

Exhibit No.:
Issue: Rate of Return
Witness: Matthew J. Barnes
Sponsoring Party: MoPSC Staff
Type of Exhibit: Direct Testimony
Case No.: WR-2006-0425
Date Testimony Prepared: December 1, 2006

MISSOURI PUBLIC SERVICE COMMISSION
UTILITY SERVICES DIVISION

DIRECT TESTIMONY

OF

MATTHEW J. BARNES

FILED²

FEB 08 2007

Missouri Public
Service Commission

ALGONQUIN WATER RESOURCES OF MISSOURI, LLC

CASE NO. WR-2006-0425

Jefferson City, Missouri
December 2006

~~STAFF~~ Exhibit No. 11
Case No(s) WR-2006-0425
Date 1-22-07 Rptr RF

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

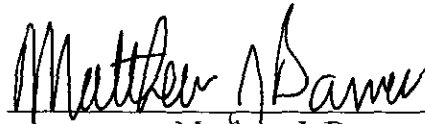
In the Matter of the Tariff Filing Algonquin Water)
Resources of Missouri, LLC to Implement a)
General Rate Increase for Water and Sewer Service)
Provided to Customers in Its Missouri Service)
Areas.)

Case No. WR-2006-0425

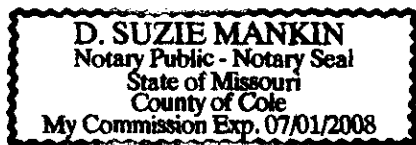
AFFIDAVIT OF MATTHEW J. BARNES

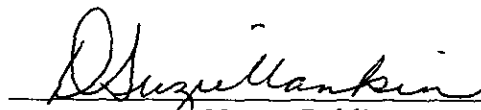
STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

Matthew J. Barnes, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Direct Testimony in question and answer form, consisting of 21 pages to be presented in the above case; that the answers in the foregoing Direct Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.


Matthew J. Barnes

Subscribed and sworn to before me this 30th day of November 2006.




Notary Public

1
2
3
4
5
6
7
8
9
10
11
12
13
14

TABLE OF CONTENTS
DIRECT TESTIMONY OF
MATTHEW J. BARNES
ALGONQUIN WATER RESOURCES OF MISSOURI, LLC
CASE NO. WR-2006-0425

EXECUTIVE SUMMARY	3
LEGAL PRINCIPLES.....	5
CURRENT ECONOMIC CONDITIONS.....	6
ECONOMIC PROJECTIONS.....	9
BUSINESS OPERATIONS OF ALGONQUIN POWER INCOME FUND	9
DETERMINATION OF THE COST OF CAPITAL.....	10
CAPITAL STRUCTURE AND EMBEDDED COSTS.....	11
COST OF COMMON EQUITY	14
RATE OF RETURN FOR ALGONQUINMO	20

Direct Testimony of
Matthew J. Barnes

1 A. Yes. I filed Supplemental Direct Testimony in BPS Telephone
2 Company (BPS) Case No. TC-2002-1076; Rebuttal Testimony in Sprint Nextel Case
3 No. IO-2006-0086; Rebuttal Testimony in Alltel Missouri, Inc. Case No. TM-2006-0272 and
4 Direct, Rebuttal, and Surrebuttal Testimony in Kansas City Power and Light
5 Company (KCP&L) Case No. ER-2006-0314. I sponsored rate-of-return testimony in both
6 the BPS and KCP&L cases. The BPS case is closed and the KCP&L is still pending with the
7 Commission.

8 The issues I covered in Alltel Missouri Inc. Case No. TM-2006-0272 and Sprint
9 Nextel Case No. IO-2006-0086 were the spin-off of the utilities' regulated landline
10 operations into a new, separate company. I analyzed indicative credit rating reports from the
11 three major credit rating agencies (Standard & Poor's, Moody's, and Fitch), which discussed
12 the potential credit rating, a reasonable dividend payout ratio and cash flows from the new
13 spin-off companies. I then used the indicative credit rating reports and compared the
14 potential credit rating, dividend payout ratio, and cash flows of the spin-off companies to a
15 group of similar telephone companies. These two cases were settled and presented to the
16 Commission during an on-the-record presentation. My positions in both cases were
17 approved by the Commission.

18 Q. Have you participated in other rate cases in the past?

19 A. Yes. I participated in AmerenUE Case No. GR-2003-0517, Aquila, Inc. Case
20 No. ER-2004-0034, Empire Case No. ER-2004-0570, and Missouri-American Water Case
21 No. WR-2003-0500. I was involved in preparing the schedules and review of testimony for
22 the department manager and the Auditor IV concerning rate of return.

23 Q. Have you made recommendations in any other cases before this Commission?

Direct Testimony of
Matthew J. Barnes

1 A. Yes, I have made recommendations on finance, merger and acquisition cases
2 before this Commission.

3 Q. Have you attended any schools, conferences or seminars specific to utility
4 finance and utility regulation?

5 A. Yes. I attended The Rate Case Process in Missouri presented by the Staff of
6 the Missouri Public Service Commission in March 2005. I have also attended the Financial
7 Research Institute seminars in 2003 and 2004 which covered topics such as rate of return,
8 restructuring of electric utility companies and the future operations of utility companies.

9 Q. What is the purpose of your testimony in this case?

10 A. I present the Staff's recommendation to the Commission of a fair and
11 reasonable rate of return for the Missouri jurisdictional water utility rate base of Algonquin
12 Water Resources of Missouri, LLC (AlgonquinMO or Company).

13 Q. Have you prepared a written analysis of the cost of capital for AlgonquinMO?

14 A. Yes. I am sponsoring a study entitled "An Analysis of the Cost of Capital for
15 Algonquin Water Resources of Missouri, LLC, Case No. WR-2006-0425" consisting of
16 19 schedules which are attached to this direct testimony (see Schedule 1 for a list of these
17 schedules).

18 **EXECUTIVE SUMMARY**

19 Q. Please provide an executive summary of your testimony.

20 A. I present the Staff's recommendation that the Commission authorize an
21 overall rate of return (ROR) of 7.02 percent to 7.50 percent for AlgonquinMO. This rate-of-
22 return recommendation is based on a recommended return on common equity of 8.06 percent

Direct Testimony of
Matthew J. Barnes

1 to 9.06 percent applied to a hypothetical common equity ratio of 47.88 percent based on the
2 average common equity ratio of my comparable group. The recommendation is driven by
3 my comparable company analysis using the discounted cash flow (DCF) model. I believe the
4 DCF model is the most reliable model available.

5 Staff used a hypothetical embedded cost of long-term debt of 6.01 percent. Staff used
6 a hypothetical capital structure as of December 31, 2005 as the basis for the Staff's capital
7 structure recommendation for AlgonquinMO. This capital structure is based on the average
8 capital structures of my comparable group. A complete and detailed explanation of the
9 Staff's recommended capital structure starts on page 11, line 15 of this testimony.

10 Q. How did you determine the Staff's recommended cost of common equity?

11 A. I determined the Staff's recommended cost of common equity by applying the
12 DCF model to a comparable group of water utility companies. I then evaluated a number of
13 factors to test the reasonableness of this recommendation. A complete and detailed
14 explanation of the Staff's recommended cost of common equity starts on page 14, line 19 of
15 this testimony.

16 Q. How did you determine the Staff's recommended embedded cost of debt?

17 A. I determined an embedded cost of debt of 6.01 percent as of December 31,
18 2005 by calculating the comparable groups' stated cost of long-term debt and Missouri-
19 American Water Company's (MOAWC) embedded and stated cost of long-term debt. Staff
20 used MOAWC as a starting point to determine how much issuance costs should be included
21 in the hypothetical embedded cost of debt for AlgonquinMO. A complete and detailed
22 explanation of the Staff's recommended embedded cost of debt for AlgonquinMO starts on
23 page 12, line 21 of this testimony.

LEGAL PRINCIPLES

Q. What legal principles do you understand constitute the basis for the assessment of the justness and reasonableness of rate-of-return recommendations?

A. I understand that the *Bluefield Water Works and Improvement Company* (1923) (*Bluefield*) and the *Hope Natural Gas Company* (1944) (*Hope*) cases have been cited as the two most influential cases for the legal framework to determine a fair and reasonable rate of return.

Q. What do you understand to be the teachings of the *Bluefield* case?

A. In the *Bluefield* case the Supreme Court ruled that a fair return would be:

1. A return "generally being made at the same time" in that "general part of the country;"

2. A return achieved by other companies with "corresponding risks and uncertainties;" and

3. A return "sufficient to assure confidence in the financial soundness of the utility."

The Court specifically stated:

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

1 affecting opportunities for investment, the money market and business
2 conditions generally.

3 Q. What do you understand to be the teachings of the *Hope* case?

4 A. In the *Hope* case, the Court stated that:

5 The rate-making process . . . , *i.e.*, the fixing of "just and reasonable"
6 rates, involves a balancing of the investor and the consumer interests.
7 Thus we stated . . . that "regulation does not insure that the business
8 shall produce net revenues" . . . it is important that there be enough
9 revenue not only for operating expenses but also for the capital costs
10 of the business. These include service on the debt and dividends on
11 the stock By that standard the return to the equity owner should
12 be commensurate with returns on investments in other enterprises
13 having corresponding risks. That return, moreover, should be
14 sufficient to assure confidence in the financial integrity of the
15 enterprise, so as to maintain its credit and to attract capital.

16 The *Hope* case restates the concept of comparable returns to include those achieved
17 by other enterprises that have "corresponding risks." The Supreme Court also noted in this
18 case that regulation does not guarantee profits to a utility company.

19 Q. Do you have any further comments on the use of cost of capital models to
20 determine a fair rate of return?

21 A. Yes. See Schedule A.

22 **CURRENT ECONOMIC CONDITIONS**

23 Q. What are the main aspects of the current capital and economic environment
24 that the Commission should consider in determining a reasonable authorized return on
25 common equity (ROE) for AlgonquinMO?

26 A. The Federal Reserve (Fed) has been steadily raising the Fed Funds rate by
27 25 basis points since June 30, 2004. This began after the Fed had kept the Fed Funds Rate at
28 a 46-year low of 1.00 percent for a full year. The Fed has now raised the Fed Funds Rate

Direct Testimony of
Matthew J. Barnes

seventeen consecutive times to its current level of 5.25 percent and has kept it at that level since June 2006. According to a November 16, 2006, article in the *Wall Street Journal*:

Federal Reserve officials remain firmly focused on inflation, minutes of their last policy meeting show, suggesting that a near-term cut in interest rates remains unlikely. Since the Oct. 24-25 meeting, markets have begun to see a greater probability of a rate cut by May, in part because of softer-than-expected data on wholesale prices, manufacturing activity and retail sales.

Still, the meeting minutes, released yesterday with the usual three-week lag, suggest the central bank is sufficiently preoccupied with inflation that the latest data would have little effect on its rate intentions.

...At the October meeting, the policy-making Federal Open Market Committee left its target for short-term interest rates at 5.25%, where it has stood since late June.

Q. How have utility bond yields responded to the tightening of U.S. monetary policy?

A. A review of Schedules 5-1 and 5-3 shows that since average utility bond yields fell to an average annual yield of 5.39 percent during June 2005, which was the lowest yield in the past 26 years, average utility bond yields had increased to an average of 6.39 percent in May and June 2006, but have since declined to an average of 6.01 percent in October 2006.

Q. Would you explain the changes in utility bond yields and Thirty-Year U.S. Treasury bond yields in a little more detail?

A. Cost-of-capital changes for utilities are closely reflected in the yields on public utility bonds and yields on Thirty-Year U.S. Treasury Bonds (see attached Schedules 5-1 and 5-2). Schedule 5-3, attached to this direct testimony, shows how closely the Mergent's "Public Utility Bond Yields" have followed the yields of Thirty-Year U.S.

Direct Testimony of
Matthew J. Barnes

1 Treasury Bonds during the period from 1980 to the present. The average spread for this
2 period between these two composite indices has been 151 basis points, with the spread
3 ranging from a low of 80 basis points to a high of 304 basis points (see attached
4 Schedule 5-4). Although there may be times when utility bond yield changes may lag the
5 yield changes in the Thirty-Year U.S. Treasury Bond, these spread parameters show just how
6 tightly utilities' cost of capital is correlated with the level of interest rates on long-term
7 treasuries. For a detailed explanation of historical economic conditions please see
8 Schedule B.

9 Q. What is the significance of the current economic conditions for AlgonquinMO
10 and what conclusions should the Commission draw from it?

11 A. The significance of the current economic conditions for AlgonquinMO is that
12 yields on public utility bonds and yields on Thirty-year Treasury bonds are low by recent
13 historical standards. An example of recent historical standards is the double-digit yields for
14 long-term U.S. Government bonds and corporate bonds from the late-1970s to the mid-
15 1980s. A lower interest rate environment means a lower cost of capital and a higher interest
16 rate environment means a higher cost of capital for a utility. The current yields on
17 U.S. Government bonds and corporate bonds are now more normal by historical standards.
18 The Commission should take the lower and more normal yields on U.S. Government and
19 corporate bonds into consideration when authorizing a rate of return for AlgonquinMO. For
20 a history of long-term investment grade Baa (Moody's equivalent of S&P's BBB credit
21 rating) corporate bond yields, please see Schedule 5-5.

ECONOMIC PROJECTIONS

Q. Do you have any information on economic projections?

A. Yes. See Schedule C for projections on inflation, interest rates and gross domestic product (GDP).

BUSINESS OPERATIONS OF ALGONQUIN POWER INCOME FUND

Q. Please describe Algonquin Power Income Fund's (Algonquin Power) business operations.

A. Algonquin Power, which is a Canadian company, 2005 Annual Report provides a good description of Algonquin Power's business operations:

Algonquin Power Income Fund is an open-ended investment trust that owns or has interests in a diverse portfolio of power generating and infrastructure assets across North America, including 48 hydroelectric facilities, five natural gas-fired cogeneration facilities, 17 alternative fuels facilities and 15 water reclamation and distribution facilities. Algonquin Power was established in 1997 to provide unitholders with sustainable, highly stable and growing cash flows through a diversified portfolio of energy and infrastructure assets. The Fund's units and convertible debentures are traded on the Toronto Stock Exchange under the symbols APF.UN and APF.DB, respectively.

Q. What are Algonquin Power's divisions?

A. Algonquin Power has four operating divisions within its portfolio. They are the Hydroelectric Division, Cogeneration Division, Alternative Fuels Division, and the Infrastructure Division. AlgonquinMO's water operations operate under the Infrastructure Division. Algonquin Power reports its financial statements in Canadian dollars. Therefore, the following information is in Canadian dollars. Algonquin Power's total operating profit was C\$84,031,000 for the 12 months ended December 31, 2005, versus C\$76,826,000 for the 12 months ended December 31, 2004. These 2005 revenues resulted in cash available for

Direct Testimony of
Matthew J. Barnes

1 distribution of C\$64,892,000 and earnings per trust unit of C\$.93 as compared to the 2004
2 cash available for distribution of C\$59,887,000 and earnings per trust unit of C\$.87. These
3 revenues and net incomes were generated from total assets of C\$823,801,000 at
4 December 31, 2005, and C\$824,796,000 at December 31, 2004. These figures were taken
5 from Algonquin Power's Annual Report for the 2005 calendar year from Algonquin Power's
6 company website at www.algonquinpower.com.

7 Q. What is Algonquin Power's current credit rating?

8 A. Algonquin Power's current Standard & Poor's Corporation's (S&P) corporate
9 credit rating is "BBB+" with a Negative outlook, which is three notches above non-
10 investment grade, *i.e.* junk status.

11 Q. Please provide some comments from a recent S&P research report on
12 Algonquin Power.

13 A. S&P's June 13, 2006 *Algonquin Power Income Fund Research Report*
14 provided the following explanation of Algonquin Power's credit rating:

15 The ratings on Algonquin Power Income Fund (APIF or the fund)
16 reflect the fund's diversified electricity generation and water and
17 waste-water utility portfolio; a large proportion of contracted or
18 regulated revenue streams with investment-grade counterparties; and
19 an average financial risk profile. APIF's exposure to fuel and
20 technology risk, the complexity of its portfolio of investments, and the
21 execution and integration risk associated with its ongoing aggressive
22 acquisition strategy offset these strengths.

23 **DETERMINATION OF THE COST OF CAPITAL**

24 Q. How do you determine a utility company's cost of capital?

25 A. The total dollars of capital utilized by the utility company are determined as of
26 a specific point in time. This total dollar amount is then apportioned into each specific

Direct Testimony of
Matthew J. Barnes

1 capital component, *i.e.* common equity, long-term debt, preferred stock and short-term debt.
2 A weighted cost for each capital component is determined by multiplying each capital
3 component ratio by the appropriate embedded cost or by the estimated cost of common
4 equity component. The individual weighted costs are summed to arrive at a total weighted
5 cost of capital. This total weighted average cost of capital (WACC) is synonymous with the
6 fair rate of return for the utility company.

7 Q. Why is a total WACC synonymous with a fair rate of return?

8 A. From a financial viewpoint, a company employs different forms of capital to
9 support or fund the assets of the company. Each different form of capital has a cost and these
10 costs are weighted proportionately to fund each dollar invested in the assets.

11 Assuming that the various forms of capital are within a reasonable balance and are
12 costed correctly, the resulting total WACC, when applied to rate base, will provide the funds
13 necessary to service the various forms of capital. Thus, the total WACC corresponds to a fair
14 rate of return for the utility company.

15 **CAPITAL STRUCTURE AND EMBEDDED COSTS**

16 Q. What capital structure did you use for AlgonquinMO?

17 A. The capital structure Staff used for AlgonquinMO is a hypothetical capital
18 structure based on a selection of comparable companies, as of December 31, 2005.

19 Q. Why did Staff use a hypothetical capital structure and not a company-specific
20 capital structure?

21 A. Staff used a hypothetical capital structure because AlgonquinMO's operations
22 are part of a division of Algonquin Power. Consequently, AlgonquinMO does not have stock

Direct Testimony of
Matthew J. Barnes

1 that is publicly traded in the United States' capital markets. Although Algonquin Power has
2 publicly traded stock, Algonquin Power's corporate offices are located in Oakville, Ontario
3 Canada and the company's stock is traded on the Toronto Stock Exchange. The Staff is not
4 familiar with Canadian markets. Staff cannot provide informed judgment as to whether the
5 costs of capital in Canada are similar to those in the United States. Algonquin Power is also
6 organized differently than water companies in the United States. Algonquin Power is
7 organized under operating divisions rather than subsidiaries, which is unusual for a United
8 States water company. Staff chose to use a hypothetical capital structure, consisting of
9 American water companies' financial information, to determine a reasonable rate of return
10 for AlgonquinMO's jurisdictional operations.

11 Schedule 11 presents Staff's proposed hypothetical capital structure. The resulting
12 hypothetical capital structure consists of 47.88 percent common stock equity and
13 52.12 percent long-term debt. The amount of long-term debt outstanding as of December 31,
14 2005 for Staff's hypothetical capital structure was \$1,599,818,178 and includes current
15 maturities of long-term debt due within one year. The amount of long-term debt in the
16 hypothetical capital structure is shown on Schedule 10-1 attached to this direct testimony.

17 Q. Did Staff include any short-term debt in its capital structure?

18 A. No. Staff did not include any short-term debt in the hypothetical capital
19 structure because, as of December 31, 2005, each company in Staff's comparable group had
20 Construction Work In Progress (CWIP) that exceeded its short-term debt balance.

21 Q. What was the embedded cost of long-term debt, as of December 31, 2005, for
22 the debt in AlgonquinMO's hypothetical capital structure?

Direct Testimony of
Matthew J. Barnes

1 A. The embedded cost of long-term debt for the debt in AlgonquinMO's
2 hypothetical capital structure as of December 31, 2005, was 6.01 percent.

3 Q. What is a stated cost of long-term debt?

4 A. The stated cost of long term debt is simply the stated coupon rate or interest
5 rate for each issuance of debt. The stated cost of long-term debt for each comparable
6 company can be found in Schedules 9-1, 9-2, 9-3, and 9-4.

7 Q. What is an embedded cost of long-term debt?

8 A. Staff utilizes the Simple Interest (Amortization) Method to determine the
9 embedded cost of long-term debt. Page 5-4 of David C. Parcell's book The Cost of Capital-
10 A Practitioner's Guide, provides a description of the Simple Interest (Amortization) Method
11 to determine the embedded cost of long-term debt. "This method recognizes
12 premium/discount and issuance costs in a more direct fashion, by including annual (usually
13 equal) amortization as costs which are combined with interest payments to determine annual
14 costs." Staff does not have premium/discount and issuance costs available for each
15 comparable company, which is the reason Staff used the difference between MOAWC's
16 embedded cost and stated cost of long-term debt and then added this amount to the
17 comparable companies stated cost of long-term debt to determine the hypothetical embedded
18 cost of long-term debt for AlgonquinMO. The calculation of the hypothetical embedded cost
19 of long-term debt for AlgonquinMO is shown on Schedule 10-2.

20 Q. How did Staff calculate the embedded cost of long-term debt for the debt in
21 AlgonquinMO's hypothetical capital structure?

22 A. In this case Staff could not directly determine the embedded cost of long-term
23 debt for the comparable group, due to information that is not reasonably available to the

Direct Testimony of
Matthew J. Barnes

1 Staff. Therefore, Staff calculated the embedded cost of long-term debt for AlgonquinMO by
2 starting with Staff's stated cost of long-term debt for my comparable companies of
3 5.88 percent. Staff then used the embedded cost of long-term debt of 6.10 percent for
4 Missouri American Water Company (MOAWC) in Case No. WR-2003-0500. Staff used the
5 embedded cost of long-term debt of MOAWC to determine how much of the company's
6 embedded cost was attributed to debt issuance expenses, discounts, premiums, etc. Staff then
7 calculated the stated cost of long-term debt for MOAWC to be 5.97 percent. Staff used the
8 difference between MOAWC's embedded cost of long-term debt of 6.10 percent and
9 MOAWC's stated cost of long-term debt of 5.97 percent to arrive at a spread of 13 basis
10 points for debt issuance expenses, discounts, premiums, etc. The spread of 13 basis points
11 was then added to Staff's comparable companys' stated cost of long-term debt of
12 5.88 percent to arrive at an embedded cost of long-term debt for AlgonquinMO of
13 6.01 percent.

14 Q. Was there any preferred stock that should be included in the hypothetical
15 capital structure as of December 31, 2005?

16 A. No. None of the companies in Staff's comparable group had any preferred
17 stock outstanding as of December 31, 2005. As a result, Staff did not include any preferred
18 stock in AlgonquinMO's hypothetical capital structure.

19 **COST OF COMMON EQUITY**

20 Q. How did you analyze those factors by which the cost of common equity for
21 AlgonquinMO may be determined?

Direct Testimony of
Matthew J. Barnes

1 A. In order to calculate the cost of common equity for AlgonquinMO,
2 I performed a comparable company analysis of four companies. I have selected the DCF
3 model (explained in detail in Schedule D) as the primary tool to determine the cost of
4 common equity for AlgonquinMO, but I also used the CAPM (explained in detail in
5 Schedule E) to check the reasonableness of the DCF results.

6 Q. Can you directly analyze AlgonquinMO's cost of common equity?

7 A. No. Staff can not directly analyze AlgonquinMO's cost of common equity
8 because they do not have stock that is publicly-traded.

9 Q. How did you analyze AlgonquinMO's cost of common equity?

10 A. I analyzed the cost of common equity for a comparable group of water utility
11 companies because these companies have similar water operations that are comparable to
12 AlgonquinMO.

13 Q. How did you determine which companies were comparable water utility
14 companies?

15 A. I first relied on the Edward Jones *Water Utility Industry Summary Quarterly*
16 *Financial and Common Stock Information* as of September 30, 2006, which specifies
17 companies that it considers to be water utilities. Schedule 7 presents a list of the eleven
18 water utility companies that Edward Jones currently classifies as water utility companies.
19 I then applied the following criteria to these eleven companies in order to select my ultimate
20 proxy group:

- 21 1. Stock publicly traded: This criterion did not eliminate any companies;
22 2. Information printed in Value Line: This criterion eliminated three
23 companies;

Direct Testimony of
Matthew J. Barnes

- 1 3. Ten years of data available: This criterion eliminated one additional
2 company;
- 3 4. At least investment grade credit rating: This criterion eliminated two
4 companies, because they are not rated by Standard and Poor's;
- 5 5. Two sources for projected growth available with one of those being
6 from Value Line: This criterion eliminated one additional company.
- 7 6. Greater than 80 percent of revenues from water operations: This
8 criterion did not eliminate any companies.

9 This resulted in a group of four publicly traded water utility companies, which are listed on
10 Schedule 8.

11 Q. How did you determine the cost of common equity of each of the
12 comparables?

13 A. I calculated a DCF cost of common equity for each of the comparables. The
14 first step was to calculate a growth rate. I reviewed the actual dividends per share (DPS),
15 earnings per share (EPS), and book values per share (BVPS) as well as projected EPS growth
16 rates for the comparables. Schedule 12-1 lists the annual compound growth rates for DPS,
17 EPS, and BVPS for the past ten years. Schedule 12-2 lists the annual compound growth rates
18 for DPS, EPS, and BVPS for the past five years. Schedule 12-3 presents the averages of the
19 growth rates shown in Schedules 12-1 and 12-2. Schedule 13 presents the average historical
20 growth rates and the projected growth rates for the comparables. The projected EPS growth
21 rates were obtained from three outside sources; I/B/E/S Inc.'s *Institutional Brokers Estimate*
22 *System*, Standard & Poor's Corporation's *Earnings Guide*, and *The Value Line Investment*
23 *Survey: Ratings and Reports*. The three projected EPS growth rates were averaged to
24 develop an average projected growth rate of 6.53 percent, which was averaged with the
25 historical growth rates to produce a historical and projected growth rate of 4.82 percent.

Direct Testimony of
Matthew J. Barnes

1 I decide to give the most weight to the average projected growth rate of 6.53 percent to arrive
2 at a growth rate range of 5.18 percent to 6.18 percent.

3 The next step was to calculate an expected yield for each of the comparables. The
4 yield term of the DCF model is calculated by dividing the amount of DPS expected to be
5 paid over the next twelve months by the market price per share of the firm's stock. Even
6 though a strict technical application of the model requires the use of a current spot market
7 price, I have chosen to use a monthly average market price for each of the comparables. I
8 used this averaging technique to minimize the effects on the dividend yield that can occur
9 due to daily volatility in the stock market. Schedule 14 presents the average high / low stock
10 price for the period of June 1, 2006, through September 30, 2006, for each comparable.
11 Column 1 of Schedule 15 indicates the expected dividend for each comparable over the next
12 12 months as projected by *The Value Line Investment Survey: Ratings & Reports*, July 28,
13 2006. Column 3 of Schedule 15 shows the projected dividend yield for each of the
14 comparables. The dividend yield for each comparable was averaged to calculate the
15 projected dividend yield for the comparables of 2.88 percent.

16 As illustrated in Column 5 of Schedule 15, the average cost of common equity based
17 on the projected dividend yield added to the average of historical and projected growth is
18 7.70 percent. However, this is not my recommendation. As I mentioned previously, I
19 decided to use a range of growth of 5.18 percent to 6.18 percent. This range of growth is
20 added to the projected dividend yield for the comparables of 2.88 percent to arrive at my
21 DCF proxy group cost of common equity estimation of 8.06 percent to 9.06 percent.

22 Q. How did you verify the reasonableness of your DCF model-derived cost of
23 common equity for the comparable company group?

Direct Testimony of
Matthew J. Barnes

1 A. I performed a CAPM cost-of-common-equity analysis for the comparables.

2 Q. What did you use for your risk-free rate?

3 A. For purposes of this analysis, the risk-free rate I used was the yield on Thirty-
4 Year U.S. Treasury Bonds. I determined the appropriate rate to be the average yield for the
5 month of October 2006. The average yield of 4.85 percent was provided on the St. Louis
6 Federal Reserve website.

7 For the second variable, beta, I researched Value Line in order to find the betas for
8 my comparable group of companies. Schedule 16 contains the appropriate betas for the
9 comparables.

10 The final term of the CAPM is the market risk premium ($R_m - R_f$). The market risk
11 premium represents the expected return from holding the entire market portfolio less the
12 expected return from holding a risk-free investment.

13 Q. Please explain your application of the CAPM using historical return
14 differences.

15 A. The first risk premium used was based on the long-term, arithmetic average
16 from 1926 to 2005, which was 6.50 percent. The second risk premium was based on the
17 long-term, geometric average from 1926 to 2005, which was determined to be 4.90 percent.
18 The third risk premium was based on a short-term, geometric average from 1996 to 2005,
19 which was determined to be 1.48 percent. Although the short-term risk premium CAPM
20 results are much lower than the long-term risk premium results, it is interesting to note the
21 smaller spread between earned returns on equity versus earned returns on long-term treasury
22 bonds. These risk premiums were taken from Ibbotson Associates, Inc.'s *Stocks, Bonds,*
23 *Bills, and Inflation: 2006 Yearbook.*

Direct Testimony of
Matthew J. Barnes

1 Schedule 16 presents the CAPM analysis of the comparables using historical actual
2 return spreads to estimate the required equity risk premium. The CAPM analysis produces
3 an estimated cost of common equity of 9.97 percent for the comparables when using the
4 long-term arithmetic average risk premium period; using the long-term geometric average
5 produces an estimated cost of common equity of 8.71 percent and using the short-term
6 geometric average produces an estimated cost of common equity of 6.02 percent. The long-
7 term arithmetic average risk premium CAPM results would support a higher cost of common
8 equity, which Staff believes is questionable. The long-term geometric average risk premium
9 CAPM results supports a cost of common equity similar to what is currently produced in
10 performing a DCF analysis.

11 Q. What is the difference between arithmetic and geometric mean return?

12 A. According to Ibbotson Associates, Inc.'s *Stocks, Bonds, Bills, and Inflation:*
13 *2006 Yearbook*, the definition of arithmetic mean return is, "A simple average of a series of
14 returns." The definition of geometric mean return is, "The compound rate of return. The
15 geometric mean of a return series is a measure of the actual average performance of a
16 portfolio over a given time period."

17 Q. Please provide a simple example to illustrate why you don't believe investors
18 use arithmetic means when determining the amount of risk premium they will require on a
19 given stock or a portfolio of stocks.

20 A. Suppose that an investor makes a \$1 stock investment over a three-year
21 period. If an investor pays \$1 for a stock in year 1 and in year 2 the stock increases to \$1.50,
22 then the investor would have a 50 percent growth rate. In year three the price of the stock
23 decreases by 50 percent to \$.75. If an investor performed a simple arithmetic average of

Direct Testimony of
Matthew J. Barnes

these two returns, then they would think that they received 0 percent $[(50 \text{ percent} + -50 \text{ percent})/2]$ growth in their investment over the three-year period. However, in reality the investor actually had a 25 percent decline in their investment over this three-year period. This is why Staff believes that using the arithmetic mean is questionable.

Q. Would you summarize your cost-of-common-equity analysis for AlgonquinMO?

A. I performed a DCF and CAPM cost of common equity analysis on a group of four comparable water utility companies applied to AlgonquinMO's hypothetical capital structure. The results are summarized below.

	<u>DCF</u>	<u>CAPM (Historical)</u>
Comparable Companies	8.06% - 9.06%	Historical - 9.97%; 8.71%; 6.02%

Q. Based on your analysis, what is your recommended return on common equity for AlgonquinMO in this proceeding?

A. I recommend a return on common equity in the range of 8.06 percent to 9.06 percent based on the results of my comparable-company-DCF analysis.

RATE OF RETURN FOR ALGONQUINMO

Q. How are the returns you developed for each capital component used in the ratemaking approach you have adopted for AlgonquinMO?

A. The cost-of-service ratemaking method was adopted in this case. This approach develops the public utility's revenue requirement. The cost of service (revenue requirement) is based on the following components: operating costs, rate base and a return allowed on the rate base (see Schedule 18).

Direct Testimony of
Matthew J. Barnes

1 It is my responsibility to calculate and recommend a rate of return that should be
2 authorized on the Missouri jurisdictional water utility rate base of AlgonquinMO. Under the
3 cost-of-service ratemaking approach, a weighted cost of capital in the range of 6.99 to
4 7.47 percent was developed for AlgonquinMO's water utility operations (see Schedule 19).
5 This rate was calculated by applying a hypothetical embedded cost of long-term debt of
6 6.01 percent and a cost of common equity range of 8.06 percent to 9.06 percent to a capital
7 structure consisting of 52.12 percent long-term debt and 47.88 percent common equity.
8 Therefore, from a financial perspective, I am recommending that AlgonquinMO's water
9 utility operations be allowed to earn a return on its original cost rate base in the range of
10 7.02 percent to 7.50 percent.

11 It is my expert opinion that, through my analysis I have developed a fair and
12 reasonable return, which, when applied to AlgonquinMO's jurisdictional rate base, will allow
13 AlgonquinMO the opportunity to earn the revenue requirement developed in this rate case.

14 Q. Does this conclude your prepared direct testimony?

15 A. Yes, it does.

MATTHEW J. BARNES

TESTIMONY SCHEDULES A THROUGH E

ALGONQUIN WATER RESOURCES OF MISSOURI, LLC

CASE NO. WR-2006-0425

RECOMMENDED COST OF COMMON EQUITY

Q. Is your recommendation of the cost of common equity consistent with a fair rate of return on common equity?

A. Yes. It is my expert opinion that my recommendation as to the cost of common equity is consistent with a fair rate of return on common equity. It is generally recognized that authorizing an allowed return on common equity based on a utility's cost of common equity is consistent with a fair rate of return. It is for this very reason that the discounted cash flow (DCF) model is widely recognized as an appropriate model to utilize in arriving at a reasonable recommended return on equity that should be authorized for a utility. The concept of the DCF model is to determine the cost of common equity capital to the utility, which reflects the current economic and capital market environment. For example, a company may achieve a return on common equity that is higher than its cost of common equity. This situation will tend to increase the share price. However, this does not mean that this past, achieved return is the barometer for what would be a fair authorized return in the context of a rate case. It is the lower cost of capital that should be recognized as a fair authorized return. If a utility continues to be allowed a return on common equity that is not reflective of today's current low-cost-of-capital environment, then this will result in the possibility of excessive returns.

1 The authorized return should provide a fair and reasonable return to the investors of
2 the company, while ensuring that ratepayers do not support excessive earnings that could
3 result from the utility's monopolistic powers. However, this fair and reasonable rate does not
4 necessarily guarantee revenues or the continued financial integrity of the utility.

5 It should be noted that a reasonable return may vary over time as economic conditions,
6 such as the level of interest rates, and business conditions change. Therefore, the past, present
7 and projected economic and business conditions must be analyzed in order to calculate a fair
8 and reasonable rate of return.

HISTORICAL ECONOMIC CONDITIONS

Q. Please discuss the historical economic conditions in which AlgonquinMO has operated.

A. One of the most commonly accepted indicators of economic conditions is the discount rate set by the Federal Reserve Board (Federal Reserve or Fed). The Federal Reserve tries to achieve its monetary policy objectives by controlling the discount rate (the interest rate charged by the Federal Reserve for loans of reserves to depository institutions) and the Federal (Fed) Funds Rate (the overnight lending rate between banks). However, recently the Fed Funds Rate has become the primary means for the Federal Reserve to achieve its monetary policy, and the discount rate has become more of a symbolic interest rate. This explains why the Federal Reserve's decisions now focus on the Fed Funds rate. It should also be noted that on January 9, 2003, the Federal Reserve changed the way the discount window is administered. Under the changed administration of the discount window, an eligible institution does not need to exhaust other sources of funds before coming to the discount window, nor are there restrictions on the purposes for which the borrower can use primary credit. This explains why the discount rate jumped from 0.75 percent to 2.25 percent on January 9, 2003, even though the Fed Funds rate didn't change. Therefore, discount rates before January 9, 2003, are not comparable to discount rates after January 9, 2003.

At the end of 1982, the U.S. economy was in the early stages of an economic expansion, following the longest post-World War II recession. This economic expansion began when the Federal Reserve reduced the discount rate seven times in the second half of 1982 in an attempt to stimulate the economy. This reduction in the discount rate led to a reduction in the prime interest rate (the rate charged by banks on short-term loans to

1 borrowers with high credit ratings) from 16.50 percent in June 1982, to 11.50 percent in
2 December 1982. The economic expansion continued for approximately eight years until
3 July 1990, when the economy entered into a recession.

4 In December 1990, the Federal Reserve responded to the slumping economy by
5 lowering the discount rate to 6.50 percent (see Schedules 2-1 and 2-2). Over the next year-
6 and-a-half, the Federal Reserve lowered the discount rate another six times to a low of
7 3.00 percent, which had the effect of lowering the prime interest rate to 6.00 percent (see
8 Schedules 3-1 and 3-2).

9 In 1993, perhaps the most important factor for the U.S. economy was the passage of
10 the North American Free Trade Agreement (NAFTA). NAFTA created a free-trade zone
11 consisting of the United States, Canada and Mexico. The rate of economic growth for the
12 fourth quarter of 1993 was one the Federal Reserve believed could not be sustained without
13 experiencing higher inflation. Therefore in the first quarter of 1994, the Federal Reserve took
14 steps to try to restrict the economy by increasing interest rates. As a result, on March 24,
15 1994, the prime interest rate increased to 6.25 percent. On April 18, 1994, the Federal
16 Reserve announced its intention to raise its targeted interest rates, which resulted in the prime
17 interest rate increasing to 6.75 percent. The Federal Reserve took action again on May 17,
18 1994, by raising the discount rate to 3.50 percent. The Federal Reserve took three additional
19 restrictive monetary actions, with the last occurring on February 1, 1995. These actions raised
20 the discount rate to 5.25 percent, and in turn, banks raised the prime interest rate to
21 9.00 percent.

22 The Federal Reserve then reversed its policy in late 1995 by lowering its target for the
23 Fed Funds Rate by 0.25 percentage points on two different occasions. This had the effect of

1 lowering the prime interest rate to 8.50 percent. On January 31, 1996, the Federal Reserve
2 lowered the discount rate to a rate of 5.00 percent.

3 The actions of the Federal Reserve from 1996 through 2000 were primarily focused on
4 keeping the level of inflation under control, and it was successful. The inflation rate, as
5 measured by the *Consumer Price Index - All Urban Consumers* (CPI), was never higher than
6 3.70 percent during this period. The increase in CPI stood at 2.10 percent for the twelve
7 months ending September 31, 2006 (see attached Schedules 4-1, 4-2 and 6).

8 The unemployment rate was 4.40 percent as of October 2006 (see Schedule 6). A
9 lower unemployment rate probably provides the Fed with some comfort to continue to raise
10 the Fed Funds rate if it believes this is needed to contain inflation.

11 The combination of low inflation and low unemployment had led to a prosperous
12 economy from 1993 through 2000 as evidenced by the fact that real gross domestic
13 product (GDP) of the United States increased every quarter during this period. However,
14 GDP actually declined for the first three quarters of 2001, indicating there was a contraction
15 in the economy during these three quarters. This contraction of GDP for more than two
16 quarters in a row meets the textbook definition of a recession. According to the National
17 Bureau of Economic Research, the recession began in March of 2001 and ended eight months
18 later. Since the recession ended, GDP had been low up until the second quarter of 2003, but
19 since the second quarter of 2003, GDP has been fairly healthy. GDP grew at a rate of
20 2.60 percent for the third quarter of 2006 (see attached Schedule 6).

1 **INFLATIONARY ESTIMATIONS AND EXPECTATIONS FOR 2006-2008**

2 Q. What are the inflationary estimations and expectations for 2006 through 2008?

3 A. *The Value Line Investment Survey: Selection & Opinion*, August 25, 2006,
4 estimates inflation to be 2.00 percent for 2006, 2.50 percent for 2007 and 2.40 percent for
5 2008. The Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years*
6 *2007-2016*, issued January 2006, states that inflation is expected to be 2.80 percent for 2006,
7 2.20 percent for 2007 and 2.20 percent for 2008 (see attached Schedule 6).

8 Q. What are the interest rate forecasts for 2006, 2007 and 2008 and the current
9 interest rates?

10 A. Short-term interest rates (those measured by three-month U.S. Treasury Bills),
11 are estimated to be 4.80 percent in 2006, 4.70 percent in 2007 and 4.50 percent in 2008
12 according to *Value Line's* predictions. *Value Line* expects the long-term, Thirty-Year
13 U.S. Treasury Bonds to average 4.90 percent in 2006, 4.80 percent in 2007 and 5.20 percent
14 in 2008. The current rate for three-month U.S. Treasury Bills was 4.92 percent as of
15 October 1, 2006, as noted on the St. Louis Federal Reserve website,
16 <http://research.stlouisfed.org/fred2/series/TB3MS/22>. The current rate for Thirty-Year U.S.
17 Treasury Bonds was 4.70 percent as of November 15, 2006, as noted on the CBS
18 MarketWatch website, <http://www.marketwatch.com>.

19 Q. What are the growth estimates and expectations for real GDP?

20 A. GDP is a benchmark utilized by the Commerce Department to measure
21 economic growth within the U.S. borders. Real GDP is measured by the actual GDP, adjusted
22 for inflation. *Value Line* stated that Real GDP is expected to increase by 3.20 percent in
23 2006, 2.30 percent in 2007 and 3.20 percent in 2008. The Congressional Budget Office's,

1 *The Budget and Economic Outlook: Fiscal Years 2007-2016* stated that Real GDP is expected
2 to increase by 3.6 percent in 2006, 3.4 percent in 2007 and 3.1 percent in 2008 (see attached
3 Schedule 6).

4 Q. Please summarize the expectations of the economic conditions for the next few
5 years.

6 A. In summary, when combining the previously mentioned sources, inflation is
7 expected to be in the range of 2.00 percent to 2.80 percent, increase in Real GDP in the range
8 of 2.30 percent to 3.60 percent, and long-term interest rates are expected to range from 4.90
9 percent to 5.20 percent.

10 Selected excerpts from *The Value Line Investment Survey: Selection & Opinion*,
11 November 24, 2006, follow:

12
13 The moderation in the economy is continuing as 2006 winds down.
14 In some cases--notably housing--the deceleration in economic
15 activity is intensifying. Otherwise, the picture is largely mixed.
16 True, the sequential pattern in the gross domestic product is
17 disturbing, with growth of 5.6%, 2.6%, and 1.6% respectively, in
18 the first, second, and third quarters of this year. Moreover, the
19 housing slump is deepening and we're seeing softness in
20 manufacturing, auto production, and consumer spending. On the
21 other hand, nonmanufacturing activity is picking up; personal
22 income is on the rise; non-farm payrolls are increasing at a fairly
23 good pace, on average; and the jobless rate is at a five-and-a-half
24 year low.

25
26 How serious is the slowdown in business activity likely to
27 become? That is the principal question at this time. Our
28 expectation is that the U.S. economy will remain on a generally
29 slow track in the year ahead, with growth likely to average 2.0%-
30 2.5% in the next few quarters, as the various economic sectors see
31 their outlooks alternately brighten and dim as the business cycle
32 unfolds. Our sense is that we are near the low point in the
33 slowdown, with growth likely to be at the low end of the 2.0%-
34 2.5% range in the current quarter and through the early part of
35 2007, before climbing back to the top of that range or a little

1 beyond by the second half of the new year. We do not expect a
2 recession to unfold in 2007, unless the housing downturn
3 accelerates, oil resumes its climb, retail spending falters, or the
4 Federal Reserve Board miscalculates on the interest-rate front.
5

6 All eyes will be on the Federal Reserve, as the nation's central
7 bank endeavors to maintain a balanced monetary approach. The
8 objective is to keep interest rates low enough to sustain the
9 economic up cycle (even at this modest rate), but high enough to
10 discourage inflationary excesses in labor and raw materials from
11 taking hold. It is a delicate balancing act, to be sure, but one in
12 which the Fed will need to realize success over the next year given
13 the concurrent softness in the economy and the selective uptick in
14 inflation in recent months.

DCF MODEL

Q. Please describe the DCF model.

A. The DCF model is a market-oriented approach for deriving the cost of common equity. The cost of common equity calculated from the DCF model is inherently capable of attracting capital. This results from the theory that security prices adjust continually over time, so that an equilibrium price exists and the stock is neither undervalued nor overvalued. It can also be stated that stock prices continually fluctuate to reflect the required and expected return for the investor.

The constant-growth form of the DCF model was used in this analysis. This model relies upon the fact that a company's common stock price is dependent upon the expected cash dividends and upon cash flows received through capital gains or losses that result from stock price changes. The interest rate which discounts the sum of the future expected cash flows to the current market price of the common stock is the calculated cost of common equity. This can be expressed algebraically as:

$$\text{Present Price} = \frac{\text{Expected Dividends}}{\text{Discounted by } k} + \frac{\text{Expected Price in 1 year}}{\text{Discounted by } k} \quad (1)$$

where k equals the cost of equity. Since the expected price of a stock in one year is equal to the present price multiplied by one plus the growth rate, equation (1) can be restated as:

$$\text{Present Price} = \frac{\text{Expected Dividends}}{(1 + k)} + \frac{\text{Present Price } (1+g)}{(1 + k)} \quad (2)$$

1 where g equals the growth rate and k equals the cost of equity. Letting the present price equal
2 P_0 and expected dividends equal D_1 , the equation appears as:

$$3 \quad P_0 = \frac{D_1}{(1+k)} + \frac{P_0(1+g)}{(1+k)} \quad (3)$$

6 The cost of equity equation may also be algebraically represented as:

$$7 \quad k = \frac{D_1}{P_0} + g \quad (4)$$

10 Thus, the cost of common stock equity, k, is equal to the expected dividend yield
11 (D_1/P_0) plus the expected growth in dividends (g) continuously summed into the future. The
12 growth in dividends and implied growth in earnings will be reflected in the current price.
13 Therefore, this model also recognizes the potential of capital gains or losses associated with
14 owning a share of common stock.

15 The discounted cash flow method is a continuous stock valuation model. The DCF
16 theory is based on the following assumptions:

- 17 1. Market equilibrium;
- 18 2. Perpetual life of the company;
- 19 3. Constant payout ratio;
- 20 4. Payout of less than 100% earnings;
- 21 5. Constant price/earnings ratio;
- 22 6. Constant growth in cash dividends;
- 23 7. Stability in interest rates over time;
- 24 8. Stability in required rates of return over time; and

1 9. Stability in earned returns over time.

2 Flowing from these, it is further assumed that an investor's growth horizon is
3 unlimited and that earnings, book values and market prices grow hand-in-hand. Although the
4 entire list of the above assumptions is rarely met, the DCF model is a reasonable working
5 model describing an actual investor's expectations and resulting behaviors.

CAPM MODEL

Q. Please describe the CAPM.

A. The CAPM describes the relationship between a security's investment risk and its market rate of return. This relationship identifies the rate of return which investors expect a security to earn so that its market return is comparable with the market returns earned by other securities that have similar risk. The general form of the CAPM is as follows:

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

where:

k = the expected return on equity for a specific security;

R_f = the risk-free rate;

β = beta; and

$R_m - R_f$ = the market risk premium.

The first term of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level of return that can be achieved without accepting any risk. In reality, there is no such risk-free asset, but it is generally represented by U.S. Treasury securities.

The second term of the CAPM is beta (β). Beta is an indicator of a security's investment risk. It represents the relative movement and relative risk between a particular security and the market as a whole (where beta for the market equals 1.00). Securities with betas greater than 1.00 exhibit greater volatility than do securities with betas less than 1.00. This causes a higher beta security to be less desirable to a risk-averse investor and therefore requires a higher return in order to attract investor capital away from a lower beta security.

The final term of the CAPM is the market risk premium ($R_m - R_f$). The market risk premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk-free investment.

AN ANALYSIS OF THE COST OF CAPITAL

FOR

ALGONQUIN WATER RESOURCES OF MISSOURI, LLC

CASE NO. WR-2006-0425

SCHEDULES

BY

MATTHEW J. BARNES

UTILITY SERVICES DIVISION

MISSOURI PUBLIC SERVICE COMMISSION

DECEMBER 2006

Algonquin Water Resources
WR-2006-0425

List of Schedules

Schedule Number	Description of Schedule
1	List of Schedules
2-1	Federal Reserve Discount Rate and Federal Reserve Funds Rate Changes
2-2	Graph of Federal Reserve Discount Rates and Federal Reserve Funds Rates Changes
3-1	Average Prime Interest Rates
3-2	Graph of Average Prime Interest Rates
4-1	Rate of Inflation
4-2	Graph of Rate of Inflation
5-1	Average Yields on Mergent's Public Utility Bonds
5-2	Average Yields on Thirty-Year U.S. Treasury Bonds
5-3	Graph of Average Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds
5-4	Graph of Monthly Spreads Between Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds
5-5	Graph of Moody's Baa Corporate Bond Yields
6	Economic Estimates and Projections, 2006-2008
7	Criteria for Selecting Comparable Water Utility Companies
8	Comparable Water Utility Companies for Algonquin Water Resources of Missouri
9-1	American States Water Company's Stated Cost of Long-Term Debt as of December 31, 2005
9-2	Aqua America Inc.'s Stated Cost of Long-Term Debt as of December 31, 2005
9-3	California Water Service Group Corporation's Stated Cost of Long-Term Debt as of December 31, 2005
9-4	Middlesex Water Company's Stated Cost of Long-Term Debt as of December 31, 2005
10-1	Stated Cost of Long-Term Debt for the Four Comparable Water Utility Companies as of December 31, 2005
10-2	Hypothetical Embedded Cost of Long-Term Debt for Algonquin Water Resources of Missouri as of December 31, 2006
11	Hypothetical Capital Structure as of December 31, 2006 for Algonquin Water Resources of Missouri
12-1	Ten-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Four Comparable Water Utility Companies
12-2	Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates for the Four Comparable Water Utility Companies
12-3	Average of Ten- and Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share of Growth Rates for the Four Comparable Water Utility Companies
13	Historical and Projected Growth Rates for the Four Comparable Water Utility Companies
14	Average High / Low Stock Price for June 2006 through September 2006 for the Four Comparable Water Utility Companies
15	Discounted Cash Flow (DCF) Estimated Costs of Common Equity for the Four Comparable Water Utility Companies
16	Capital Asset Pricing Model (CAPM) Costs of Common Equity Estimates Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries for the Four Comparable Water Utility Companies
17	Selected Financial Ratios for the Four Comparable Water Utility Companies
18	Public Utility Revenue Requirement or Cost of Service
19	Weighted Cost of Capital as of December 31, 2005 for Algonquin Water Resources of Missouri

**Algonquin Water Resources
WR-2006-0425**

Federal Reserve Discount Rates Changes and Federal Reserve Funds Rates Changes

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate	Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
07/19/82	11.50%		01/31/96	5.00%	5.25%
07/31/82	11.00%		03/25/97		5.50%
08/14/82	10.50%		12/12/97	5.00%	
08/26/82	10.00%		01/09/98	5.00%	
10/10/82	9.50%		03/06/98	5.00%	
11/20/82	9.00%		09/29/98		5.25%
12/14/82	8.50%		10/15/98	4.75%	5.00%
01/01/83	8.50%		11/17/98	4.50%	4.75%
12/31/83	8.50%		06/30/99	4.50%	5.00%
04/09/84	9.00%		08/24/99	4.75%	5.25%
11/21/84	8.50%		11/16/99	5.00%	5.50%
12/24/84	8.00%		02/02/00	5.25%	5.75%
05/20/85	7.50%		03/21/00	5.50%	6.00%
03/07/86	7.00%		05/19/00	6.00%	6.50%
04/21/86	6.50%		01/03/01	5.75%	6.00%
07/11/86	6.00%		01/04/01	5.50%	6.00%
08/21/86	5.50%		01/31/01	5.00%	5.50%
09/04/87	6.00%		03/20/01	4.50%	5.00%
08/09/88	6.50%		04/18/01	4.00%	4.50%
02/24/89	7.00%		05/15/01	3.50%	4.00%
07/13/90		8.00% *	06/27/01	3.25%	3.75%
10/29/90		7.75%	08/21/01	3.00%	3.50%
11/13/90		7.50%	09/17/01	2.50%	3.00%
12/07/90		7.25%	10/02/01	2.00%	2.50%
12/18/90		7.00%	11/06/01	1.50%	2.00%
12/19/90	6.50%		12/11/01	1.25%	1.75%
01/09/91		6.75%	11/06/02	0.75%	1.25%
02/01/91	6.00%	6.25%	01/09/03	2.25%**	1.25%
03/08/91		6.00%	06/25/03	2.00%	1.00%
04/30/91	5.50%	5.75%	06/30/04	2.25%	1.25%
08/06/91		5.50%	08/10/04	2.50%	1.50%
09/13/91	5.00%	5.25%	09/21/04	2.75%	1.75%
10/31/91		5.00%	11/10/04	3.00%	2.00%
11/06/91	4.50%	4.75%	12/14/04	3.25%	2.25%
12/06/91		4.50%	02/02/05	3.50%	2.50%
12/20/91	3.50%	4.00%	03/22/05	3.75%	2.75%
04/09/92		3.75%	05/03/05	4.00%	3.00%
07/02/92	3.00%	3.25%	06/30/05	4.25%	3.25%
09/04/92		3.00%	08/09/05	4.50%	3.50%
01/01/93			09/20/05	4.75%	3.75%
12/31/93	No Changes	No Changes	11/01/05	5.00%	4.00%
02/04/94		3.25%	12/13/05	5.25%	4.25%
03/22/94		3.50%	01/31/06	5.50%	4.50%
04/18/94		3.75%	03/28/06	5.75%	4.75%
05/17/94	3.50%	4.25%	05/10/06	6.00%	5.00%
08/16/94	4.00%	4.75%	06/29/06	6.25%	5.25%
11/15/94	4.75%	5.50%			
02/01/95	5.25%	6.00%			
07/06/95		5.75%			
12/19/95		5.50%			

* Staff began tracking the Federal Funds Rate.

**Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy results in incomparability of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

Source:

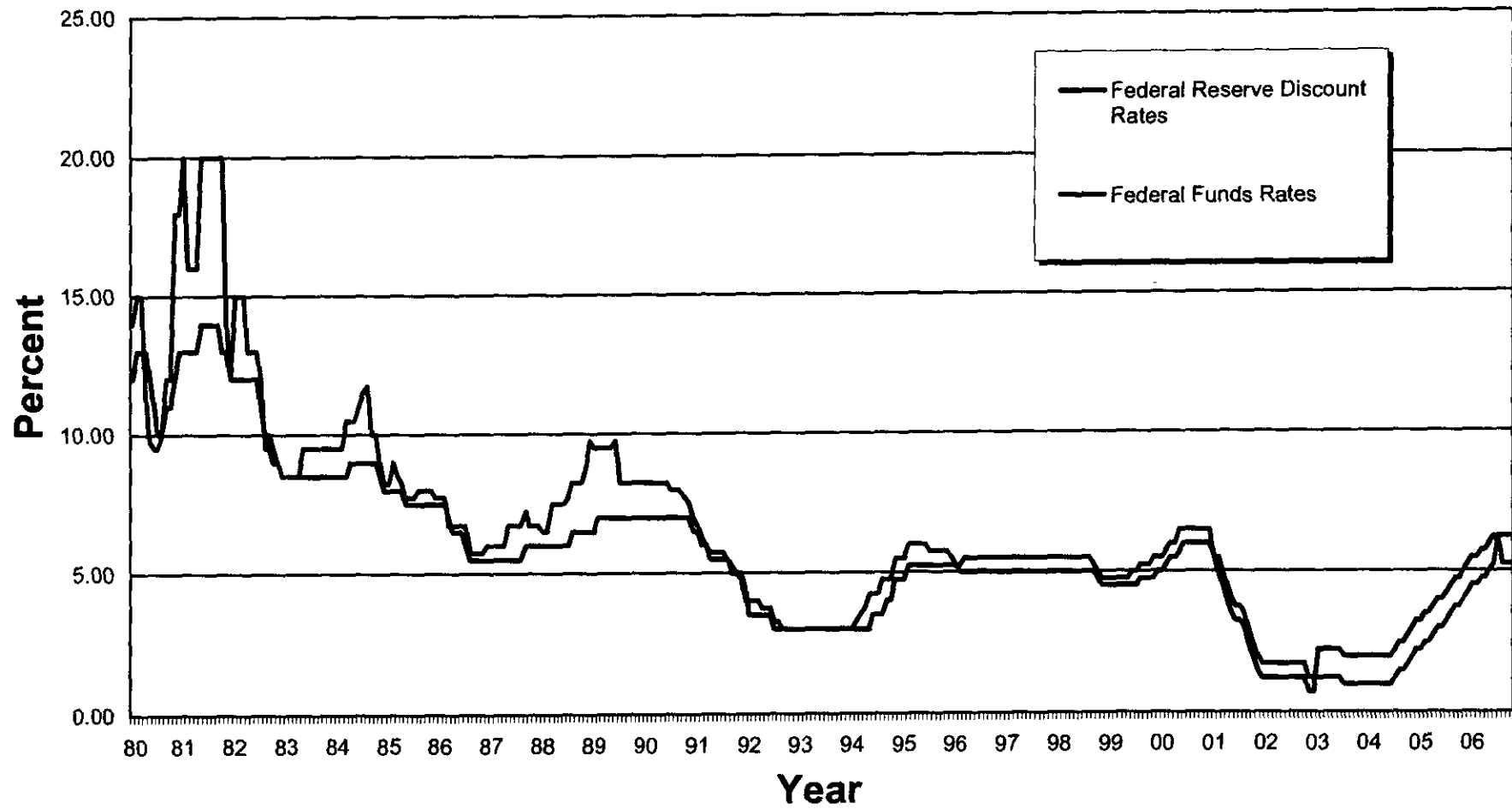
Federal Reserve Discount rate <http://www.newyorkfed.org/markets/statistics/dlvrates/fedrate.html>

Federal Reserve Funds rate <http://www.newyorkfed.org/markets/statistics/dlvrates/fedrate.html>

Note: Interest rates as of December 31 for each year are underlined.

Algonquin Water Resources
WR-2006-0425

Federal Reserve Discount Rates and Federal Funds Rates
1980 - 2006



Schedule 2-2

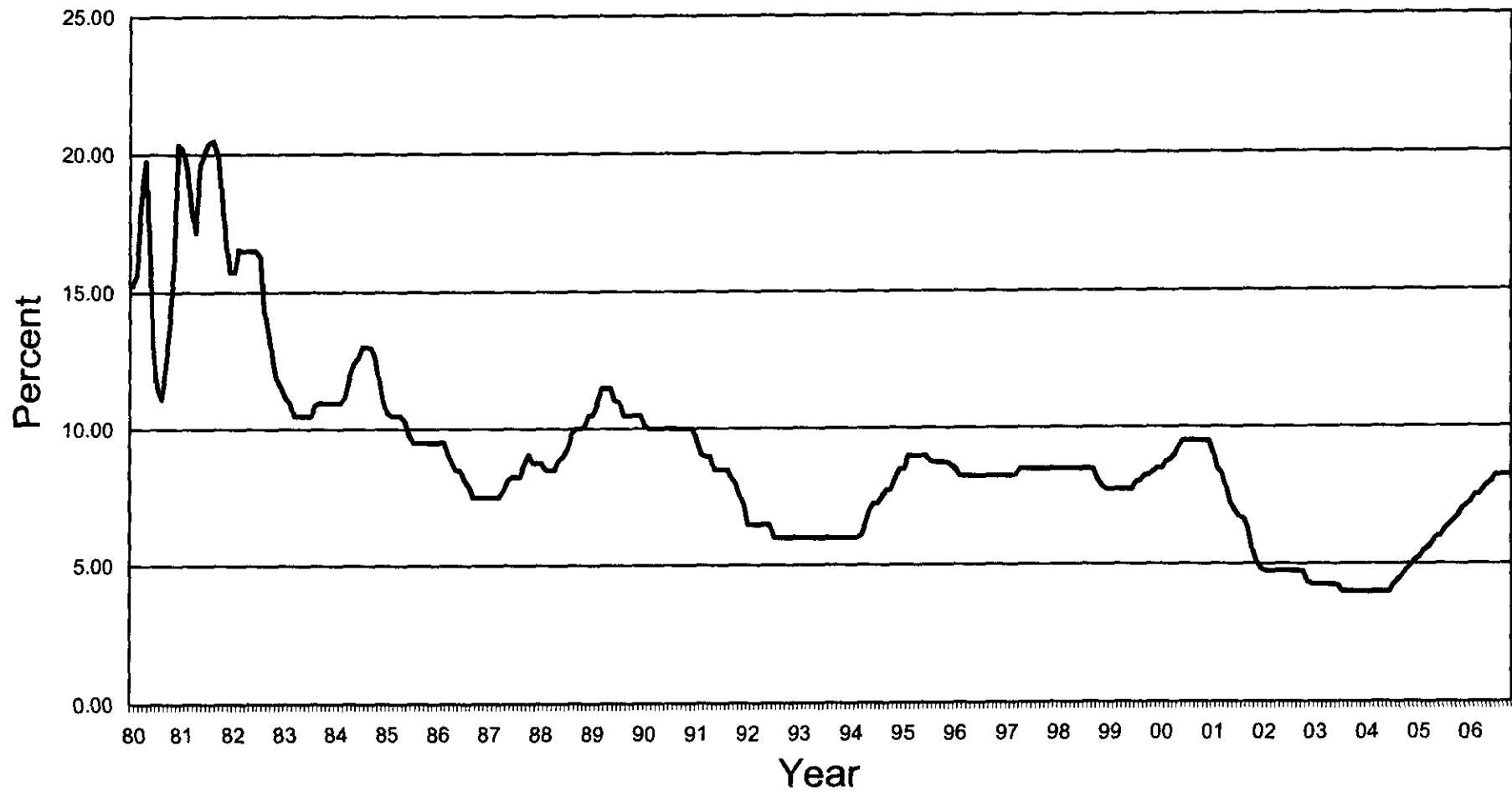
SCHEDULE 2-2

Average Prime Interest Rates

Source: <http://research.stlouisfed.org/fred2/data/MPRME.txt>

Algonquin Water Resources
WR-2006-0425

Average Prime Interest Rates
1980 - 2006

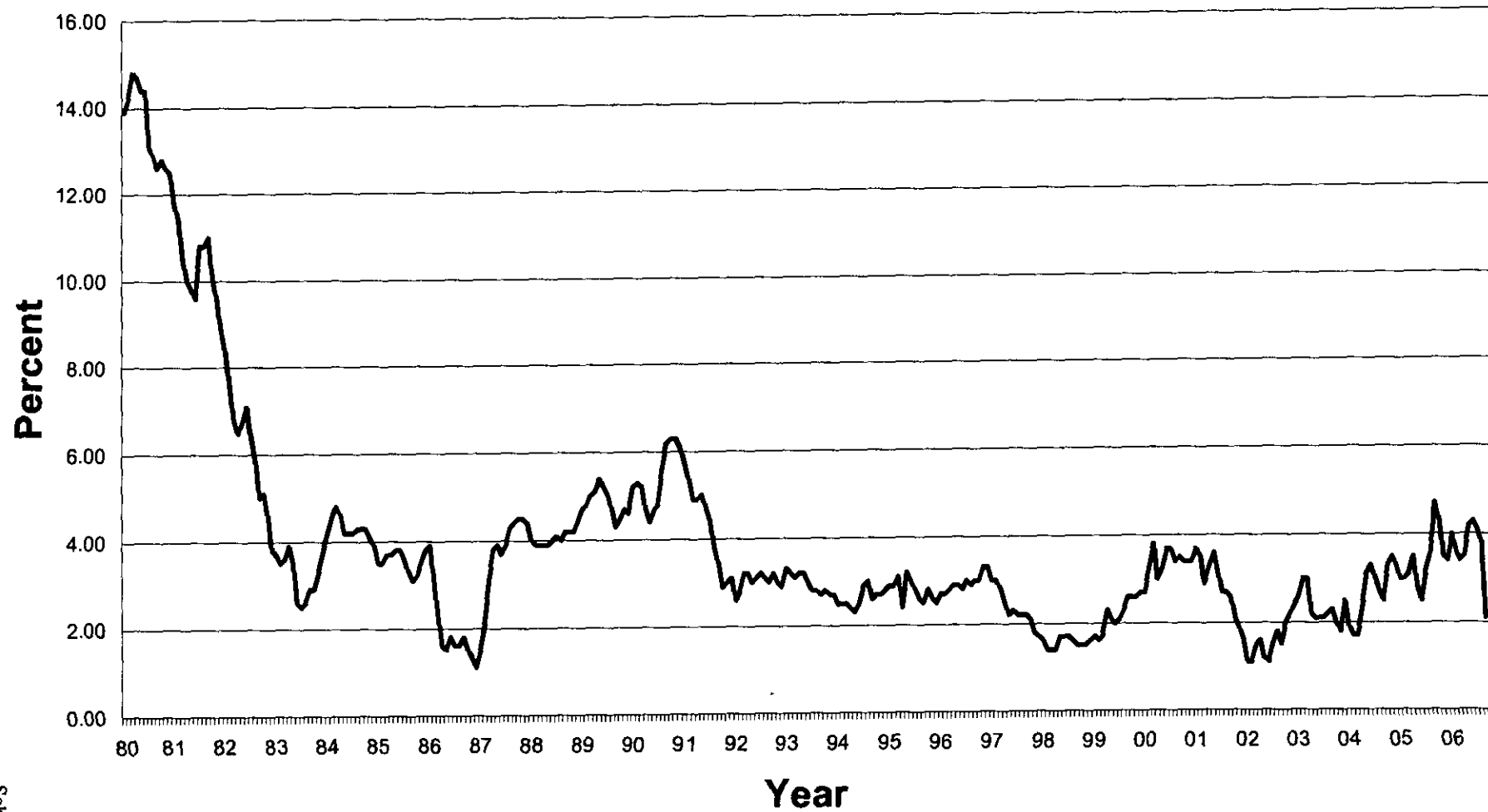


Rate of Inflation

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers Change for 12-Month Period, Bureau of Labor Statistics, http://www.bls.gov/schedule/archives/cpi_mt.htm

Algonquin Water Resources
WR-2006-0425

Rate of Inflation
1980 - 2006



Average Yields on Mergent's Public Utility Bonds

Source: Mergent Bond Record

Algonquin Water Resources
WR-2006-0425

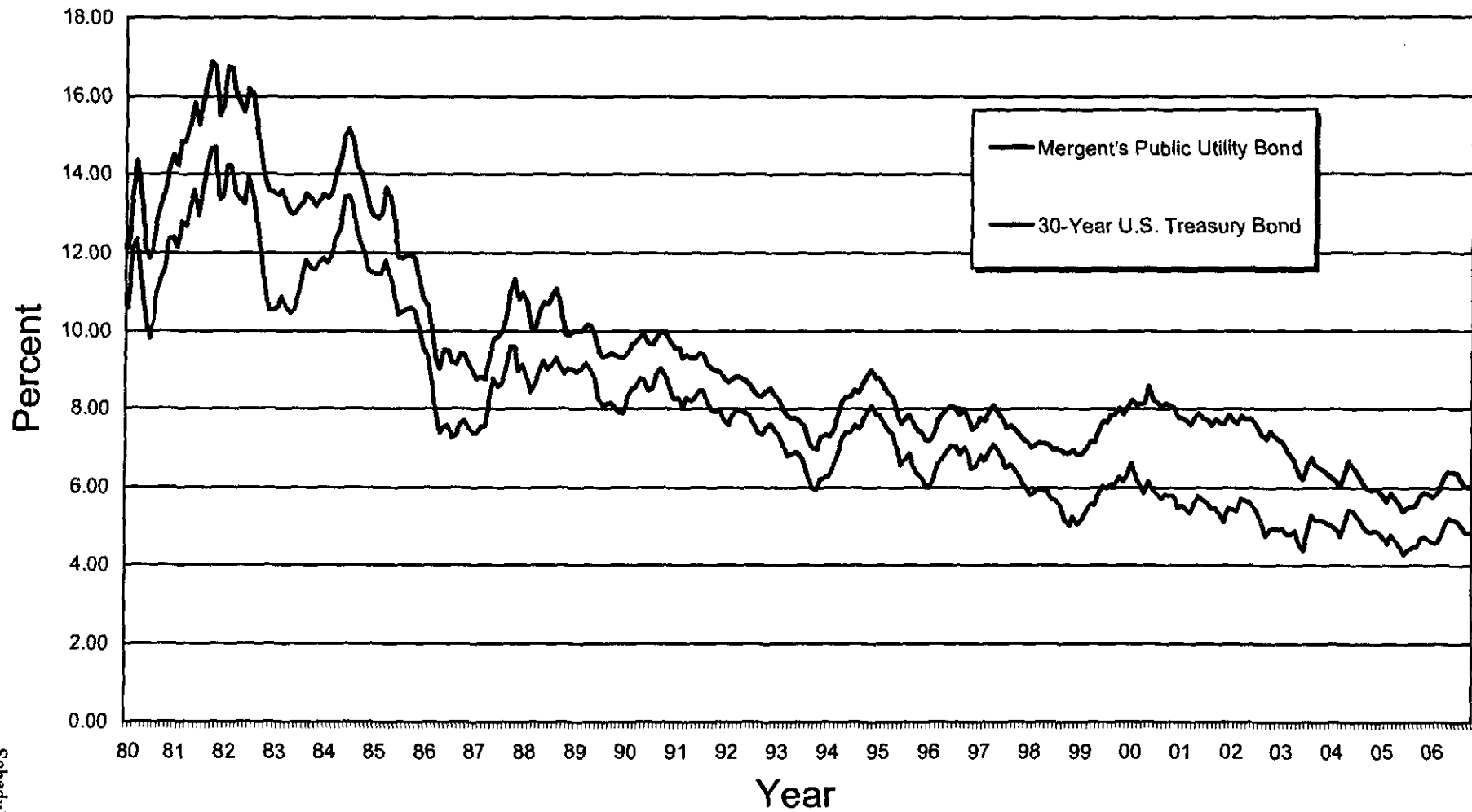
Average Yields on Thirty-Year U.S. Treasury Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	10.60	Jan 1984	11.75	Jan 1988	8.83	Jan 1992	7.58	Jan 1996	6.05	Jan 2000	6.63	Jan 2004	4.99	Jan 2005	5.54	Jan 2006	5.44
Feb	12.13	Feb	11.95	Feb	8.43	Feb	7.85	Feb	6.24	Feb	6.23	Feb	4.93	Feb	5.45	Feb	5.44
Mar	12.34	Mar	12.38	Mar	8.63	Mar	7.97	Mar	6.60	Mar	6.05	Mar	4.74	Mar	5.34	Mar	5.39
Apr	11.40	Apr	12.65	Apr	8.95	Apr	7.96	Apr	6.79	Apr	5.85	Apr	5.14	Apr	4.65	Apr	5.71
May	10.36	May	13.43	May	9.23	May	7.89	May	7.06	May	5.93	May	5.42	May	4.49	May	5.67
Jun	9.81	Jun	13.44	Jun	9.00	Jun	7.84	Jun	7.03	Jun	5.85	Jun	5.41	Jun	4.29	Jun	5.52
Jul	10.24	Jul	13.21	Jul	9.14	Jul	7.60	Jul	6.51	Jul	5.38	Jul	5.22	Jul	4.41	Jul	5.13
Aug	11.00	Aug	12.54	Aug	9.32	Aug	7.39	Aug	6.58	Aug	5.08	Aug	5.06	Aug	4.46	Aug	5.08
Sep	11.34	Sep	12.29	Sep	9.06	Sep	7.34	Sep	6.33	Sep	4.76	Sep	4.90	Sep	4.47	Sep	4.76
Oct	11.59	Oct	11.98	Oct	8.89	Oct	7.53	Oct	6.33	Oct	4.93	Oct	4.86	Oct	4.73	Oct	4.85
Nov	12.37	Nov	11.56	Nov	9.02	Nov	7.61	Nov	6.11	Nov	4.95	Nov	4.89	Nov	4.86	Nov	4.95
Dec	12.40	Dec	11.52	Dec	9.01	Dec	7.44	Dec	5.99	Dec	4.92	Dec	4.86	Dec	4.73	Dec	4.92
Jan 1981	12.14	Jan 1985	11.45	Jan 1989	8.93	Jan 1993	7.09	Jan 1997	6.83	Jan 2001	5.54	Jan 2005	5.54	Jan 2006	5.44	Jan 2007	5.44
Feb	12.80	Feb	11.47	Feb	9.01	Feb	6.82	Feb	6.09	Feb	5.45	Feb	4.78	Feb	4.55	Feb	5.44
Mar	12.69	Mar	11.81	Mar	9.17	Mar	6.85	Mar	6.33	Mar	5.34	Mar	4.65	Mar	4.78	Mar	5.39
Apr	13.20	Apr	11.47	Apr	9.03	Apr	6.92	Apr	6.50	Apr	5.65	Apr	4.55	Apr	4.65	Apr	5.71
May	13.60	May	11.05	May	8.83	May	6.81	May	6.33	May	5.78	May	4.49	May	4.29	May	5.67
Jun	12.96	Jun	10.44	Jun	8.27	Jun	6.81	Jun	6.33	Jun	5.61	Jun	4.41	Jun	4.29	Jun	5.52
Jul	13.59	Jul	10.50	Jul	8.08	Jul	6.63	Jul	6.33	Jul	5.48	Jul	4.41	Jul	4.41	Jul	5.38
Aug	14.17	Aug	10.56	Aug	8.12	Aug	6.32	Aug	6.33	Aug	5.48	Aug	4.46	Aug	4.46	Aug	5.08
Sep	14.67	Sep	10.61	Sep	8.15	Sep	6.00	Sep	6.33	Sep	5.48	Sep	4.47	Sep	4.47	Sep	4.76
Oct	14.68	Oct	10.50	Oct	8.00	Oct	5.94	Oct	6.33	Oct	5.32	Oct	4.67	Oct	4.73	Oct	4.85
Nov	13.35	Nov	10.06	Nov	7.90	Nov	6.21	Nov	6.11	Nov	5.48	Nov	4.73	Nov	4.73	Nov	4.95
Dec	13.45	Dec	9.54	Dec	7.90	Dec	6.25	Dec	5.99	Dec	5.44	Dec	4.66	Dec	4.73	Dec	4.92
Jan 1982	14.22	Jan 1986	9.40	Jan 1990	8.26	Jan 1994	6.29	Jan 1998	5.81	Jan 2002	5.44	Jan 2006	4.59	Jan 2007	5.44	Jan 2008	5.44
Feb	14.22	Feb	8.93	Feb	8.50	Feb	6.49	Feb	5.81	Feb	5.39	Feb	4.58	Feb	5.44	Feb	5.44
Mar	13.53	Mar	7.96	Mar	8.56	Mar	6.91	Mar	5.95	Mar	5.71	Mar	4.73	Mar	5.44	Mar	5.44
Apr	13.37	Apr	7.39	Apr	8.76	Apr	7.27	Apr	5.92	Apr	5.67	Apr	5.06	Apr	5.44	Apr	5.44
May	13.24	May	7.52	May	8.73	May	7.41	May	5.93	May	5.64	May	5.20	May	5.44	May	5.44
Jun	13.92	Jun	7.57	Jun	8.46	Jun	7.40	Jun	5.70	Jun	5.52	Jun	5.16	Jun	5.44	Jun	5.44
Jul	13.55	Jul	7.27	Jul	8.50	Jul	7.58	Jul	5.68	Jul	5.38	Jul	5.13	Jul	5.44	Jul	5.44
Aug	12.77	Aug	7.33	Aug	8.86	Aug	7.49	Aug	5.54	Aug	5.08	Aug	5.00	Aug	5.44	Aug	5.44
Sep	12.07	Sep	7.62	Sep	9.03	Sep	7.71	Sep	5.20	Sep	4.76	Sep	4.85	Sep	5.44	Sep	5.44
Oct	11.17	Oct	7.70	Oct	8.86	Oct	7.94	Oct	5.01	Oct	4.93	Oct	4.85	Oct	5.44	Oct	5.44
Nov	10.54	Nov	7.52	Nov	8.54	Nov	8.08	Nov	5.25	Nov	4.95	Nov	4.85	Nov	5.44	Nov	5.44
Dec	10.54	Dec	7.37	Dec	8.24	Dec	7.87	Dec	5.06	Dec	4.94	Dec	4.85	Dec	5.44	Dec	5.44
Jan 1983	10.63	Jan 1987	7.39	Jan 1991	8.27	Jan 1995	7.85	Jan 1999	5.16	Jan 2003	4.94	Jan 2007	4.59	Jan 2008	5.44	Jan 2009	5.44
Feb	10.88	Feb	7.54	Feb	8.03	Feb	7.61	Feb	5.37	Feb	4.81	Feb	4.59	Feb	5.44	Feb	5.44
Mar	10.63	Mar	7.55	Mar	8.29	Mar	7.45	Mar	5.58	Mar	4.80	Mar	4.59	Mar	5.44	Mar	5.44
Apr	10.48	Apr	8.25	Apr	8.21	Apr	7.36	Apr	5.55	Apr	4.90	Apr	4.59	Apr	5.44	Apr	5.44
May	10.53	May	8.78	May	8.27	May	6.95	May	5.81	May	4.53	May	4.59	May	5.44	May	5.44
Jun	10.93	Jun	8.57	Jun	8.47	Jun	6.57	Jun	6.04	Jun	4.37	Jun	4.59	Jun	5.44	Jun	5.44
Jul	11.40	Jul	8.64	Jul	8.45	Jul	6.72	Jul	5.98	Jul	4.93	Jul	4.59	Jul	5.44	Jul	5.44
Aug	11.82	Aug	8.97	Aug	8.14	Aug	6.86	Aug	6.07	Aug	5.30	Aug	5.14	Aug	5.44	Aug	5.44
Sep	11.63	Sep	9.59	Sep	7.95	Sep	6.55	Sep	6.07	Sep	5.14	Sep	5.16	Sep	5.44	Sep	5.44
Oct	11.58	Oct	9.61	Oct	7.93	Oct	6.37	Oct	6.26	Oct	5.16	Oct	5.13	Oct	5.44	Oct	5.44
Nov	11.75	Nov	8.95	Nov	7.92	Nov	6.26	Nov	6.15	Nov	5.13	Nov	5.13	Nov	5.44	Nov	5.44
Dec	11.88	Dec	9.12	Dec	7.70	Dec	6.06	Dec	6.35	Dec	5.08	Dec	5.08	Dec	5.44	Dec	5.44

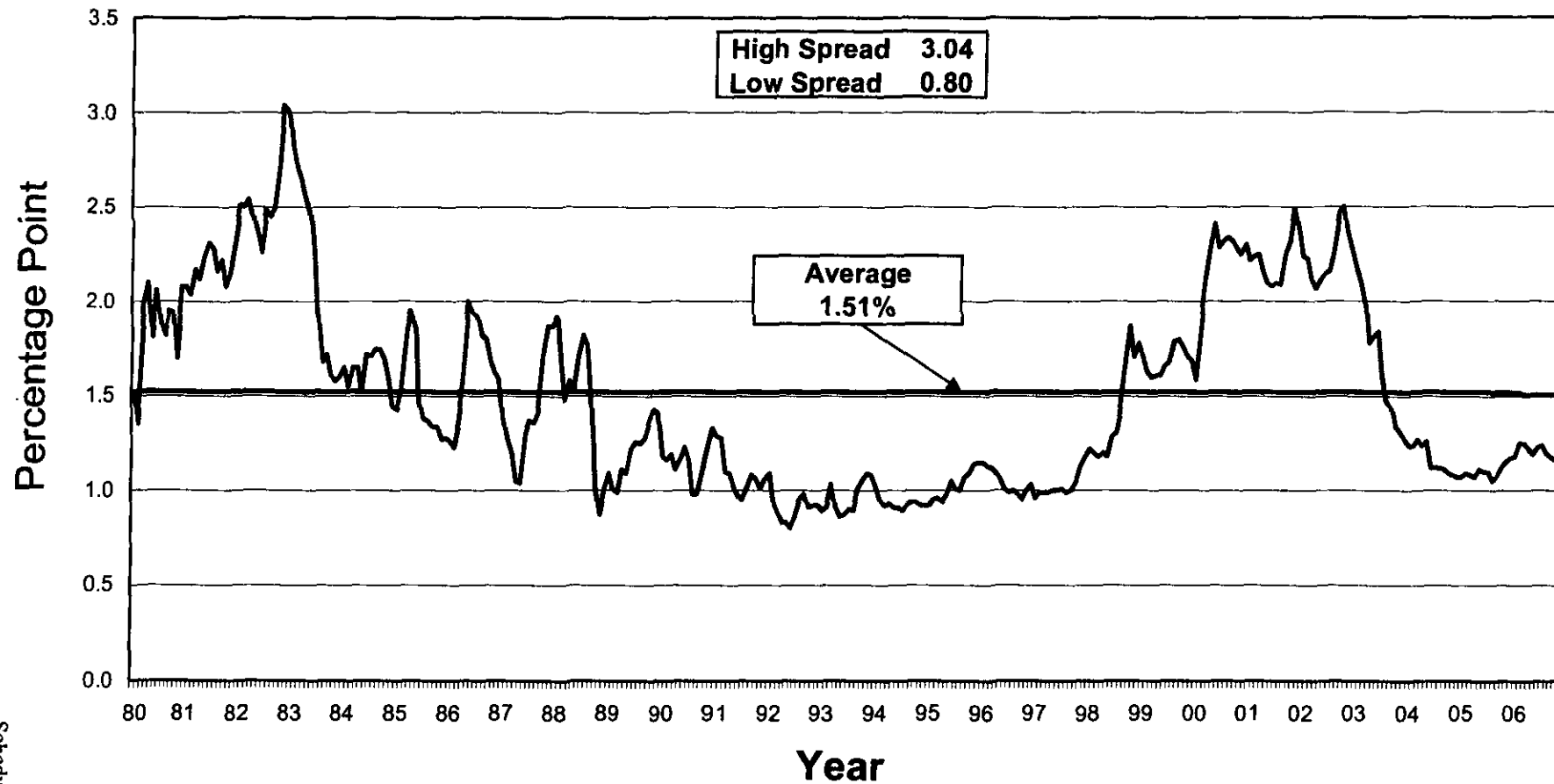
Sources:
<http://finance.yahoo.com/q/hp?3=TYX>

Algonquin Water Resources
WR-2006-0425

Average Yields on Mergent's Public Utility Bonds and
Thirty-Year U.S. Treasury Bonds (1980 - 2006)

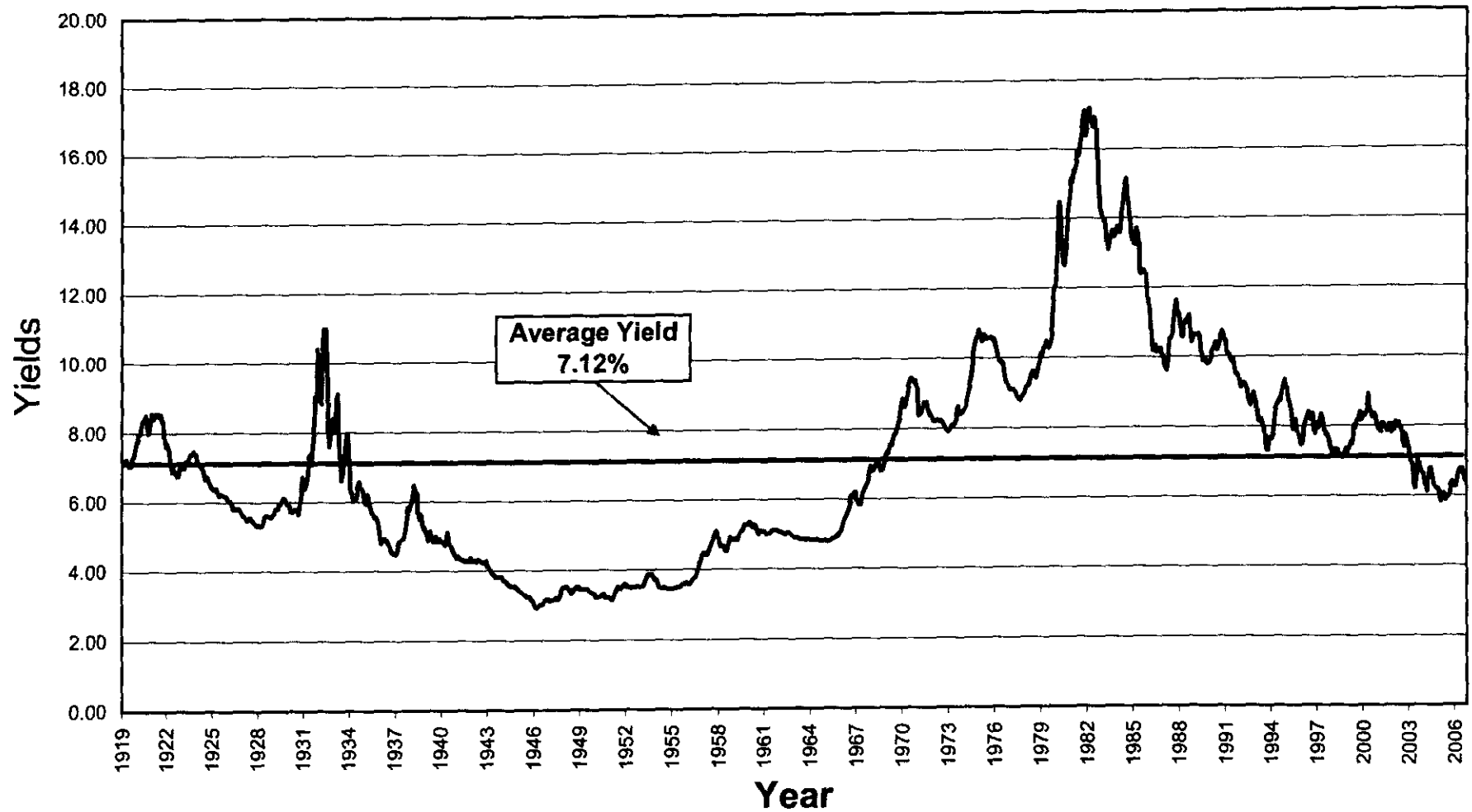


Monthly Spreads Between Yields on Mergent's Public Utility Bonds
and
Thirty-Year U.S. Treasury Bonds (1980 - 2006)



Algonquin Water Resources
WR-2006-0425

Moody's Baa Corporate
Bond Yields 1919-2006



Schedule 5-5

Source: St. Louis Federal Reserve Website: <http://stlouisfed.org>

Schedule 5-5

**Algonquin Water Resources
WR-2006-0425**

Economic Estimates and Projections, 2006-2008															
	Inflation Rate			Real GDP			Unemployment			3-Mo. T-Bill Rate			30-Year T-Bond Rate		
Source	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008	2006	2007	2008
Value Line Investment Survey - Selection & Opinion (11-24-06, page 813)	2.00%	2.50%	2.40%	3.20%	2.30%	3.20%	4.60%	4.80%	4.90%	4.80%	4.70%	4.50%	4.90%	4.80%	5.20%
The Budget and Economic Outlook FY2007-2016	2.80%	2.20%	2.20%	3.60%	3.40%	3.10%	5.00%	5.00%	5.20%	4.50%	4.50%	4.40%	N/A	N/A	N/A
Current rate	2.10%			2.60%			4.40%			4.92%			4.70%		
Notes: N.A. = Not Available.															
Value Line data for 2006-2008 are estimated.															
CBO data for 2006 and 2007 are forecasted, data for 2008 is projected.															
Sources of Current Rates:															
Inflation:	The Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers, 12-Month Period Ending, July 31, 2006 (see first paragraph). http://www.bls.gov/schedule/archives/cpi_nr.htm														
GDP:	U.S. Department of Commerce, Bureau of Economic Analysis for the Quarter Ending September 30, 2006 (see first paragraph). http://www.bea.gov/bea/newsrel/gdpnewsrelease.htm														
Unemployment:	The Bureau of Labor Statistics, Economy Situation Summary - Unemployment Rate, October 2006. http://www.bls.gov/news.release/empsit.nr0.htm														
3-Month Treasury:	St. Louis Federal Reserve website for October 1, 2006. http://research.stlouisfed.org/fred2/series/TB3MS/22														
30-Yr. T-Bond:	CBS MarketWatch website on November 15, 2006. http://www.marketwatch.com/tools/marketsummary/default.asp?site=mkwtw														
Other Sources (2006 - 2008):	ValueLine Investment Survey Selection & Opinion, August 25, 2006, page 961. The Congressional Budget Office, The Budget and Economic Outlook: Fiscal Years 2007-2016, January 2006, page 46. http://www.cbo.gov/ftpdocs/70xx/doc7027/01-26-BudgetOutlook.pdf														

Algonquin Water Resources
WR-2006-0425

Criteria for Selecting Comparable Water Utility Companies

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Water Utility Companies (Ticker)	Stock Publicly Traded	Information Printed In Value Line	10-Years of Data Available	At Least Investment Grade Credit Rating	Two Sources for Projected Growth Available, with One from Value Line	>80% of Revenues from Water Operations	Comparable Company Met All Criteria
American States Water Company (ASWR)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aqua America Inc. (WTR)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Artesian Resources Corporation (ARTNA)	Yes	No					
BIW Ltd. (BIW)	Yes	No					
California Water Service Group (CWT)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connecticut Water Service, Inc. (CTWS)	Yes	Yes	Yes	Yes	No		
Middlesex Water Company (MSWQ)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pennichuck Corporation (PNNW)	Yes	No					
SJW Corporation (SJW)	Yes	Yes	Yes	N.R.			
Southwest Water Company (SWWC)	Yes	Yes	Yes	N.R.			
York Water Company (YORW)	Yes	Yes	No				

Sources: Column 1 and 7 = Edward Jones Water Utility Industry Summary Quarterly Financial and Common Stock Information for September 30, 2006.
Columns 2 and 5 = Standard & Poor's RatingsDirect.
Columns 3, 4 and 6 = The Value Line Investment Survey: Ratings & Reports, July 28, 2006.
Column 6 = November 2006 Earnings Guide and I/B/E/S Inc.'s Institutional Brokers Estimate System, October 19, 2006.

Notes: N.R. = Not Rated by Standard and Poor's

Algonquin Water Resources
WR-2006-0425

Comparable Water Utility Companies for Algonquin Water Resources of Missouri

Number	Ticker Symbol	Company Name
1	AWR	American States Water Company
2	WTR	Aqua America Inc.
3	CWT	California Water Service Group
4	MSEX	Middlesex Water Company

**Algonquin Water Resources
WR-2006-0425**

**American States Water Company's
Stated Cost of Long-Term Debt
as of December 31, 2005**

Common Shareholders Equity:

Common Shares, no par value, no stated value:

Authorized: 30,000,000 shares

Outstanding: 16,797,952 shares in 2005

and 16,752,128 shares in 2004

Earnings reinvested in the business

Accumulated other comprehensive loss

Total Shareholder's Equity

\$ 166,529,000

\$ 101,121,000

\$ (3,556,000)

\$ 264,094,000

Long-Term Debt

Notes/Debentures:	Stated Interest Rate	Amount Outstanding	Interest Expense
6.64% notes due 2013	6.64%	\$ 1,100,000	\$ 73,040
6.80% notes due 2013	6.80%	\$ 2,000,000	\$ 136,000
6.87% notes due 2023	6.87%	\$ 5,000,000	\$ 343,500
7.00% notes due 2023	7.00%	\$ 10,000,000	\$ 700,000
7.55% notes due 2025	7.55%	\$ 8,000,000	\$ 604,000
7.65% notes due 2025	7.65%	\$ 22,000,000	\$ 1,683,000
6.81% notes due 2028	6.81%	\$ 15,000,000	\$ 1,021,500
6.59% notes due 2029	6.59%	\$ 40,000,000	\$ 2,636,000
7.875% notes due 2030	7.88%	\$ 20,000,000	\$ 1,575,000
7.23% notes due 2031	7.23%	\$ 50,000,000	\$ 3,615,000
Private Placement Notes:			
9.56% notes due 2031	9.56%	\$ 28,000,000	\$ 2,676,800
5.87% notes due 2028	5.87%	\$ 40,000,000	\$ 2,348,000
Tax-Exempt Obligations:			
5.50% notes due 2026	5.50%	\$ 7,920,000	\$ 435,600
Variable Rate Obligation due 2014		* \$ 6,000,000	
State Water Project due 2035		\$ 4,941,000	
Other Debt Instruments:			
8.50% fixed rate obligation due 2013	8.50%	\$ 1,174,000	\$ 99,790
Variable Rate Obligation due 2018		* \$ 448,000	
Capital lease obligations		\$ 252,000	
Chaparral City Water Company:			
4% to 4.85% serial bonds due 2007	4.43%	* \$ 470,000	\$ 20,821
5.20% term bonds due 2011	5.20%	\$ 1,000,000	\$ 52,000
5.40% term bonds due 2022	5.40%	\$ 4,610,000	\$ 248,940
4.65% term bonds due 2006	4.65%	\$ 40,000	\$ 1,860
5.30% term bonds due 2022	5.30%	\$ 1,015,000	\$ 53,795
3.34% repayment contract due 2006	3.34%	\$ 70,000	\$ 2,338
Net Amount Outstanding		\$ 269,040,000	
Plus: Current maturities		\$ 635,000	
Total Amount Outstanding		<u>\$ 269,675,000</u>	<u>\$ 18,326,984</u>
Total Capitalization		\$ 533,769,000	

Cost of Long-Term Debt 6.80%

Source: American States Water Company 10-K for December 31, 2005.

Notes: *The cost of long-term debt does not include Variable Rate Obligations interest rate.

The total amount of long-term debt outstanding includes current maturities.

**Algonquin Water Resources
WR-2006-0425**

**Aqua America Inc.'s
Stated Cost of Long-Term Debt
as of December 31, 2005**

Common Shareholders Equity:

Common Stock, \$.50 par value	\$ 64,829,000
Capital in excess of par value	\$ 478,508,000
Retained Earnings	\$ 285,132,000
Treasury Stock, at cost	\$ (12,914,000)
Accumulated other comprehensive loss	\$ (3,082,000)
Unearned compensation	\$ (550,000)
Total Common Stockholders' Equity	\$ 811,923,000

Long-Term Debt

Long-term debt of subsidiaries (substantially secured by utility plant):

Interest Rate Range	Average Stated Interest Rate	Amount Outstanding	Interest Expense
0.00% to 2.49%	1.25%	\$ 21,574,000	\$ 269,675
2.50% to 2.99%	2.75%	\$ 28,684,000	\$ 788,810
3.00% to 3.49%	3.25%	\$ 17,380,000	\$ 564,850
3.50% to 3.99%	3.75%	\$ 6,748,000	\$ 253,050
4.00% to 4.99%	4.50%	\$ 30,695,000	\$ 1,381,275
5.00% to 5.49%	5.25%	\$ 262,588,000	\$ 13,785,870
5.50% to 5.99%	5.75%	\$ 79,000,000	\$ 4,542,500
6.00% to 6.49%	6.25%	\$ 88,504,000	\$ 5,531,500
6.50% to 6.99%	6.75%	\$ 32,000,000	\$ 2,160,000
7.00% to 7.49%	7.25%	\$ 15,878,000	\$ 1,151,155
7.50% to 7.99%	7.75%	\$ 25,012,000	\$ 1,938,430
8.00% to 8.49%	8.25%	\$ 26,507,000	\$ 2,186,828
8.50% to 8.99%	8.75%	\$ 9,000,000	\$ 787,500
9.00% to 9.49%	9.25%	\$ 46,764,000	\$ 4,325,670
9.50% to 9.99%	9.75%	\$ 40,933,000	\$ 3,990,968
10.00% to 10.50%	10.25%	\$ 6,000,000	\$ 615,000
Unsecured notes payable, 4.87%, maturing in various installments 2010-2023.	4.87%	\$ 135,000,000	\$ 6,574,500
Unsecured notes payable, 5.01%, due 2015	5.01%	\$ 18,000,000	\$ 901,800
Unsecured notes payable, 5.20%, due 2020	5.20%	\$ 12,000,000	\$ 624,000
Notes payable, 6.05%, maturing in 2006 through 2008	6.05%	\$ 816,000	\$ 49,368
Net Amount Outstanding		\$ 903,083,000	
Plus: Current maturities		\$ 24,645,000	
Total Amount Outstanding		\$ 927,728,000	\$ 52,422,748
Total Capitalization		\$ 1,739,651,000	

Cost of Long-Term Debt 5.65%

Source: Aqua America Incorporation's 10-K for December 31, 2005.

Notes: The total amount of long-term debt outstanding includes current maturities.
The average stated interest rate is the high and low interest rate stated in the first column.

**Algonquin Water Resources
WR-2006-0425**

**California Water
Stated Cost of Long-Term Debt
as of December 31, 2005**

Common Shareholder's Equity

Common stock, 0.01 par value; 25,000 shares authorized, 18,390 and 18,367, outstanding in 2005 and 2004, respectively	\$ 184,000
Additional paid-in capital	\$ 131,991,000
Retained earnings	\$ 162,968,000
Accumulated other comprehensive loss	\$ (1,202,000)
Total Common Stockholders' Equity	\$ 293,941,000

Long-Term Debt	Stated Interest Rate	Amount Outstanding	Interest Expense
First Mortgage Bonds:	8.86%	\$ 3,600,000	\$ 318,960
	6.94%	\$ 5,000,000	\$ 347,000
	9.86%	\$ 18,100,000	\$ 1,784,660
Senior Notes:	7.28%	\$ 20,000,000	\$ 1,456,000
	6.77%	\$ 20,000,000	\$ 1,354,000
	8.15%	\$ 20,000,000	\$ 1,630,000
	7.13%	\$ 20,000,000	\$ 1,426,000
	7.11%	\$ 20,000,000	\$ 1,422,000
	5.90%	\$ 20,000,000	\$ 1,180,000
	5.29%	\$ 20,000,000	\$ 1,058,000
	5.29%	\$ 20,000,000	\$ 1,058,000
	5.54%	\$ 10,000,000	\$ 554,000
	5.44%	\$ 10,000,000	\$ 544,000
	4.58%	\$ 10,000,000	\$ 458,000
	5.48%	\$ 10,000,000	\$ 548,000
	5.52%	\$ 20,000,000	\$ 1,104,000
	5.55%	\$ 20,000,000	\$ 1,110,000
California Department of Water Resources loans 3.00% to 7.40%:	5.20%	\$ 2,546,000	\$ 132,392
Net Amount Outstanding		\$ 269,246,000	
Plus: Current maturities		\$ 1,133,000	
Total Amount Outstanding		\$ 270,379,000	\$ 17,485,012
Total Capitalization		\$ 564,320,000	

Cost of Long-Term Debt 6.47%

Source: California Water Service Company's 10-K for December 31, 2005.

Notes: The total amount of long-term debt outstanding includes current maturities.

The interest rate for the California Department of Water Resources loans is an average 3.00% and 7.40%.

**Algonquin Water Resources
WR-2006-0425**

**Middlesex Water Company's
Stated Cost of Long-Term Debt
as of December 31, 2005**

Common Shareholder's Equity

Common stock, no par value; 20,000 shares authorized, 11,584,499 and 11,358,772, outstanding in 2005 and 2004, respectively	\$ 76,160,949
Retained earnings	\$ 23,638,301
Accumulated other comprehensive loss	\$ (206,925)
Total Common Stockholders' Equity	\$ 99,592,325

Long-Term Debt	Stated Interest Rate	Amount Outstanding	Interest Expense
8.05%, Amortizing Secured Note, due December 20, 2021	8.05%	\$ 2,983,384	\$ 240,162
6.25%, Amortizing Secured Note, due May 22, 2028	6.25%	\$ 9,415,000	\$ 588,438
6.44%, Amortizing Secured Note, due August 25, 2030	6.44%	\$ 6,906,667	\$ 444,789
6.46%, Amortizing Secured Note, due September 19, 2031	6.46%	\$ 7,000,000	\$ 452,200
4.22%, State Revolving Trust Note, due December 31, 2022	4.22%	\$ 754,164	\$ 31,826
3.30% to 3.60%, State Revolving Trust Note, due May 1, 2025	3.45% *	\$ 3,018,254	\$ 104,130
3.49%, State Revolving Trust Note, due January 25, 2027	3.49%	\$ 278,144	\$ 9,707
4.00% to 5.00%, State Revolving Trust Bond, due September 1, 2021	4.50% *	\$ 760,000	\$ 34,200
0.00%, State Revolving Fund Bond, due September 1, 2021	0.00%	\$ 614,436	\$ -
			\$ -
First Mortgage Bonds:			\$ -
5.20%, Series S, due October 1, 2022	5.20%	\$ 12,000,000	\$ 624,000
5.25%, Series T, due October 1, 2023	5.25%	\$ 6,500,000	\$ 341,250
6.40%, Series U, due February 1, 2009	6.40%	\$ 15,000,000	\$ 960,000
5.25%, Series V, due February 1, 2029	5.25%	\$ 10,000,000	\$ 525,000
5.35%, Series W, due February 1, 2038	5.35%	\$ 23,000,000	\$ 1,230,500
0.00%, Series X, due September 1, 2018	0.00%	\$ 700,280	\$ -
4.25% to 4.63%, Series Y, due September 1, 2018	4.44% *	\$ 870,000	\$ 38,628
0.00%, Series Z, due September 1, 2019	0.00%	\$ 1,567,367	\$ -
5.25% to 5.75%, Series AA, due September 1, 2019	5.50% *	\$ 1,990,000	\$ 109,450
0.00%, Series BB, due September 1, 2021	0.00%	\$ 1,926,956	\$ -
4.00% to 5.00%, Series CC, due September 1, 2021	4.50% *	\$ 2,185,000	\$ 98,325
5.10%, Series DD, due January 1, 2032	5.10%	\$ 6,000,000	\$ 306,000
0.00%, Series EE, due September 1, 2024	0.00%	\$ 7,715,909	\$ -
3.00% to 5.50%, Series FF, due September 1, 2024	4.25% *	\$ 8,920,000	\$ 379,100
 Net Amount Outstanding		\$ 130,105,561	
Plus: Current maturities		\$ 1,930,617	
Total Amount Outstanding		\$ 132,036,178	\$ 6,517,705
 Total Capitalization		\$ 231,628,503	

Cost of Long-Term Debt 4.94%

Source: Middlesex Water Company's 10-K for December 31, 2005.

Notes: The total amount of long-term debt outstanding includes current maturities.

*These are an average interest rate.

**Algonquin Water Resources
WR-2006-0425**

**Stated Cost of Long-Term Debt
for the Four Comparable Water Utility Groups
as of December 31, 2005**

<u>Company Name</u>	<u>Amount Outstanding</u>	<u>Interest Expense</u>	<u>Stated Cost of Long-term Debt</u>
American States Water Company	\$ 269,675,000	\$ 18,326,984	6.80%
Aqua America Inc.	\$ 927,728,000	\$ 52,422,748	5.65%
California Water Service Group	\$ 270,379,000	\$ 17,485,012	6.47%
Middlesex Water Company	\$ 132,036,178	\$ 6,517,705	4.94%
Total	\$ 1,599,818,178	\$ 94,752,449	5.96%
Cost of Long-Term Debt	5.96%		

**Hypothetical Embedded Cost of Long-Term Debt
for Algonquin Water Resources of Missouri**

	<u>Principal Amount Outstanding</u>	<u>Interest</u>
Missouri-American Water Cost of Debt	\$3,662,685,671	\$218,812,512
(1) Embedded Cost of Debt for Missouri American Water	6.10%	
(2) Stated Cost of Debt for Missouri American Water	5.97%	
(3) Spread due to issuance costs	0.13%	
(4) Hypothetical embedded Cost of Debt for Algonquin Water Res	6.09%	

Source: Direct Testimony of Staff witness David Murray
in Missouri-American Water Case No. WR-2003-0500

Notes: (3) = (1) - (2)
(4) = (4) + (3)

**Algonquin Water Resources
WR-2006-0425**

**Hypothetical Capital Structure as of December 31, 2005
for Algonquin Water Resources of Missouri**

Capital Component	Dollar Amount (000's)	Percentage of Capital
Common Stock Equity	\$ 1,469,550,325	47.88%
Preferred Stock	\$ -	0.00%
Long-Term Debt	\$ 1,599,818,178	52.12%
Short-Term Debt	\$ -	0.00%
Total Capitalization	\$ 3,069,368,503	100.00%

**Water Utility Financial Ratio Benchmarks
Total Debt / Total Capital - Including Preferred Stock**

Standard & Poor's RatingsDirect July 7, 2000	Lower Quartile	Median	Jpper Quartile
	<u>A</u>	<u>A</u>	<u>A</u>
	53%	56%	61%

Source: American States Water Company 10-K for December 31, 2005.
Aqua America Incorporation's 10-K for December 31, 2005.
California Water Service Company's 10-K for December 31, 2005.
Middlesex Water Company's 10-K for December 31, 2005.

**Algonquin Water Resources
WR-2006-0425**

**Ten-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates
for the Four Comparable Water Utility Companies**

Company Name	10-Year Annual Compound Growth Rates			Average of 10 Year Annual Compound Growth Rates
	DPS	EPS	BVPS	
American States Water Company	1.00%	0.00%	4.00%	1.67%
Aqua America Inc.	6.00%	9.00%	9.50%	8.17%
California Water Service Group	1.50%	0.50%	2.50%	1.50%
Middlesex Water Company	2.18%	0.43%	4.13%	2.25%
Average	2.67%	2.48%	5.03%	3.40%
Standard Deviation	1.97%	3.77%	2.66%	2.77%

Source: The Value Line Investment Survey: Ratings & Reports, July 28, 2006.

**Algonquin Water Resources
WR-2006-0425**

**Five-Year Dividends Per Share, Earnings Per Share & Book Value Per Share Growth Rates
for the Four Comparable Water Utility Companies**

----- 5-Year Annual Compound Growth Rates -----				Average of 5 Year Annual Compound Growth Rates
<u>Company Name</u>	<u>DPS</u>	<u>EPS</u>	<u>BVPS</u>	
American States Water Company	1.00%	-2.50%	4.50%	1.00%
Aqua America Inc.	6.50%	8.50%	11.00%	8.67%
California Water Service Group	1.00%	-4.00%	1.50%	-0.50%
Middlesex Water Company	2.00%	1.00%	3.50%	2.17%
Average	<u>2.63%</u>	<u>0.75%</u>	<u>5.13%</u>	<u>2.83%</u>
Standard Deviation	2.27%	4.83%	3.56%	3.50%

Source: The Value Line Investment Survey: Ratings & Reports, July 28, 2006.

**Algonquin Water Resources
WR-2006-0425**

**Average of Ten- and Five-Year Dividends Per Share, Earnings Per Share &
Book Value Per Share of Growth Rates for the Four Comparable Water Utility Companies**

Company Name	10-Year Average DPS, EPS & BVPS	5-Year Average DPS, EPS & BVPS	Average of 5-Year & 10-Year Averages
American States Water Company	1.67%	1.00%	1.33%
Aqua America Inc.	8.17%	8.67%	8.42%
California Water Service Group	1.50%	-0.50%	0.50%
Middlesex Water Company	2.25%	2.17%	2.21%
Average	<u>3.40%</u>	<u>2.83%</u>	<u>3.11%</u>

**Algonquin Water Resources
WR-2006-0425**

**Historical and Projected Growth Rates
for the Four Comparable Water Utility Companies**

	(1)	(2)	(3)	(4)	(5)	(6)
Company Name	Historical Growth Rate (DPS, EPS and BVPS)	Projected 5-Year EPS Growth IBES (Mean)	Projected 5-Year EPS Growth S&P	Projected 3-5 Year EPS Growth Value Line	Average Projected Growth	Average of Historical & Projected Growth
American States Water Company	1.33%	6.00%	6.00%	4.50%	5.50%	3.42%
Aqua America Inc.	8.42%	10.50%	11.00%	11.00%	10.83%	9.63%
California Water Service Group	0.50%	7.33%	7.00%	4.50%	6.28%	3.39%
Middlesex Water Company	2.21%	3.50%	3.50%	N.A.	3.50%	2.85%
Average	3.11%	6.83%	6.88%	6.67%	6.53%	4.82%

Proposed Range of Growth for Comparables: 5.18% - 6.18%

Sources: Column 1 = Average of 10-Year and 5-Year Annual Compound Growth Rates from Schedule 12-3.

Column 2 = I/B/E/S Inc.'s Institutional Brokers Estimate System, July 21 and September 14, 2006.

Column 3 = Standard & Poor's Earnings Guide, September and November 2006.

Column 4 = The Value Line Investment Survey: Ratings and Reports, July 28, 2006.

**Algonquin Water Resources
WR-2006-0425**

**Average High / Low Stock Price for June 2006 through September 2006
for the Four Comparable Water Utility Companies**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	-- June 2006 --		-- July 2006 --		-- August 2006 --		-- September 2006 --		Average High/Low Stock Price (6/06 - 9/06)
Company Name	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	
American States Water Company	\$38.380	\$33.180	\$38.900	\$34.910	\$39.180	\$35.700	\$38.950	\$36.060	\$36.908
Aqua America Inc.	\$23.620	\$20.130	\$23.180	\$21.130	\$23.820	\$21.500	\$23.930	\$21.500	\$22.351
California Water Service Group	\$40.000	\$32.770	\$37.840	\$33.750	\$38.480	\$34.250	\$39.190	\$35.430	\$36.464
Middlesex Water Company	\$19.070	\$16.500	\$19.150	\$17.580	\$20.500	\$17.590	\$20.500	\$18.410	\$18.663

Notes:

Column 9 = [(Column 1 + Column 2 + Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 8) / 8].

Sources: S & P Stock Guides: July, August, September, and October.

**Algonquin Water Resources
WR-2006-0425**

**Discounted Cash Flow (DCF) Estimated Costs of Common Equity
for the Four Comparable Water Utility Companies**

	(1)	(2)	(3)	(4)	(5)
Company Name	2007 Expected Annual Dividend	Average High/Low Stock Price	Projected Dividend Yield	Average of Historical & Projected Growth	Estimated Cost of Common Equity
American States Water Company	\$0.92	\$36.908	2.49%	3.42%	5.91%
Aqua America Inc.	\$0.49	\$22.351	2.19%	9.63%	11.82%
California Water Service Group	\$1.16	\$36.464	3.18%	3.39%	6.57%
Middlesex Water Company	\$0.68 *	\$18.663	3.67%	2.85%	6.52%
Average			<u>2.88%</u>	<u>4.82%</u>	<u>7.70%</u>

Proposed Dividend Yield: 2.88%

Proposed Range of Growth: 5.18%-6.18%

Estimated Proxy Cost of Common Equity: 8.06%-9.06%

Notes: Column 1 = Estimated Dividends Declared per share for 2007 from Value Line.

Column 3 = (Column 1 / Column 2).

Column 5 = (Column 3 + Column 4).

Sources: Column 1 = The Value Line Investment Survey: Ratings and Reports, July 28, 2006.

Column 2 = Schedule 14.

Column 4 = Schedule 13.

Note *Middlesex was calculated by taking the 2005 dividend of \$0.67 times the average historical 5-year and 10-year dividend growth rate.

**Algonquin Water Resources
WR-2006-0425**

**Capital Asset Pricing Model (CAPM) Costs of Common Equity Estimates
Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries
for the Four Comparable Water Utility Companies**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Arithmetic Average Market Risk Premium (1926-2005)	Geometric Average Market Risk Premium (1926-2005)	Geometric Average Market Risk Premium (1996-2005)	Arithmetic CAPM Cost of Common Equity (1926-2005)	Geometric CAPM Cost of Common Equity (1926-2005)	Geometric CAPM Cost of Common Equity (1996-2005)
Company Name	Risk Free Rate	Company's Value Line Beta						
American States Water Company	4.85%	0.75	6.50%	4.90%	1.48%	9.73%	8.53%	5.96%
Aqua America Inc.	4.85%	0.80	6.50%	4.90%	1.48%	10.05%	8.77%	6.03%
California Water Service Group	4.85%	0.80	6.50%	4.90%	1.48%	10.05%	8.77%	6.03%
Middlesex Water Company	4.85%	0.80	6.50%	4.90%	1.48%	10.05%	8.77%	6.03%
Average		0.79				9.97%	8.71%	6.02%

Sources:

Column 1 = The appropriate yield is equal to the average 30-year U.S. Treasury Bond yield for October 2006 which was obtained from the St. Louis Federal Reserve website at <http://research.stlouisfed.org/fred2/series/GS30/22>.

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole as reported by the Value Line Investment Survey: Ratings & Reports, July 28, 2006.

Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926 - 2005 was determined to be 6.50% based on an arithmetic average as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2006 Yearbook.

Column 4 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926 - 2005 was determined to be 4.90% based on a geometric average as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2006 Yearbook.

Column 5 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1996 - 2005 was determined to be 1.48% as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2006 Yearbook.

Column 6 = (Column 1 + (Column 2 * Column 3)).

Column 7 = (Column 1 + (Column 2 * Column 4)).

Column 8 = (Column 1 + (Column 2 * Column 5)).

**Algonquin Water Resources
WR-2006-0425**

Selected Financial Ratios for the Four Comparable Water Utility Companies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Company Name	2005 Common Equity Ratio	2005 Long-Term Debt Ratio	Funds From Operations Interest Coverage	Funds From Operations to Total Debt	Market- to-Book Value	2005 Return on Common Equity	2006 Projected Return on Common Equity	Bond Rating
American States Water Company	49.60%	50.40%	5.60 x	27.9%	2.49 x	8.50%	9.50% *	A-
Aqua America Inc.	48.00%	52.00%	4.30 x	17.0%	3.58 x	11.20%	11.50% *	A+
California Water Service Group	51.40%	48.60%	3.70 x	17.8%	2.39 x	9.30%	9.50% *	A+
Middlesex Water Company	45.00%	55.00%	N.A. x	N.A.	2.22 x	8.20%	N.A. *	N.R.
Average	48.50%	51.50%	4.53 x	20.9%	2.67 x	9.30%	10.17%	A

Sources:

The Value Line Investment Survey Ratings & Reports, July 28, 2006: for columns (1), (2), (6) and (7).

Standard & Poor's RatingsDirect for columns (3), (4) and (8).

AUS Utility Reports, November 2006 for column (5).

Note: * Estimated.

**Algonquin Water Resources
WR-2006-0425**

Public Utility Revenue Requirement

or

Cost of Service

The formula for the revenue requirement of a public utility may be stated as follows :

Equation 1 : **Revenue Requirement = Cost of Service**

or

Equation 2 : **$RR = O + (V - D)R$**

The symbols in the second equation are represented by the following factors :

RR	= Revenue Requirement
O	= Prudent Operating Costs, including Depreciation and Taxes
V	= Gross Valuation of the Property Serving the Public
D	= Accumulated Depreciation
(V - D)	= Rate Base (Net Valuation)
(V - D)R	= Return Amount (\$\$) or Earnings Allowed on Rate Base
R	= $iL + dP + kE$ or Overall Rate of Return (%)
i	= Embedded Cost of Debt
L	= Proportion of Debt in the Capital Structure
d	= Embedded Cost of Preferred Stock
P	= Proportion of Preferred Stock in the Capital Structure
k	= Required Return on Common Equity (ROE)
E	= Proportion of Common Equity in the Capital Structure

**Algonquin Water Resources
WR-2006-0425**

**Weighted Cost of Capital as of December 31, 2005
for Algonquin Water Resources of Missouri, LLC**

Capital Component	Percentage of Capital	Embedded Cost	Weighted Cost of Capital Using Common Equity Return of:		
			8.06%	8.56%	9.06%
Common Stock Equity	47.88%	---	3.86%	4.10%	4.34%
Preferred Stock	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	52.12%	6.09%	3.17%	3.17%	3.17%
Short-Term Debt	0.00%	0.00%	0.00%	0.00%	0.00%
Total	<u>100.00%</u>		<u>7.03%</u>	<u>7.27%</u>	<u>7.51%</u>

Notes:

See Schedule 11 for the Capital Structure Ratios.