3.3617	0.0955	15.1	16.2	13.4	11.5	9.1	13.1	(0.50)	9.5	(1.16)
ServiceMaster Co.	0.80	0.69	3.0081	0.0854	9.4	14.0	19.4	17.4	17.1	15.5	(0.25)	19.5	0.43
Smucker (J.M.)	0.70	0.50	3.0276	0.0860	12.2	9.3	10.0	8.9	8.5 E	9.8	(0.84)	10.0	(1.08)
Sonic Corp.	0.70	0.53	3.6416	0.1034	19.4	20.7	19.7	18.8	19.6	19.6	0.18	15.0	(0.29)
Standex Int'l	0.90	0.81	3.3976	0.0965	14.5	11.4	11.1	13.5	14.4	13.0	(0.51)	14.5	(0.37)
Stryker Corp.	0.80	0.64	3.1848	0.0904	25.7	23.8	21.0	21.3	22.1	22.8	0.51	27.0	1.62
Tennant Co.	0.90	0.78	3.1424	0.0892	3.1	8.0	8.5	8.5	11.9	8.0	(1.03)	12.5	(0.68)
Thornburg Mtg.	0.75	0.60	3.2295	0.0917	11.0	14.4	14.2	13.0	12.8	13.1	(0.50)	12.0	(0.76)
Toro Co.	0.95	0.85	3.1111	0.0883	14.8	17.4	18.5	26.0	29.0 E	21.1	0.33	33.0 (4)	2.57
UnitedHealth Group	0.65	0.42	3.3475	0.0951	23.5	30.5	35.6	24.1	8.6	24.5	0.69	31.0 (4)	2.25
Wabtec Corp.	0.80	0.67	3.3741	0.0958	9.1	8.8	9.0	10.3	15.2	10.5	(0.77)	16.0	(0.13)
Walgreen Co.	0.80	0.65	2.9638	0.0842	16.7	16.3	16.1	16.5	17.5	16.6	(0.14)	18.0	0.19
Waste Connections	0.90	0.77	3.6082	0.1025	10.3	12.8	12.2	10.9	12.2	11.7	(0.65)	15.5	(0.21)
Waste Management	0.80	0.84	3.0992	0.0880	13.6	15.2	13.2	13.7	14.3	14.0	(0.41)	21.5	0.75
Wendy's Int'l	0.75	0.55	3.4248	0.0973	18.8	15.1	13.4	13.6	12.0	14.6	(0.34)	12.0	(0.76)
Average for the Non-Utility Group	0.82	0.69	3.2132	0.0912									
Average for the Proxy Group of Four Value Line (Standard Edition) Water Companies	0.74	0.58	3.2476 (10)	0.0922						16.3%		15.6%	
Mean											16.0% (6)		
Conclusion (6)										14.2%		14.0%	
Conservative Mean (7)											14.1% (8)		
Conservative Conclusion (8)													

See pages 5 and 6 for notes.

Exhibit No. ____
Schedule PMA-12
Page 4 of 6

Carolina Water Service, Inc.
Comparable Earnings Analysis

E = Estimated

Notes: (1) The criteria for selection of the proxy group of eighty-six non-utility companies was that the non-utility companies be domestic and have a meaningful rate of return on book common equity, net worth, or partners' capital for each of the five years ended 2005 or projected 2009 - 2011 as reported in Value Line Investment Survey (Standard Edition). The proxy group of eighty-six non-utility companies was selected based upon the proxy group of seven AUS Utility Reports water companies' unadjusted beta range of 0.23 - 0.81 and standard error of the regression range of 2.9630 – 3.8630. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's direct testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.

(2) Ending 2005.

(3) 2009 - 2011.

(4) The Student's T-statistic associated with these returns exceeds 1.96 at the 95% level of confidence. Therefore, they have been excluded, as outliers, to arrive at proper mean historical and projected returns as fully explained in Ms. Ahern's testimony.

(5) The standard deviation of group of seven AUS Utility Reports water companies' standard error of the regression is 0.1500. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{/2N}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1500 = \frac{3.4130}{/518} = \frac{3.4130}{22.7596}$$

(6) Mid-point of the arithmetic mean of the historical five year average and five year projected rate of return on book common equity, net worth, or partners' capital.

(7) Arithmetic mean of historical five year rates of return and five year projected rates of return on net worth, common equity or partners' capital excluding those 20% and greater as well as those 8.7% or less, i.e., 200 basis points above the prospective yield of 6.7% on A rated Moody's public utility bonds (from page 1 of Schedule PMA-10 of this Exhibit.)

(8) Mid-point of the arithmetic mean of historical five year rates of return and five year projected rates of return on net worth, common equity or partners' capital excluding those 20% and greater as well as those 8.7% or less, i.e., 200 basis points above the prospective yield of 6.7% on A rated Moody's public utility bonds (from page 1 of Schedule PMA-10 of this Exhibit.)

(9) The criteria for selection of the proxy group of ninety-four non-utility companies was that the non-utility companies be domestic and have a meaningful rate of return on book common equity, net worth, or partners' capital for each of the five years ended 2005 or projected 2009 - 2011 as reported in Value Line Investment Survey (Standard Edition). The proxy group of ninety-four non-utility companies was selected based upon the proxy group of four Value Line

Carolina Water Service, Inc.
Comparable Earnings Analysis

(Standard Edition) water companies' unadjusted beta range of 0.30 - 0.86 and standard error of the regression range of 2.8195– 3.6757. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's direct testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.

(10) The standard deviation of the proxy group of four Value Line (Standard Edition) water companies' standard error of the regression is 0.1427 (3.2476 / 22.7596).

Source of Information: Value Line, Inc., March 16, 2006
Value Line Investment Survey (Standard Edition)