

Carolina Water Service, Inc. of North Carolina
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
at June 30, 2018

<u>Type Of Capital</u>	<u>Ratios (1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	49.09%	5.68% (1)	2.79%
Common Equity	<u>50.91%</u>	10.80% - 11.20% (2)	<u>5.50%</u> - <u>5.70%</u>
Total	<u><u>100.00%</u></u>		<u><u>8.29%</u></u> <u><u>8.49%</u></u>

Notes:

(1) Company-Provided.

(2) From page 2 of this Schedule.

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

<u>Line No.</u>	<u>Principal Methods</u>	<u>Proxy Group of Six Water Companies</u>
1.	Discounted Cash Flow Model (DCF) (1)	9.15%
2.	Risk Premium Model (RPM) (2)	10.73%
3.	Capital Asset Pricing Model (CAPM) (3)	10.93%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	<u>12.43%</u>
5.	Indicated Common Equity Cost Rate before Adjustment for Size Risk	10.80%
6.	Size Risk Adjustment (5)	<u>0.40%</u>
7.	Recommended Range of Common Equity Cost Rates	<u><u>10.80%-11.20%</u></u>

- Notes: (1) From page 3 of this Schedule.
(2) From page 10 of this Schedule.
(3) From page 21 of this Schedule.
(4) From page 26 of this Schedule.
(5) From Schedule DWD-8 (direct testimony).

Carolina Water Service, Inc. of North Carolina
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Proxy Group of Six Water Companies

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Average Dividend Yield (1)	Value Line Projected Five Year Growth in EPS (2)	Reuters Mean Consensus Projected Five Year Growth Rate in EPS	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth in EPS (3)	Adjusted Dividend Yield (4)	Indicated Common Equity Cost Rate (5)
1.83 %	6.00 %	NA %	6.00 %	4.00 %	5.33 %	1.88 %	7.21 %
2.07	10.00	9.73	7.80	8.10	8.91	2.16	11.07
2.38	7.50	9.00	5.30	5.00	6.70	2.46	9.16
1.82	9.50	NA	7.00	9.80	8.77	1.90	10.67
1.97	8.00	NA	NA	2.70	5.35	2.02	7.37
2.18	9.00	NA	NA	4.90	6.95	2.26	9.21
						Average	9.11 %
						Median	9.18 %
						Average of Mean and Median	9.15 %

NA= Not Available

Notes:

- (1) Indicated dividend at 09/28/2018 divided by the average closing price of the last 60 trading days ending 09/28/2018 for each company.
- (2) From pages 4 through 9 of this Schedule.
- (3) Average of columns 2 through 5 excluding negative growth rates.
- (4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., $1.83\% \times (1 + (1/2 \times 5.33\%)) = 1.88\%$.
- (5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.reuters.com Downloaded on 09/28/2018
www.zacks.com Downloaded on 09/28/2018
www.yahoo.com Downloaded on 09/28/2018

AMER. STATES WATER NYSE-AWR				RECENT PRICE	58.12	P/E RATIO	33.2 (Trailing: 31.8 Median: 20.0)	RELATIVE P/E RATIO	1.80	DIV'D YLD	1.9%	VALUE LINE																																																																																																																																																																																																																												
TIMELINESS	4	Lowered 5/18/18	High: 23.1 Low: 16.8	19.4 14.9	19.8 15.6	18.2 15.3	24.1 17.0	38.7 27.0	44.1 35.8	47.2 37.3	58.4 41.1	60.0 50.1	Target Price Range 2021 2022 2023																																																																																																																																																																																																																											
SAFETY	2	Raised 7/20/12	LEGENDS 1.35 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 9/13 Options: Yes Shaded area indicates recession																																																																																																																																																																																																																																					
TECHNICAL	3	Lowered 7/6/18	2021-23 PROJECTIONS Price Gain Ann'l Total Return High 60 (+5%) 3% Low 45 (-25%) -3%																																																																																																																																																																																																																																					
BETA	.80	(1.00 = Market)	Insider Decisions S O N D J F M A M to Buy 0 0 0 0 0 0 0 0 0 Options 4 0 2 1 1 1 1 1 1 8 to Sell 3 2 4 0 1 0 1 4 1 3																																																																																																																																																																																																																																					
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CAPITAL STRUCTURE as of 3/31/18 Total Debt \$390.4 mill. Due in 5 Yrs \$100.7 mill. LT Debt \$281.1 mill. LT Interest \$19.8 mill. (35% of Cap'l) Leases, Uncapitalized: Annual rentals \$2.3 mill. Pension Assets-12/17 \$173.6 mill. Oblig. \$207.7 mill. Pfd Stock None Common Stock 36,733,416 shs. as of 5/1/18 MARKET CAP: \$2.1 billion (Mid Cap) CURRENT POSITION (SMILL) Cash Assets 4 2 6.0 Accts Receivable 20.0 26.1 19.2 Other 146.5 129.2 120.5 Current Assets 166.9 155.5 145.7 Accts Payable 43.7 51.0 38.8 Debt Due 90.3 59.3 109.3 Other 43.9 46.4 48.4 Current Liab. 177.9 156.7 196.5																																																																																																																																																																																																																																								
BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 258,949 customers in 70 cities in 10 counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,274 customers in Big Bear Lake and San Bernardino Cnty. Provides water & wastewater services to U.S. military bases through its ASUS sub. Sold Chaparral City Wtr. of AZ. (6/11). Employs 758. BlackRock, Inc. owns 11.7% of out. shares; Vanguard, 9.5%; off. & dir. 1.5%. (4/18 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprowls. Inc. CA. Addr.: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.																																																																																																																																																																																																																																								
A recent ruling is hurting American States Water's utility operations. Earlier this year, California regulators made a decision on Golden States Water's petition for higher rates. Despite being granted a higher return on equity, the permitted return on rate base was lowered. This has had a more meaningful impact on the utility than was expected, and was the main reason for first-quarter results falling short of the consensus. We are lowering our near-term earnings estimates. Management believes that the California authorities' decree will shave \$3.6 million off the top line and reduce share earnings \$0.07 this year. As a result, we have deducted \$0.10 a share from both our 2018 and 2019 earnings expectations. Nonregulated activities should do pretty well. Through its ASUS subsidiary, American States provides water services to 11 U.S. Army bases. As more of these installations are privatized in the coming years, we think ASUS will win its fair share of competitive bids for these 50-year contracts. Responsible for 25% of first-quarter earnings, this percentage ought to																																																																																																																																																																																																																																								
rise in the future. This is good news because profitability in this segment isn't capped, as is the case in the utility sector. The equity's dividend yield is unattractive relative to its peer group. Investors purchase water utility stocks for the income they generate. At the recent quote, AWR is yielding less than the Value Line median. Often with issues that have strong dividend growth potential, holders are willing to accept a lower current yield. However, we are now expecting the dividend to be raised only 6% at the next board meeting (being held in early August). Also, since our last report in April, the value of AWR has increased about 10%. By comparison, the S&P 500 Index is up approximately 2%. Moreover, considering that the Federal Reserve is expected to continue raising short-term interest rates into next year, we believe one- and two-year U.S. Treasury notes may well draw greater interest from those seeking safe income. Thus, some investors may want to take profits now, as AWR is also rated to underperform the market averages in the year ahead. James A. Flood July 13, 2018																																																																																																																																																																																																																																								
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2017	.34	.62	.57	.35	1.88																																																																																																																																																																																																																																			
2018	.20	.50	.60	.40	1.75																																																																																																																																																																																																																																			
2019	.30	.55	.63	.42	1.90																																																																																																																																																																																																																																			
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© 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product. To subscribe call 1-800-VALUELINE.																																																																																																																																																																																																																																								

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AMERICAN WATER NYSE-AWK										RECENT PRICE 86.31	P/E RATIO 26.2	(Trailing: 35.2 Median: 19.0)	RELATIVE P/E RATIO 1.42	DIV'D YLD 2.1%	VALUE LINE																																				
TIMELINESS 3 Lowered 5/11/18	SAFETY 3 New 7/25/08	TECHNICAL 3 Lowered 7/6/18	BETA .65 (1.00 = Market)	High: 23.7 Low: 16.5	23.0 16.2	25.8 19.4	32.8 25.2	39.4 31.3	45.1 37.0	56.2 41.1	61.2 48.4	85.2 58.9	92.4 70.0	91.5 76.0	Target Price Range 2021 2022 2023																																				
2021-23 PROJECTIONS <table border="1"> <tr> <td>High</td> <td>115</td> <td>Gain (+35%)</td> <td>10%</td> </tr> <tr> <td>Low</td> <td>75</td> <td>Return (-15%)</td> <td>Nil</td> </tr> </table>																High	115	Gain (+35%)	10%	Low	75	Return (-15%)	Nil																												
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% TOT. RETURN 6/18 THIS STOCK INDEX 1 yr: 11.8 13.9 3 yr: 87.1 32.8 5 yr: 132.2 71.5																																																			

	2002	2003	2004	2005	2006	2007	2008E	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	© VALUE LINE PUB, LLC	21-23
Revenues per sh	--	--	--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	18.54	18.81	19.20	20.00	20.00	22.95
"Cash Flow" per sh	--	--	--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	5.26	5.14	5.80	6.30	6.30	7.70
Earnings per sh A	--	--	--	--	d.97	d.214	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	2.62	2.38	3.30	3.50	3.50	4.50
Div'd Decl'd per sh B	--	--	--	--	--	--	40	82	86	90	1.21	84	1.21	1.33	1.47	1.62	1.78	1.95	1.95	2.60
Cap'l Spending per sh	--	--	--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	7.36	8.04	9.60	9.55	9.55	9.20
Book Value per sh D	--	--	--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	29.24	30.13	31.75	33.90	33.90	42.00
Common Shs Outst'g C	--	--	--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	178.10	178.44	179.00	180.00	180.00	187.50
Avg Ann'l P/E Ratio	--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	27.7	33.8	33.8	31.0	27.7	27.7	27.7	21.50
Relative P/E Ratio	--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.03	1.45	1.70	1.70	1.45	1.03	1.03	1.03	1.20
Avg Ann'l Div'd Yield	--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	2.0%	2.5%	2.0%	2.5%	2.0%	2.0%	2.0%	2.7%

CAPITAL STRUCTURE as of 3/31/18

Total Debt \$800.7 mil.	2336.9	2440.7	2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	3302.0	3357.0	3440	3600
Due in 5 Yrs \$2192.0 mil.	187.2	209.9	267.8	304.9	374.3	369.3	429.8	476.0	468.0	426.0	590	630
LT Debt \$640.3 mil.	37.4%	37.9%	40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	39.2%	43.3%	21.0%	21.0%

Leases, Uncapitalized: Annual rentals \$15.0 mil.
Pension Assets 12/16 \$1649.0 mil.
Pfd Stock \$7.0 mil. **Pfd Div'd** \$.4 mil.
Common Stock 178,047,882 shs. as of 4/26/18

MARKET CAP: \$15.4 billion (Large Cap)

CURRENT POSITION (\$MILL)	2016	2017	3/31/18
Cash Assets	75.0	82.0	81.0
Acc'ts Receivable	269.0	272.0	273.0
Other	440.0	366.0	375.0
Current Assets	784.0	720.0	729.0
Acc's Payable	154.0	195.0	133.0
Debt Due	1423.0	1227.0	1604.0
Other	815.0	903.0	802.0
Current Liab.	2392.0	2325.0	2539.0

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in 46 states and Canada. (Regulated presence in 16 states.) Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 88% of 2017 revenues.

New Jersey is its largest market accounting for 25% of regulated revenues. Has 6,900 employees. The Vanguard Grp, owns 10.4% of outstanding shares; BlackRock, Inc., 7.4%; officers & directors, less than 1.0% (3/18 Proxy). President & CEO: Susan N. Stroy. Chair.: George MacKenzie. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Tel.: 856-346-8200. Internet: www.amwater.com.

ANNUAL RATES of change (per sh)

Revenues	10 Yrs. 3.0%	Past 5 Yrs. 3.5%	Past Est'd '15-'17 to '21-'23 4.0%
"Cash Flow"	50.0%	6.0%	7.0%
Earnings	--	7.5%	10.0%
Dividends	--	8.5%	10.0%
Book Value	1.0%	4.0%	6.0%

QUARTERLY REVENUES (\$ mill.)

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	698.0	782.0	896.0	783.0	3159.0
2016	743.0	827.0	930.0	802.0	3302.0
2017	756.0	844.0	936.0	821.0	3357.0
2018	761.0	859	975	845	3440
2019	780	890	1050	880	3600

EARNINGS PER SHARE A

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.44	.68	.96	.56	2.64
2016	.46	.77	.83	.57	2.62
2017	.52	.73	1.12	.61	2.98
2018	.59	.81	1.20	.70	3.30
2019	.60	.88	1.27	.75	3.50

QUARTERLY DIVIDENDS PAID B

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2014	.28	.31	.31	.31	1.21
2015	.31	.34	.34	.34	1.33
2016	.34	.375	.375	.375	1.47
2017	.375	.415	.415	.415	1.62
2018	.415	.455			

American Water Works has hiked the quarterly dividend by a generous amount. Since our last report in April, the board raised the payout by \$0.04 a share to \$0.455 a share. This was at the higher end of the 7%-10% target range. The growth rate was also well above the industry average.

The method of the company's success is not a mystery. American Water has been following a simple formula for some time now. By continually purchasing smaller water districts, it can meaningfully reduce operating expenses due to economies of scale. Making this easier is the current state of the water sector in the U.S. Most districts are small and municipally run. Many local governments do not have the financial wherewithal to maintain and replace aging pipelines and waste facilities. In addition, because of the many redundancies in the water operations, American Water can really cut costs and raise operating margins.

Bottom-line prospects are good for both this year and next. The company's operating strategy (with a few exceptions mostly resulting from unusual expenses),

has enabled the utility to be more profitable than the rest of the group. This year, we expect share net to recover to \$3.30 and rise another 6% in 2019, to \$3.50. The capital budget remains large. The utility will most likely spend \$1.7 billion annually through early next decade on improving its water assets. External debt will likely aid in funding a decent portion of the expenditures. Still, the company's balance sheet should not deteriorate much. Certain investors may find these shares of interest. True, the equity is only expected to keep pace with the market in the year ahead. But, that's not too bad considering the Water Utility Industry ranks among the lowest of all the groups followed by Value Line. Also, investors often have to forfeit a substantial amount of current income when purchasing a stock with healthy dividend growth prospects. In this case, AWK's yield is close to the industry norm. And though total return potential out to 2021-2023 is subpar, that's the case for the entire group. Thus, AWK is a viable option for those investors who must have exposure to the water sector.

James A. Flood July 13, 2018

(A) Diluted earnings. Excludes nonrecurr. losses: '08, \$4.62; '09, \$2.63; '11, \$0.07. Disc. oper.: '06, (\$0.04); '11, \$0.03; '12, (\$0.10); '13, (\$0.01). GAAP used as of 2014, except for '18.

(\$0.65) loss in '17 due to change in tax law. Next earnings report due mid-August. Quarterly earnings do not sum in '16 due to rounding. (B) Dividends paid in March, June, September, and December. (C) In millions. (D) Includes intangibles. On 12/31/17: \$1.379 billion, \$7.72/share. (E) Pro forma numbers for '06 & '07.

Company's Financial Strength B+

Stock's Price Stability 100

Price Growth Persistence 85

Earnings Predictability 90

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Oct 12 2018

AQUA AMERICA NYSE-WTR				RECENT PRICE	35.44	P/E RATIO	25.3	(Trailing: 26.1 Median: 22.0)	RELATIVE P/E RATIO	1.37	DIV'D YLD	2.5%	VALUE LINE
TIMELINESS	4	Lowered 5/18/18	High: 21.3 Low: 15.1	17.6 12.3	18.4 13.2	19.0 15.4	21.5 16.8	28.1 20.6	28.2 22.4	31.1 24.4	35.8 28.0	39.6 29.4	39.4 32.4
SAFETY	2	Raised 4/20/12	LEGENDS 1.60 x Dividends p sh divided by Interest Rate Relative Price Strength 4-for-3 split 12/05 5-for-4 split 9/13 Options: Yes Shaded area indicates recession										
TECHNICAL	3	Lowered 6/29/18	2021-23 PROJECTIONS Price Gain Return High 50 (+40%) 12% Low 40 (+15%) 6%										
BETA	.75	(1.00 = Market)	Insider Decisions S O N D J F M A M to Buy 0 0 0 0 0 0 0 0 0 0 to Sell 1 8 0 0 7 6 6 7 0 Options 1 0 1 0 0 0 0 0 0										
Insitutional Decisions 3Q2017 4Q2017 1Q2018 to Buy 187 187 192 to Sell 120 134 191 Hlds(000) 105796 95401 96914													
MARKET CAP: \$6.3 billion (Large Cap) CURRENT POSITION: 2016 2017 3/31/18 (\$MILL) Cash Assets 3.7 4.2 3.2 Receivables 97.4 98.6 91.8 Inventory (AvgCst) 13.0 14.4 15.3 Other 14.6 14.0 13.8 Current Assets 128.7 131.2 124.1 Accts Payable 59.9 59.2 40.2 Debt Due 157.2 117.4 123.7 Other 84.4 107.9 95.2 Current Liab. 301.5 284.5 259.1													
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CAPITAL STRUCTURE as of 3/31/18 Total Debt \$2186.8 mill. Due in 5 Yrs \$368.4 mill. LT Debt \$2063.1 mill. LT Interest \$63.0 mill. (51% of Cap)													
Pension Assets-12/17 \$270.4 mill. Oblig. \$321.0 mill. Prd Stock None Common Stock 177,897,654 shares as of 4/30/18													
ANNUAL RATES Past 10 Yrs. Past 5 Yrs. Est'd '15-'17 to '21-'23 Revenues 3.5% 2.0% 5.5% "Cash Flow" 7.0% 6.5% 6.0% Earnings 8.5% 9.5% 7.5% Dividends 7.5% 8.0% 9.0% Book Value 6.5% 7.5% 5.5%													
QUARTERLY REVENUES (\$ mill.) Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 190.3 205.8 221.0 197.1 814.2 2016 192.6 203.9 226.6 196.8 819.9 2017 187.8 203.4 215.0 203.3 809.5 2018 194.3 215.7 225 215 850 2019 205 225 235 225 890													
EARNINGS PER SHARE A Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 .27 .32 .38 .17 1.14 2016 .29 .34 .41 .28 1.32 2017 .28 .34 .43 .30 1.35 2018 .29 .36 .44 .31 1.40 2019 .31 .38 .48 .33 1.50													
QUARTERLY DIVIDENDS PAID B Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2014 .152 .152 .165 .165 .63 2015 .165 .165 .178 .178 .69 2016 .178 .178 .193 .193 .74 2017 .193 .193 .2047 .2047 .79 2018 .2047 .2047													
© VALUE LINE PUB. LLC 21-23 Revenues per sh 6.35 "Cash Flow" per sh 2.90 Earnings per sh A 1.95 Div'd Decl'd per sh B 1.25 Cap'l Spending per sh 2.10 Book Value per sh 14.50 Common Shs Outst'g C 180.00 Avg Ann'l P/E Ratio 23.0 Relative P/E Ratio 1.25 Avg Ann'l Div'd Yield 4.5%													
BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Has 1,530 employees. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2017: residential, 60%; commercial, 16%; industrial, wastewater & other, 24%. Off. & dir. own less than 1% of the common stock; Vanguard Group, 10.0%; Blackrock, Inc, 8.8%; State Street Capital, 5.0% (3/18 Proxy). President & Chief Executive Officer: Christopher Franklin. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Tel.: 610-525-1400. Internet: www.aquamerica.com.													
Aqua America is pretty busy on the regulatory front. Due to its wide geographical base, the water utility is continually involved in rate cases with several state authorities. Indeed, so far in 2018, rate decisions have been made in seven states including Illinois, Indiana, Ohio, and Pennsylvania. Final decisions in four other states are pending, and are expected to be made before yearend. Meanwhile the company is growing through acquisition. Aqua America is following the same strategy as industry leader American Water Works. That is, the utility is taking advantage of the incredibly fragmented water business to purchase some of the over 50,000 water districts in the U.S. These local entities typically don't have the financial means to spend the funds required to maintain and refurbish their antiquated infrastructure. By absorbing these smaller water districts, Aqua is able to wring significant savings from these operations due to the amount of redundancies in this industry. Most acquisitions are relatively small, so the company has to continually buy a host of small water authorities. We think that Aqua will be able to increase its customer base by at least 3% annually using this strategy. Aqua has a large capital budget. Due in part to all of the M&A activity, the utility will probably spend \$500 million this year on modernizing its water assets. The annual outlays should remain substantial through early next decade. The balance sheet remains solid. Despite the large construction program, Aqua has managed to stay in sound financial strength. Of the nine companies we follow in the industry, it is one of only two that garner an A' Financial Strength rating. These shares are ranked to underperform the market averages in the year ahead. Even with the company's improving fundamentals, the equity seems almost fully valued at this juncture. In addition, with the Federal Reserve announcing that it plans on raising short-term rates into 2020, yields on U.S. Treasury notes could be viewed as a more attractive option than utilities. Finally, like almost all members in this group, total return prospects out to 2021-2023 are subpar.													
James A. Flood July 13, 2018													

(A) Diluted eggs. Excl. nonrec. gains: '02, 4¢; '03, 3¢; '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. May not sum due to rounding. Next earnings report due Aug-2018
 (B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount).
 (C) In millions, adjusted for stock splits.
 Company's Financial Strength A
 Stock's Price Stability 95
 Price Growth Persistence 65
 Earnings Predictability 90
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CALIFORNIA WATER NYSE-CWT				RECENT PRICE	39.90	P/E RATIO	27.5	(Trailing: 30.0 Median: 20.0)	RELATIVE P/E RATIO	1.49	DIV'D YLD	1.9%	VALUE LINE					
TIMELINESS	4	Lowered 3/9/18	High: 22.7 Low: 17.1	22.7 17.1	23.3 13.8	24.1 16.7	19.8 16.9	19.4 16.7	19.3 16.8	23.4 18.4	26.4 20.3	26.0 19.5	36.8 22.5	46.2 32.4	45.8 35.3	Target Price Range 2021 2022 2023		
SAFETY	3	Lowered 7/27/07	LEGENDS 1.33 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 6/11 Options: Yes Shaded area indicates recession															
TECHNICAL	3	Lowered 6/29/18	2021-23 PROJECTIONS															
BETA	.80	(1.00 = Market)	Price	Gain	Ann'l Total Return	High 50 (+25%) Low 35 (-10%)												
Insider Decisions				S O N D J F M A M				to Buy 1 1 1 1 1 1 1 1 1 0 to Sell 1 0 0 0 0 0 1 9 0 0										
Institutional Decisions				302817 402817 102818				to Buy 80 74 114 to Sell 71 70 85 Hld's(000) 38931 33803 34461										
CAPITAL STRUCTURE as of 3/31/18				Total Debt \$796.7 mill. Due in 5 Yrs \$291.0 mill. LT Debt \$515.7 mill. LT Interest \$36.0 mill. (43% of Cap1)														
Pension Assets-12/17 \$460.9 mill. Oblig. \$671.3 mill.				Pfd Stock None														
Common Stock 48,074,000 shs.				MARKET CAP: \$1.9 billion (Mid Cap)														
CURRENT POSITION (\$MILL)				2016 2017 3/31/18														
Cash Assets				25.5 94.8 34.7														
Other				116.6 133.1 131.1														
Current Assets				142.1 227.9 165.8														
Accs Payable				77.8 94.0 73.6														
Debt Due				123.3 291.0 281.0														
Other				49.1 106.0 109.7														
Current Liab.				250.2 491.1 464.3														
ANNUAL RATES Past				Past Est'd '15-'17														
of change (per sh)				10 Yrs. 5 Yrs. to '21-'23														
Revenues				4.0% 1.5% 2.5%														
"Cash Flow"				5.5% 3.5% 4.5%														
Earnings				4.5% 4.0% 9.5%														
Dividends				2.0% 2.5% 6.5%														
Book Value				4.5% 5.0% 3.0%														
Cal-endar				QUARTERLY REVENUES (\$ mill.) ^F														
				Mar.31 Jun.30 Sep.30 Dec.31 Full Year														
2015				122.0 144.4 183.5 138.5 588.4														
2016				121.7 152.4 184.3 151.0 609.4														
2017				122.1 171.1 211.7 162.0 666.9														
2018				132.2 173 215 164.8 685														
2019				135 180 220 170 705														
Cal-endar				EARNINGS PER SHARE ^A														
				Mar.31 Jun.30 Sep.30 Dec.31 Full Year														
2015				.03 .21 .52 .18 .94														
2016				d.02 .24 .48 .31 1.01														
2017				d.02 .39 .70 .29 1.40														
2018				d.05 .42 .73 .35 1.45														
2019				.11 .45 .74 .35 1.65														
Cal-endar				QUARTERLY DIVIDENDS PAID ^B														
				Mar.31 Jun.30 Sep.30 Dec.31 Full Year														
2014				.1625 .1625 .1625 .1625 .65														
2015				.1675 .1675 .1675 .1675 .67														
2016				.1725 .1725 .1725 .1725 .69														
2017				.18 .18 .18 .18 .72														
2018				.1875 .1875														
(A) Basic EPS. Excl. nonrecurring gain (loss): '02, '4c; '11, 4c. Next earnings report due late August.				May, Aug., and Nov. ■ Div'd reinvestment plan available.				(D) In millions, adjusted for splits.				Company's Financial Strength B++						
(B) Dividends historically paid in late Feb.				(C) Incl. intangible assets. In '17 : \$24.8 mill., \$0.52/sh.				(E) Excludes non-reg. rev.				Stock's Price Stability 75						
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												Earnings Predictability 65						
												To subscribe call 1-800-VALUELINE.						

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MIDDLESEX WATER NDQ-MSEX										RECENT PRICE	42.37	P/E RATIO	28.2	(Trailing: 29.6 Median: 20.0)	RELATIVE P/E RATIO	1.53	DIV'D YLD	2.1%	VALUE LINE
TIMELINESS	3	Raised 3/23/18	High: 20.2	19.8	17.9	19.3	19.4	22.5	23.7	28.0	44.5	46.7	45.2	Target Price	2021	2022	2023	Range	
SAFETY	2	New 10/21/11	Low: 16.9	12.0	11.6	14.7	16.5	17.5	18.6	19.1	21.2	25.0	32.2	34.0					
TECHNICAL	3	Lowered 6/29/18	LEGENDS — 1.20 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																
BETA	.80	(1.00 = Market)	2021-23 PROJECTIONS Price Gain Ann'l Total Return High 50 (+20%) 7% Low 35 (-15%) -2%																
Insider Decisions			S O N D J F M A M to Buy 0 0 0 0 0 0 0 0 0 0 Options 0 0 0 0 0 0 0 0 0 0 to Sell 1 1 1 0 0 0 1 1																
Institutional Decisions			3Q2017 4Q2017 1Q2018 to Buy 46 49 49 to Sell 41 36 57 Hld's(000) 9500 8418 8601 Percent shares traded 12 4 4																
© VALUE LINE PUB. LLC 21-23			% TOT. RETURN 6/18 THIS STOCK VL ARITH+ 1 yr. 8.9 13.9 3 yr. 101.3 32.8 5 yr. 144.9 71.5																
2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Revenues per sh	9.40
5.98	6.12	6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	8.16	8.00	8.20	8.50	"Cash Flow" per sh	3.15
1.20	1.15	1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	2.17	2.24	2.40	2.55	Earnings per sh ^	2.10
.73	.61	.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	1.38	1.38	1.50	1.65	Div'd Decl'd per sh ^	1.11
.63	.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	.81	.86	.91	.96	Cap'l Spending per sh	2.50
1.59	1.87	2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	2.91	3.08	3.05	3.00	Book Value per sh	16.75
7.39	7.60	8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	13.40	14.02	14.85	15.15	Common Shs Outst'g ^	17.00
10.36	10.48	11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	16.30	16.35	16.50	16.75	Avg Ann'l P/E Ratio	21.0
23.5	30.0	26.4	27.4	22.7	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	25.6	28.4	28.4	28.4	28.4	Relative P/E Ratio	1.15
1.28	1.71	1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.96	1.34	1.43	1.43	1.43	Avg Ann'l Div'd Yield	2.6%
3.7%	3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.2%	2.2%	2.2%	Revenues (\$mill)	160
CAPITAL STRUCTURE as of 3/31/18			Total Debt \$174.6 mill. Due in 5 Yrs \$34.9 mill. LT Debt \$140.1 mill. LT Interest \$5.5 mill. (Total interest coverage: 8.5x) (38% of Cap'l)																
Pension Assets-12/17 \$69.2 mill.			Oblig. \$88.0 mill. Pfd Stock \$2.4 mill. Pfd Div'd: \$.1 mill.																
Common Stock 16,359,184 shs. as of 4/30/18			MARKET CAP: \$700 million (Small Cap)																
CURRENT POSITION (SMILL.)			2016 2017 3/31/18 Cash Assets 3.9 4.9 2.0 Other 22.8 24.3 23.2 Current Assets 26.7 29.2 25.2 Accts Payable 12.3 13.9 11.0 Debt Due 18.2 34.9 34.5 Other 16.6 15.7 18.5 Current Liab. 47.1 64.5 64.0																
ANNUAL RATES of change (per sh)			Past 10 Yrs. Past 5 Yrs. Est'd '15-'18 Revenues 2.5% 3.5% 3.0% "Cash Flow" 4.5% 7.0% 7.0% Earnings 5.0% 8.0% 8.0% Dividends 2.0% 2.0% 5.5% Book Value 3.5% 3.5% 4.0%																
QUARTERLY REVENUES (\$ mill.)			Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 28.8 31.7 34.7 30.8 126.0 2016 30.6 32.7 37.8 31.8 132.9 2017 30.1 33.0 36.2 31.5 130.8 2018 31.2 34.0 37.5 32.3 135 2019 33.0 36.0 39.0 34.0 142																
EARNINGS PER SHARE ^			Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 .22 .31 .41 .28 1.22 2016 .29 .36 .54 .19 1.38 2017 .27 .33 .46 .32 1.38 2018 .27 .35 .55 .33 1.50 2019 .32 .39 .59 .35 1.65																
QUARTERLY DIVIDENDS PAID ^			Cal-ender Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2014 .19 .19 .19 .1925 .76 2015 .1925 .1925 .1925 .19875 .78 2016 .19875 .19875 .19875 .21125 .81 2017 .21125 .21125 .21125 .22375 .86 2018 .22375 .22375																
BUSINESS:			Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2017, the Middlesex System accounted for 58% of operating revenues. At 12/31/17, the company had 315 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.5% of the common stock. BlackRock Institutional Trust Co., 6.4% (4/18 proxy). Add.: 1500 Ronson Road, Iselin, NJ 08830. Tel.: 732-634-1500. Internet: www.middlesexwater.com.																
ANALYSIS:			Middlesex Water stock has regained some ground over the past three months. Shares of the Northeast water provider struggled in the early part of this year, but have been performing better of late. Since our April review, they are up more than 15% in value, and are trading just several points shy of their recently etched all-time high price. At this time, it appears the market is pricing in a good amount of MSEX's anticipated top- and bottom-line growth, which includes a lower corporate tax bill, as well as recently approved water rate hikes. (The latter took effect April 1st, and ought to be evident in the second quarter). First-quarter financial results were mixed. The company generated revenues of \$31.2 million, about 4% higher than the previous-year tally, due largely to a wider Delaware customer base and increased water usage from industrial and commercial customers in New Jersey. Meantime, earnings of \$0.27 a share came in flat, year over year, as an uptick in operation and maintenance expenses (increased production costs and unforeseen weather-related expenses) kept the lid on the bot-																
CONCLUSION:			tom line. Consequently, we now look for revenues of \$135 million (down \$1 million from our prior call) and share net of \$1.50 (down \$0.05) this year. Investments in its aging infrastructure are under way. Middlesex has kicked off its capital spending program, known as "Water For Tomorrow," with a \$52 million project along its New Jersey territory. The construction of the Western Transmission Main will supplement its existing main, which services 300,000 customers through Middlesex County. Over the next five years, the company has earmarked approximately \$300 million to the program in an effort to increase efficiency and ultimately lower costs across its water delivery systems. At the current valuation this issue does not stand out. The recent run-up in price has eroded most of the gains we envision over the pull to next decade. Too, MSEX stock is neutrally ranked for the year ahead, and the dividend yield is only average. All told, we continue to recommend investors exercise patience and wait for a better entry point.																
DISCLOSURE:			(A) Diluted earnings. Next earnings report due early August. (B) Dividends historically paid in mid-Feb., May, Aug., and November. Div'd reinvestment plan available. (C) In millions.																
RATING:			Company's Financial Strength B++ Stock's Price Stability 65 Price Growth Persistence 40 Earnings Predictability 80																
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YORK WATER NDQ:YORW		RECENT PRICE	32.75	P/E RATIO	31.2	(Trailing: 32.4 Median: 24.0)	RELATIVE P/E RATIO	1.70	DIV'D YLD	2.0%	VALUE LINE							
TIMELINESS	5 Lowered 6/8/18	High: 18.5	16.5	18.0	18.0	18.1	18.5	22.0	24.3	26.7	39.8	39.9	34.2	Target Price Range	2021	2022	2023	
SAFETY	3 Lowered 7/17/15	Low: 15.5	6.2	9.7	12.8	15.8	16.8	17.6	18.8	19.7	23.8	31.7	27.5	64	48	40	32	
TECHNICAL	4 Lowered 6/29/18	LEGENDS 1.10 x Dividends p sh divided by Interest Rate Relative Price Strength 3 for 2 split 9/06 Shaded area indicates recession											24	16	8	6		
BETA	.80 (1.00 = Market)	2021-23 PROJECTIONS Price Gain Return High 45 (+35%) 10% Low 30 (-10%) 1%											20	12	8	6		
Insider Decisions S O N D J F M A M to Buy 2 1 3 2 2 1 5 2 2 1 4 2 to Sell 0 0 0 0 0 0 0 0 0 0 1 5 Options 0 0 0 0 0 0 0 0 0 0 1 5 Options: Yes 4 Options: No 0		Insider Decisions 3Q2017 4Q2017 1Q2018 to Buy 40 29 38 to Sell 30 35 40 Hlds(000) 5125 4588 4449 Percent shares traded 12 6 4											% TOT. RETURN 6/18 THIS STOCK VL ARITH+ 1 yr. -6.9 13.9 3 yr. 62.2 32.8 5 yr. 87.6 71.5		20	12	8	6
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019		© VALUE LINE PUB. LLC 21-23											20	12	8	6		
REVENUES PER SH 2002 2.17 2003 2.18 2004 2.58 2005 2.79 2006 2.89 2007 2.95 2008 3.07 2009 3.18 2010 3.21 2011 3.27 2012 3.58 2013 3.68 2014 3.70 2015 3.77 2016 3.85 2017 4.00 2018 4.00 2019 4.00 "Cash Flow" per sh 2002 .57 2003 .65 2004 .65 2005 .79 2006 .77 2007 .86 2008 .88 2009 1.07 2010 1.09 2011 1.12 2012 1.19 2013 1.36 2014 1.45 2015 1.42 2016 1.53 2017 1.65 2018 1.75 2019 1.75 Earnings per sh A 2002 .40 2003 .47 2004 .49 2005 .58 2006 .57 2007 .57 2008 .54 2009 .71 2010 .71 2011 .72 2012 .75 2013 .89 2014 .97 2015 1.01 2016 1.05 2017 1.15 2018 1.15 2019 1.15 Div'd Decl'd per sh B 2002 .35 2003 .37 2004 .39 2005 .42 2006 .45 2007 .48 2008 .49 2009 .52 2010 .53 2011 .54 2012 .55 2013 .60 2014 .63 2015 .65 2016 .70 2017 .75 2018 .75 2019 .75		20	12	8	6													
Cap'l Spending per sh 2002 .86 2003 1.07 2004 2.50 2005 1.69 2006 1.85 2007 1.69 2008 2.17 2009 1.18 2010 .83 2011 .74 2012 .94 2013 .76 2014 1.10 2015 1.11 2016 1.03 2017 1.95 2018 1.50 2019 1.25 Book Value per sh 2002 3.90 2003 4.06 2004 4.65 2005 4.85 2006 5.84 2007 5.97 2008 6.14 2009 6.92 2010 7.19 2011 7.45 2012 7.98 2013 8.15 2014 8.51 2015 8.88 2016 9.28 2017 9.35 2018 10.55 2019 10.55 Common Shs Outst'g C 2002 9.55 2003 9.63 2004 10.33 2005 10.40 2006 11.20 2007 11.27 2008 11.37 2009 12.56 2010 12.69 2011 12.79 2012 12.92 2013 12.98 2014 12.83 2015 12.81 2016 12.85 2017 12.87 2018 12.80 2019 12.75		20	12	8	6													
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019		REVENUES (\$mill) 2002 26.9 2003 24.5 2004 25.7 2005 26.3 2006 31.2 2007 30.3 2008 24.6 2009 21.9 2010 23.9 2011 24.4 2012 26.3 2013 23.1 2014 23.5 2015 32.8 2016 34.6 2017 34.6 2018 49.5 2019 51.0 Net Profit (\$mill) 2002 1.47 2003 1.40 2004 1.36 2005 1.40 2006 1.68 2007 1.61 2008 1.48 2009 1.46 2010 1.32 2011 1.50 2012 1.55 2013 1.48 2014 1.22 2015 1.18 2016 1.72 2017 1.72 2018 2.19 2019 2.75 Income Tax Rate 2002 3.3% 2003 3.2% 2004 3.1% 2005 2.9% 2006 2.8% 2007 2.8% 2008 3.5% 2009 3.6% 2010 3.5% 2011 3.1% 2012 2.8% 2013 2.8% 2014 2.6% 2015 2.1% 2016 1.9% 2017 1.9% 2018 2.0% 2019 1.5% AFUDC % to Net Profit 2002 54.5% 2003 45.7% 2004 48.3% 2005 47.1% 2006 46.0% 2007 45.1% 2008 44.8% 2009 44.4% 2010 44.8% 2011 44.4% 2012 42.6% 2013 43.0% 2014 35.5% 2015 35.0% 2016 35.0% 2017 34.0% 2018 34.0% 2019 34.0% Long-Term Debt Ratio 2002 45.5% 2003 54.3% 2004 51.7% 2005 52.9% 2006 54.0% 2007 54.9% 2008 55.2% 2009 55.6% 2010 57.4% 2011 57.0% 2012 64.5% 2013 65.0% 2014 65.0% 2015 65.0% 2016 65.0% 2017 65.0% 2018 65.0% 2019 65.0% Common Equity Ratio 2002 153.4 2003 160.1 2004 176.4 2005 180.2 2006 184.8 2007 188.4 2008 189.4 2009 196.3 2010 198.7 2011 209.5 2012 210 2013 200 2014 200 2015 210 2016 210 2017 210 2018 210 2019 210 Total Capital (\$mill) 2002 211.4 2003 222.0 2004 228.4 2005 233.0 2006 240.3 2007 244.2 2008 253.2 2009 261.4 2010 270.9 2011 288.8 2012 295 2013 300 2014 300 2015 300 2016 300 2017 300 2018 300 2019 300 Net Plant (\$mill) 2002 5.7% 2003 6.2% 2004 6.5% 2005 6.4% 2006 6.4% 2007 6.5% 2008 6.5% 2009 6.5% 2010 6.5% 2011 6.5% 2012 6.5% 2013 6.5% 2014 6.5% 2015 6.5% 2016 6.5% 2017 6.5% 2018 6.5% 2019 6.5% Return on Total Cap'l 2002 9.2% 2003 8.6% 2004 9.8% 2005 9.5% 2006 9.3% 2007 9.3% 2008 11.0% 2009 11.5% 2010 10.4% 2011 10.9% 2012 10.0% 2013 10.0% 2014 10.0% 2015 10.0% 2016 10.0% 2017 10.0% 2018 10.0% 2019 10.0% Return on Shr. Equity 2002 9.2% 2003 8.6% 2004 9.8% 2005 9.5% 2006 9.3% 2007 9.3% 2008 11.0% 2009 11.5% 2010 10.4% 2011 10.9% 2012 10.0% 2013 10.0% 2014 10.0% 2015 10.0% 2016 10.0% 2017 10.0% 2018 10.0% 2019 10.0% Return on Com Equity 2002 1.4% 2003 1.9% 2004 2.7% 2005 2.5% 2006 2.4% 2007 2.4% 2008 3.9% 2009 4.4% 2010 3.4% 2011 4.0% 2012 3.5% 2013 3.5% 2014 3.5% 2015 3.5% 2016 3.5% 2017 3.5% 2018 3.5% 2019 3.5% Retained to Com Eq 2002 85% 2003 78% 2004 72% 2005 73% 2006 74% 2007 74% 2008 64% 2009 62% 2010 67% 2011 63% 2012 67% 2013 63% 2014 67% 2015 65% 2016 65% 2017 65% 2018 65% 2019 65% All Div'ds to Net Prof 2002 85% 2003 78% 2004 72% 2005 73% 2006 74% 2007 74% 2008 64% 2009 62% 2010 67% 2011 63% 2012 67% 2013 63% 2014 67% 2015 65% 2016 65% 2017 65% 2018 65% 2019 65%											20	12	8	6		
CAPITAL STRUCTURE as of 3/31/18 Total Debt \$90.0 mill. DU in 5 Yrs \$42.5 mill. LT Debt \$78.0 mill. LT Interest \$5.3 mill. (39% of Cap'l)		Pension Assets 12/17 \$41.4 mill. Obliq. \$44.6 mill. Pfd Stock None Common Stock 12,892,798 shs.											20	12	8	6		
MARKET CAP: \$425 million (Small Cap)		CURRENT POSITION 2016 2017 3/31/18 Cash Assets 4.2 -- -- Accounts Receivable 4.3 4.5 4.2 Inventory (Avg. Cost) 7.7 9 9.9 Other 3.4 3.2 3.3 Current Assets 12.6 8.6 8.4 Accts Payable 3.7 3.1 3.2 Debt Due -- -- 12.0 Other 4.5 6.0 5.6 Current Liab. 8.2 9.1 20.8											20	12	8	6		
ANNUAL RATES of change (per sh) Past 10 Yrs. Past 5 Yrs. Est'd '15-'17 to '21-'23 Revenues 3.5% 3.5% 6.0% "Cash Flow" 6.0% 6.0% 7.5% Earnings 5.5% 6.5% 9.0% Dividends 3.5% 3.5% 8.0% Book Value 5.0% 3.5% 5.0%		QUARTERLY REVENUES (\$ mill.) Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 11.2 11.9 12.4 11.6 47.1 2016 11.3 11.8 12.6 11.9 47.6 2017 11.3 12.3 12.7 12.3 48.6 2018 11.6 12.5 12.9 12.5 49.5 2019 12.0 12.8 13.3 12.9 51.0											20	12	8	6		
QUARTERLY DIVIDENDS PAID B Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2014 .1431 .1431 .1431 .1431 .572 2015 .1495 .1495 .1495 .1555 .604 2016 .1555 .1555 .1555 .1602 .627 2017 .1602 .1602 .1602 .1666 .647 2018 .1666 .1666		EARNINGS PER SHARE A Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2015 .20 .22 .28 .27 .97 2016 .19 .23 .27 .23 .92 2017 .20 .23 .31 .27 1.01 2018 .20 .25 .32 .28 1.05 2019 .24 .27 .33 .31 1.15											20	12	8	6		
Business: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2017, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 198,000. Has more than 69,000 customers. Residential customers accounted for 64% of 2017 revenues; commercial and industrial (28%); other (8%). It also provides sewer billing services. Incorporated: PA. York had 102 full-time employees at 12/31/17. President/CEO: Jeffrey R. Hines. Officers/directors own 1.1% of the common stock (3/18 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.		York Water's first-quarter bottom line was unchanged compared to the previous-year figure. The regulated utility posted earnings of \$0.20 a share for the March period, missing our mark by \$0.02. Nevertheless, we are retaining our current-year profit forecast of \$1.05 per share, as we think a lower effective tax rate, combined with higher asset improvement deductions, should help offset rising expenses in the back half of 2018. Meantime, first-quarter revenues of \$11.6 million were fractionally above our call, though the beat was not significant enough to spur an upward revision. As we expected the company has inquired about a rate increase. In May, York asked the Pennsylvania Public Utility Commission for more than \$6 million (annual revenues) in customer rate hikes to recover replacement costs associated with water pipeline improvements, other infrastructure upgrades, as well as personnel and operational cost increases. York hopes to recover expenses incurred since its last rate case filing in 2013, and help balance future capital investments. A time frame for the decision has not yet been established.											20	12	8	6		
Capital spending ought to continue through 2018 and beyond. Year to date, York Water has invested only about \$3.0 million, specifically to complete a raw water pumping station and some modest infrastructure upgrades. An additional \$20 million is likely to be spent by year's end. Going forward, we expect further infrastructure upgrades and improvements to its waste water treatment plants. This spending is necessary not only as a response to its aging pipes and delivery methods, but also to handle its expanding customer base. This equity lacks investment appeal at this juncture. Shares of York Water have been lowered two spots on our Timeliness ranking scale, to 5 (Lowest). Thus, short-term accounts should turn the page. Similarly, those with a buy-and-hold mantra should take a pass, as the shares offer limited price upside 3- to 5-years out. Lastly, as a stand-alone dividend play (2.0% current yield), we think investors can find more-attractive options elsewhere.		Nicholas P. Patrikis July 13, 2018											20	12	8	6		
Company's Financial Strength B+ Stock's Price Stability 60 Price Growth Persistence 55 Earnings Predictability 90		To subscribe call 1-800-VALUELINE.											20	12	8	6		
(A) Diluted earnings. Next earnings report due late August. (B) Dividends historically paid in late February, June, September, and December. © 2018 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.		(C) In millions, adjusted for split.											20	12	8	6		

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Carolina Water Service, Inc. of North Carolina
Summary of Risk Premium Models for the
Proxy Group of Six Water Companies

	<u>Proxy Group of Six Water Companies</u>
Predictive Risk Premium Model (PRPM) (1)	10.90 %
Risk Premium Using an Adjusted Total Market Approach (2)	<u>10.56 %</u>
Average	<u><u>10.73 %</u></u>

Notes:

- (1) From page 11 of this Schedule.
- (2) From page 12 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Proxy Group of Six Water Companies	LT Average Predicted Variance	Spot Predicted Variance	Recommended Variance (2)	GARCH Coefficient	Predicted Risk Premium (3)	Risk-Free Rate (4)	Indicated ROE (5)
American States Water Co.	0.38%	0.30%	0.30%	1.84918	6.81%	3.71%	10.52%
American Water Works Company Inc	NMF	NMF	NMF	5.57916	NMF	3.71%	NMF
Aqua America Inc	0.44%	0.25%	0.25%	2.29311	7.14%	3.71%	10.85%
California Water Service Group	0.32%	0.26%	0.26%	1.93864	6.33%	3.71%	10.04%
Middlesex Water Co.	0.30%	0.37%	0.30%	2.04292	7.60%	3.71%	11.31%
York Water Co.	0.46%	0.34%	0.34%	1.93972	8.26%	3.71%	11.97%
						Average	10.94%
						Median	10.85%
						Average of Mean and Median	10.90%

NMF = Not Meaningful Figure

Notes:

- (1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.
- (2) Due to current market conditions, I have selected the lower value between the two predicted variances at this time.
- (3) $(1 + (\text{Column [3]} * \text{Column [4]})^{1/2}) - 1$.
- (4) From note 2 on page 22 of this Schedule.
- (5) $\text{Column [5]} + \text{Column [6]}$.

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

<u>Line No.</u>		<u>Proxy Group of Six Water Companies</u>
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	4.78 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	<u>0.37 (2)</u>
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	5.15 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	<u>0.07 (3)</u>
5.	Adjusted Prospective Bond Yield	5.22 %
6.	Equity Risk Premium (4)	<u>5.34</u>
7.	Risk Premium Derived Common Equity Cost Rate	<u><u>10.56 %</u></u>

- Notes:
- (1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 18-19 of this Schedule).
 - (2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.37% from page 13 of this Schedule.
 - (3) Adjustment to reflect the A2 / A3 Moody's LT issuer rating of the proxy group of six water companies as shown on page 14 of this Schedule. The 0.07% upward adjustment is derived by taking 1/6 of the spread between A2 and A3 Public Utility Bonds ($1/6 * 0.4\% = 0.07\%$) as derived from page 13 of this Schedule.
 - (4) From page 15 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1]	[2]	[3]
	<u>Aaa Rated Corporate Bond</u>	<u>A Rated Public Utility Bond</u>	<u>Baa Rated Public Utility Bond</u>
Sep-2018	3.98 %	4.32 %	4.74 %
Aug-2018	3.88	4.26	4.64
Jul-2018	<u>3.87</u>	<u>4.27</u>	<u>4.67</u>
Average	<u><u>3.91 %</u></u>	<u><u>4.28 %</u></u>	<u><u>4.68 %</u></u>

Selected Bond Spreads

A Rated Public Utility Bonds Over Aaa Rated Corporate Bonds:
0.37 % (1)

Baa Rated Public Utility Bonds Over A Rated Public Utility Bonds:
0.40 % (2)

Notes:

(1) Column [2] - Column [1].

(2) Column [3] - Column [2].

Source of Information:

Bloomberg Professional Service

Carolina Water Service, Inc. of North Carolina
Comparison of Long-Term Issuer Ratings for
Proxy Group of Six Water Companies

	Moody's		Standard & Poor's	
	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting(1)
<u>Proxy Group of Six Water Companies</u>				
American States Water Co. (2)	A2	6.0	A+	5.0
American Water Works Company Inc (3)	A3	7.0	A	6.0
Aqua America Inc (4)	NR	--	A+	5.0
California Water Service Group (5)	NR	--	A+	5.0
Middlesex Water Co.	NR	--	A	6.0
York Water Co.	NR	--	A-	7.0
Average	<u>A2/A3</u>	<u>6.5</u>	<u>A</u>	<u>5.7</u>

Notes:

- (1) From page 6 of Schedule DWD-4 (direct testimony).
- (2) Ratings that of Golden State Water Company.
- (3) Ratings that of New Jersey and Pennsylvania American Water Companies.
- (4) Ratings that of Aqua Pennsylvania, Inc.
- (5) Ratings that of California Water Service Company.

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

Carolina Water Service, Inc. of North Carolina
Judgment of Equity Risk Premium for
Proxy Group of Six Water Companies

<u>Line No.</u>		<u>Proxy Group of Six Water Companies</u>
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.15 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	<u>4.52</u>
3.	Average equity risk premium	<u><u>5.34 %</u></u>

Notes: (1) From page 16 of this Schedule.
(2) From page 20 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Six Water Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.70 %
2.	Regression on Ibbotson Risk Premium Data (2)	7.28
3.	Ibbotson Equity Risk Premium based on PRPM (3)	6.41
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	6.01
5.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	11.64
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u>10.30</u>
7.	Conclusion of Equity Risk Premium	7.89 %
8.	Adjusted Beta (7)	<u>0.78</u>
9.	Forecasted Equity Risk Premium	<u><u>6.15 %</u></u>

Notes provided on page 17 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

Notes:

- (1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2017 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa corporate bonds from 1926-2017.
- (2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2017 referenced in Note 1 above.
- (3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa corporate monthly bond yields, from January 1928 through September 2018.
- (4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 4.78% (from page 12 of this Schedule) from the projected 3-5 year total annual market return of 10.79% (described fully in note 1 on page 22 of this Schedule).
- (5) Using data from Value Line for the S&P 500, an expected total return of 16.42% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 4.78% results in an expected equity risk premium of 11.64%.
- (6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 15.08% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 4.78% results in an expected equity risk premium of 10.30%.
- (7) Average of mean and median beta from page 21 of this Schedule.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2018 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2018 and June 1, 2018
Bloomberg Professional Service

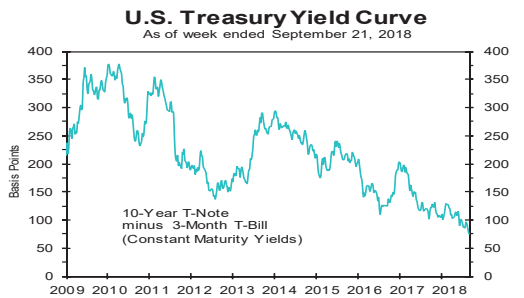
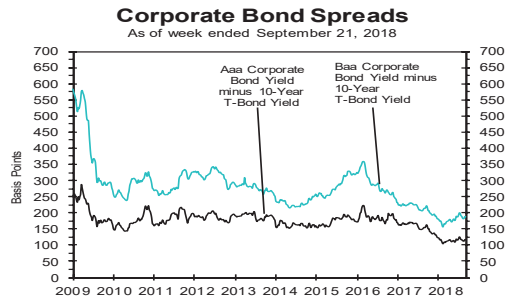
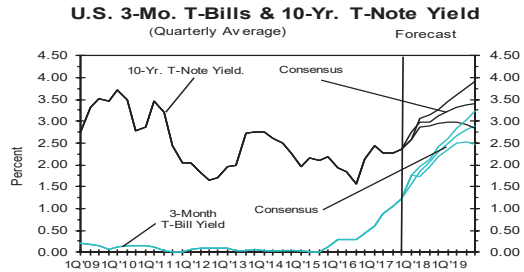
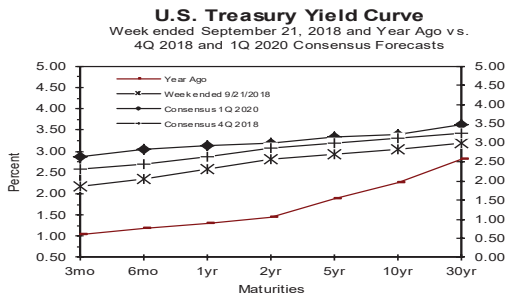
2 ■ BLUE CHIP FINANCIAL FORECASTS ■ OCTOBER 1, 2018

Consensus Forecasts of U.S. Interest Rates and Key Assumptions

Interest Rates	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month				Latest Qtr	4Q 2018	1Q 2019	2Q 2019	3Q 2019	4Q 2019
	Sep 21	Sep 14	Sep 7	Aug 31	Aug	Jul	Jun	Q3 2018*	2018	2019	2019	2019	2019	2020
Federal Funds Rate	1.92	1.92	1.91	1.92	1.91	1.91	1.81	1.91	2.2	2.4	2.7	2.8	2.9	2.9
Prime Rate	5.00	5.00	5.00	5.00	5.00	5.00	4.88	5.00	5.3	5.5	5.7	5.9	6.0	5.9
LIBOR, 3-mo.	2.35	2.33	2.32	2.32	2.33	2.34	2.33	2.33	2.6	2.8	3.0	3.1	3.2	3.2
Commercial Paper, 1-mo.	2.10	2.03	2.00	1.99	1.96	1.96	1.92	1.98	2.3	2.5	2.7	2.8	2.9	2.9
Treasury bill, 3-mo.	2.17	2.15	2.14	2.12	2.07	1.99	1.94	2.06	2.3	2.5	2.7	2.8	2.9	2.9
Treasury bill, 6-mo.	2.36	2.32	2.30	2.27	2.24	2.16	2.11	2.24	2.4	2.6	2.8	2.9	3.0	3.0
Treasury bill, 1 yr.	2.58	2.55	2.50	2.47	2.45	2.38	2.31	2.45	2.6	2.8	2.9	3.1	3.1	3.1
Treasury note, 2 yr.	2.80	2.75	2.67	2.65	2.64	2.60	2.51	2.65	2.8	3.0	3.1	3.2	3.2	3.2
Treasury note, 5 yr.	2.94	2.87	2.78	2.76	2.77	2.77	2.76	2.80	3.0	3.1	3.2	3.3	3.3	3.3
Treasury note, 10 yr.	3.05	2.97	2.91	2.87	2.90	2.88	2.90	2.91	3.1	3.2	3.3	3.4	3.4	3.4
Treasury note, 30 yr.	3.19	3.11	3.08	3.01	3.05	3.00	3.04	3.05	3.3	3.4	3.5	3.6	3.7	3.6
Corporate Aaa bond	4.17	4.12	4.10	4.03	4.04	4.06	4.09	4.07	4.3	4.5	4.6	4.7	4.7	4.7
Corporate Baa bond	4.86	4.83	4.82	4.75	4.75	4.79	4.81	4.78	5.1	5.3	5.4	5.5	5.6	5.6
State & Local bonds	3.75	3.71	3.67	3.63	3.63	3.60	3.62	3.64	4.0	4.1	4.2	4.3	4.4	4.4
Home mortgage rate	4.65	4.60	4.54	4.52	4.55	4.53	4.57	4.57	4.7	4.9	5.0	5.1	5.1	5.2

Key Assumptions	History									Consensus Forecasts-Quarterly					
	4Q 2016	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018*	2018	2019	2019	2019	2019	2020	
Major Currency Index	93.6	94.3	92.9	88.3	88.9	86.1	88.3	90.2	90.0	89.8	89.4	88.6	88.5	88.5	
Real GDP	1.8	1.8	3.0	2.8	2.3	2.2	4.2	3.2	2.8	2.4	2.4	2.2	1.9	1.8	
GDP Price Index	2.3	2.0	1.2	2.2	2.5	2.0	3.0	2.2	2.3	2.3	2.3	2.2	2.2	2.2	
Consumer Price Index	2.7	3.0	0.1	2.1	3.3	3.5	1.7	2.2	2.4	2.4	2.2	2.3	2.3	2.3	

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). Interest rate data for Q3 2018 based on historical data through the week ended September 21. *Data for Q3 2018 Major Currency Index based on data through week ended September 21. Figures for Q3 2018 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts based on a special question asked of the panelists this month.



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14 ■ BLUE CHIP FINANCIAL FORECASTS ■ JUNE 1, 2018

Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2020 through 2024 and averages for the five-year periods 2020-2024 and 2025-2029. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

Interest Rates		Average For The Year					Five-Year Averages	
		2020	2021	2022	2023	2024	2020-2024	2025-2029
1. Federal Funds Rate	CONSENSUS	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Top 10 Average	3.5	3.6	3.6	3.5	3.5	3.5	3.5
	Bottom 10 Average	2.6	2.5	2.4	2.4	2.6	2.5	2.6
2. Prime Rate	CONSENSUS	6.1	6.0	6.0	6.0	6.1	6.0	6.0
	Top 10 Average	6.5	6.6	6.6	6.5	6.5	6.6	6.5
	Bottom 10 Average	5.6	5.5	5.4	5.5	5.6	5.5	5.6
3. LIBOR, 3-Mo.	CONSENSUS	3.3	3.3	3.3	3.3	3.4	3.3	3.3
	Top 10 Average	3.7	3.9	4.0	3.9	3.9	3.9	3.8
	Bottom 10 Average	2.9	2.8	2.7	2.7	2.9	2.8	2.9
4. Commercial Paper, 1-Mo.	CONSENSUS	3.1	3.2	3.1	3.1	3.2	3.1	3.2
	Top 10 Average	3.5	3.7	3.7	3.7	3.7	3.6	3.6
	Bottom 10 Average	2.7	2.6	2.6	2.6	2.7	2.6	2.7
5. Treasury Bill Yield, 3-Mo.	CONSENSUS	3.0	3.0	2.9	2.9	3.0	3.0	3.0
	Top 10 Average	3.5	3.6	3.6	3.5	3.6	3.5	3.5
	Bottom 10 Average	2.5	2.4	2.4	2.4	2.5	2.4	2.5
6. Treasury Bill Yield, 6-Mo.	CONSENSUS	3.1	3.1	3.1	3.1	3.2	3.1	3.2
	Top 10 Average	3.6	3.7	3.7	3.7	3.7	3.7	3.7
	Bottom 10 Average	2.7	2.6	2.5	2.5	2.7	2.6	2.7
7. Treasury Bill Yield, 1-Yr.	CONSENSUS	3.2	3.3	3.2	3.2	3.3	3.2	3.3
	Top 10 Average	3.7	3.8	3.8	3.8	3.8	3.8	3.9
	Bottom 10 Average	2.8	2.7	2.6	2.7	2.8	2.7	2.8
8. Treasury Note Yield, 2-Yr.	CONSENSUS	3.4	3.4	3.4	3.4	3.4	3.4	3.5
	Top 10 Average	3.9	4.0	4.0	3.8	4.0	3.9	4.1
	Bottom 10 Average	2.9	2.9	2.8	2.8	2.9	2.8	2.9
10. Treasury Note Yield, 5-Yr.	CONSENSUS	3.6	3.6	3.6	3.6	3.7	3.6	3.8
	Top 10 Average	4.0	4.1	4.1	4.1	4.2	4.1	4.4
	Bottom 10 Average	3.2	3.2	3.0	3.1	3.2	3.1	3.2
11. Treasury Note Yield, 10-Yr.	CONSENSUS	3.8	3.8	3.8	3.8	3.8	3.8	3.9
	Top 10 Average	4.3	4.3	4.4	4.3	4.4	4.3	4.5
	Bottom 10 Average	3.3	3.3	3.2	3.2	3.3	3.2	3.4
12. Treasury Bond Yield, 30-Yr.	CONSENSUS	4.1	4.2	4.2	4.2	4.2	4.2	4.4
	Top 10 Average	4.7	4.7	4.7	4.8	4.8	4.7	5.0
	Bottom 10 Average	3.6	3.6	3.6	3.6	3.7	3.6	3.7
13. Corporate Aaa Bond Yield	CONSENSUS	5.2	5.2	5.2	5.3	5.4	5.3	5.4
	Top 10 Average	5.7	5.8	5.9	6.0	6.0	5.9	6.0
	Bottom 10 Average	4.7	4.7	4.6	4.6	4.7	4.6	4.7
13. Corporate Baa Bond Yield	CONSENSUS	6.0	6.0	6.0	6.1	6.2	6.1	6.3
	Top 10 Average	6.6	6.8	6.9	7.0	7.0	6.9	7.0
	Bottom 10 Average	5.3	5.3	5.3	5.3	5.4	5.3	5.4
14. State & Local Bonds Yield	CONSENSUS	4.6	4.5	4.5	4.5	4.6	4.5	4.6
	Top 10 Average	5.1	5.1	5.1	5.1	5.1	5.1	5.2
	Bottom 10 Average	4.0	3.9	3.9	4.0	4.1	4.0	4.1
15. Home Mortgage Rate	CONSENSUS	5.4	5.4	5.4	5.4	5.5	5.4	5.6
	Top 10 Average	5.8	5.9	6.0	6.0	6.0	6.0	6.1
	Bottom 10 Average	4.9	4.9	4.8	4.8	4.9	4.9	5.0
A. FRB - Major Currency Index	CONSENSUS	89.6	89.4	89.6	90.0	90.1	89.7	90.4
	Top 10 Average	94.3	94.6	94.5	94.5	94.5	94.5	94.8
	Bottom 10 Average	84.6	84.0	84.3	85.4	85.6	84.8	85.9
B. Real GDP	CONSENSUS	1.9	1.9	2.0	2.1	2.1	2.0	2.1
	Bottom 10 Average	1.5	1.3	1.5	1.8	1.8	1.6	1.8
C. GDP Chained Price Index	CONSENSUS	2.2	2.2	2.1	2.1	2.1	2.1	2.1
	Top 10 Average	2.4	2.4	2.3	2.2	2.3	2.3	2.2
	Bottom 10 Average	2.0	2.0	2.0	1.9	2.0	2.0	2.0
D. Consumer Price Index	CONSENSUS	2.3	2.3	2.3	2.2	2.2	2.3	2.2
	Top 10 Average	2.7	2.6	2.5	2.4	2.5	2.5	2.4
	Bottom 10 Average	1.9	2.0	2.1	2.0	2.0	2.0	2.1

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Carolina Water Service, Inc. of North Carolina
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

<u>Line No.</u>		<u>Implied Equity Risk Premium</u>
	<u>Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):</u>	
1.	Historical Equity Risk Premium	4.04 %
2.	Regression of Historical Equity Risk Premium (2)	5.43
3.	Forecasted Equity Risk Premium Based on PRPM (3)	3.72
4.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4)	4.72
5.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5)	<u>4.67</u>
6.	Average Equity Risk Premium (6)	<u><u>4.52</u></u> %

- Notes: (1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2017. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.
- (2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A rated public utility bond yields from 1928 - 2017 referenced in note 1 above.
- (3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A rated public utility bonds from January 1928 - September 2018.
- (4) Using data from Value Line for the S&P Utilities Index, an expected return of 9.87% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 5.15%, calculated on line 3 of page 12 of this Schedule results in an equity risk premium of 4.72%. (9.87% - 5.15% = 4.72%)
- (5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 9.82% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 5.15%, calculated on line 3 of page 12 of this Schedule results in an equity risk premium of 4.70%. (9.82% - 5.15% = 4.67%)
- (6) Average of lines 1 through 5.

Carolina Water Service, Inc. of North Carolina
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Six Water Companies	Value Line Adjusted Beta	Bloomberg Adjusted Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
American States Water Co.	0.80	0.71	0.76	8.99 %	3.71 %	10.54 %	11.08 %	10.81 %
American Water Works Company Inc	0.65	0.63	0.64	8.99	3.71	9.46	10.27	9.87
Aqua America Inc	0.75	0.71	0.73	8.99	3.71	10.27	10.88	10.57
California Water Service Group	0.80	0.87	0.84	8.99	3.71	11.26	11.62	11.44
Middlesex Water Co.	0.80	0.80	0.80	8.99	3.71	10.90	11.35	11.13
York Water Co.	0.80	0.87	0.84	8.99	3.71	11.26	11.62	11.44
Mean			<u>0.77</u>			<u>10.62 %</u>	<u>11.14 %</u>	<u>10.88 %</u>
Median			<u>0.78</u>			<u>10.72 %</u>	<u>11.21 %</u>	<u>10.97 %</u>
Average of Mean and Median			<u>0.78</u>			<u>10.67</u>	<u>11.18</u>	<u>10.93 %</u>

Notes on page 22 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

- (1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2017)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2017:	12.07 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.15
MRP based on Ibbotson Historical Data:	<u>6.92 %</u>

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2017)

8.59 %

Measure 3: Application of the PRPM to Ibbotson Historical Data: (January 1926 - September 2018)

7.26 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending September 28, 2018)

Total projected return on the market 3-5 years hence*:	10.79 %
Projected Risk-Free Rate (see note 2):	3.71
MRP based on Value Line Summary & Index:	<u>7.08 %</u>

*Forecasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

Total return on the Market based on the S&P 500:	16.42 %
Projected Risk-Free Rate (see note 2):	3.71
MRP based on Value Line data	<u>12.71 %</u>

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	15.08 %
Projected Risk-Free Rate (see note 2):	3.71
MRP based on Bloomberg data	<u>11.37 %</u>

Average of Value Line, Ibbotson, and Bloomberg MRP: 8.99 %

- (2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 18-19 of this Schedule.) The projection of the risk-free rate is illustrated below:

Fourth Quarter 2018	3.30 %
First Quarter 2019	3.40
Second Quarter 2019	3.50
Third Quarter 2019	3.60
Fourth Quarter 2019	3.70
First Quarter 2020	3.60
2020-2024	4.20
2025-2029	4.40
	<u>3.71 %</u>

- (3) Average of Column 6 and Column 7.

Sources of Information:

Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2018 and June 1, 2018
Stocks, Bonds, Bills, and Inflation - 2018 SBBi Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Carolina Water Service, Inc. of North Carolina
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the Non-Price Regulated Proxy Group was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group was then selected based on the unadjusted beta range of 0.33 – 0.75 and residual standard error of the regression range of 2.5251 – 3.0115 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1216. The standard deviation of the standard error of the regression is calculated as follows:

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

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

$$\text{Thus, } 0.1216 = \frac{2.7683}{\sqrt{518}} = \frac{2.7683}{22.7596}$$

Source of Information: Value Line, Inc., September 2018
Value Line Investment Survey (Standard Edition)

Carolina Water Service, Inc. of North Carolina
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

	[1]	[2]	[3]	[4]
<u>Proxy Group of Six Water Companies</u>	<u>Value Line Adjusted Beta</u>	<u>Unadjusted Beta</u>	<u>Residual Standard Error of the Regression</u>	<u>Standard Deviation of Beta</u>
American States Water Co.	0.75	0.59	2.8678	0.1079
American Water Works Company Inc	0.60	0.34	2.1070	0.0793
Aqua America Inc	0.70	0.48	2.2225	0.0836
California Water Service Group	0.75	0.58	2.8593	0.1076
Middlesex Water Co.	0.75	0.59	3.1751	0.1195
York Water Co.	0.80	0.64	3.3783	0.1271
Average	<u>0.73</u>	<u>0.54</u>	<u>2.7683</u>	<u>0.1042</u>
Beta Range (+/- 2 std. Devs. of Beta) 2 std. Devs. of Beta	0.33 0.21	0.75		
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	2.5251	3.0115		
Std. dev. of the Res. Std. Err.	0.1216			
2 std. devs. of the Res. Std. Err.	0.2432			

Source of Information: Valueline Proprietary Database, September 2018

Carolina Water Service, Inc. of North Carolina
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]
<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>VL Adjusted Beta</u>	<u>Unadjusted Beta</u>	<u>Residual Standard Error of the Regression</u>	<u>Standard Deviation of Beta</u>
AutoZone Inc.	0.80	0.67	2.7751	0.1044
Cheesecake Factory	0.75	0.55	2.7961	0.1052
Cboe Global Markets	0.75	0.59	2.7130	0.1021
Cracker Barrel	0.80	0.64	3.0058	0.1131
Chemed Corp.	0.80	0.68	2.6135	0.0983
C.H. Robinson	0.80	0.68	2.5785	0.0970
Campbell Soup	0.65	0.45	2.6367	0.0992
Dollar General	0.85	0.73	2.9989	0.1128
Dunkin' Brands Group	0.65	0.44	2.7974	0.1053
Darden Restaurants	0.85	0.70	2.9531	0.1111
Forrester Research	0.70	0.54	2.6049	0.0980
HCA Holdings	0.85	0.74	2.9907	0.1125
Hormel Foods	0.70	0.54	2.5543	0.0961
Vail Resorts	0.80	0.68	2.5433	0.0957
NVR, Inc.	0.85	0.70	2.8597	0.1076
Pinnacle Foods	0.75	0.62	2.5873	0.0974
Texas Roadhouse	0.85	0.73	2.9257	0.1101
Average	<u>0.78</u>	<u>0.63</u>	<u>2.7600</u>	<u>0.1000</u>
Proxy Group of Six Water Companies	<u>0.73</u>	<u>0.54</u>	<u>2.7683</u>	<u>0.1042</u>

Source of Information:

Valueline Proprietary Database, September 2018

Carolina Water Service, Inc. of North Carolina
Summary of Cost of Equity Models Applied to
Proxy Group of Seventeen Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

<u>Principal Methods</u>	<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
Discounted Cash Flow Model (DCF) (1)	13.79 %
Risk Premium Model (RPM) (2)	12.32
Capital Asset Pricing Model (CAPM) (3)	<u>11.52</u>
	Mean <u>12.54</u> %
	Median <u>12.32</u> %
	Average of Mean and Median <u>12.43</u> %

Notes:

- (1) From page 27 of this Schedule.
- (2) From page 28 of this Schedule.
- (3) From page 31 of this Schedule.

Carolina Water Service, Inc. of North Carolina
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Seventeen Non-Price Regulated Companies	Value Line Projected Five Year Growth in EPS	Reuters Mean Consensus Projected Five Year Growth Rate in EPS	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth Rate in EPS	Adjusted Dividend Yield	Indicated Common Equity Cost Rate (1)
Average Dividend Yield	EPS	Rate in EPS	EPS	EPS	Rate in EPS	Dividend Yield	Cost Rate (1)
-	12.50	10.93	12.20	10.93	11.64	-	NA
2.45	7.00	10.78	14.40	10.78	10.74	2.58	13.32
1.23	17.00	14.20	11.80	14.20	14.30	1.32	15.62
3.35	12.00	4.50	7.20	7.25	7.74	3.48	11.22
0.38	13.00	10.00	10.00	10.00	10.75	0.40	11.15
1.95	10.50	13.22	9.00	13.21	11.48	2.06	13.54
3.44	3.50	NMF	5.90	NMF	4.70	3.52	8.22
1.11	13.00	15.13	13.60	15.13	14.22	1.19	15.41
1.92	12.50	13.35	12.40	13.35	12.90	2.04	14.94
2.66	12.00	12.40	9.30	12.40	11.53	2.81	14.34
1.73	8.00	NA	12.00	12.00	10.67	1.82	12.49
1.12	14.00	15.08	12.20	15.08	14.09	1.20	15.29
1.96	9.50	10.50	8.30	10.50	9.70	2.06	11.76
2.04	18.00	23.09	NA	23.09	21.39	2.26	23.65
-	17.50	19.00	15.00	19.00	17.63	-	NA
1.96	10.00	9.67	8.00	9.67	9.34	2.05	11.39
1.47	20.50	17.20	11.80	17.20	16.68	1.59	18.27
						Mean	14.04
						Median	13.54
						Average of Mean and Median	13.79

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regulated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of September 28, 2018. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, www.reuters.com, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information:
Value Line Investment Survey
www.reuters.com Downloaded on 09/28/2018
www.zacks.com Downloaded on 09/28/2018
www.yahoo.com Downloaded on 09/28/2018

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

<u>Line No.</u>		<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
1.	Prospective Yield on Baa Rated Corporate Bonds (1)	5.61 %
2.	Equity Risk Premium (2)	<u>6.71</u>
3.	Risk Premium Derived Common Equity Cost Rate	<u><u>12.32</u> %</u>

Notes: (1) Average forecast of Baa corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated October 1, 2018 and June 1, 2018 (see pages 18 and 19 of this Schedule). The estimates are detailed below.

Fourth Quarter 2018	5.10 %
First Quarter 2019	5.30
Second Quarter 2019	5.40
Third Quarter 2019	5.50
Fourth Quarter 2019	5.60
First Quarter 2020	5.60
2020-2024	6.10
2025-2029	<u>6.30</u>
Average	<u><u>5.61</u> %</u>

(2) From page 30 of this Schedule.

Carolina Water Service, Inc. of North Carolina
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Seventeen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>Moody's Long-Term Issuer Rating September 2018</u>		<u>Standard & Poor's Long-Term Issuer Rating September 2018</u>	
	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>
AutoZone Inc.	Baa1	8.0	BBB	9.0
Cheesecake Factory	NR	--	NR	--
Cboe Global Markets	Baa1	8.0	A-	7.0
Cracker Barrel	WR	--	NR	--
Chemed Corp.	WR	--	NR	--
C.H. Robinson	Baa2	9.0	BBB+	8.0
Campbell Soup	Baa2	9.0	BBB-	10.0
Dollar General	Baa2	9.0	BBB	9.0
Dunkin' Brands Group	NR	--	NR	--
Darden Restaurants	Baa2	9.0	BBB	9.0
Forrester Research	NR	--	NR	--
HCA Holdings	Ba2	12.0	BB+	11.0
Hormel Foods	A1	5.0	A	6.0
Vail Resorts	NR	--	NR	--
NVR, Inc.	Baa2	9.0	BBB+	8.0
Pinnacle Foods	NR	--	BB-	13.0
Texas Roadhouse	NR	--	NR	--
Average	Baa2	8.7	BBB	9.0

Notes:

(1) From page 6 of Schedule DWD-4 (direct testimony).

Source of Information:

Bloomberg Professional Services

Carolina Water Service, Inc. of North Carolina
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Seventeen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Seventeen Non- Price Regulated Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.70 %
2.	Regression on Ibbotson Risk Premium Data (2)	7.28
3.	Ibbotson Equity Risk Premium based on PRPM (3)	6.41
5.	Equity Risk Premium Based on <u>Value Line</u> Summary and Index (4)	6.01
6.	Equity Risk Premium Based on <u>Value Line</u> S&P 500 Companies (5)	11.64
7.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u>10.30</u>
8.	Conclusion of Equity Risk Premium	7.89 %
9.	Adjusted Beta (7)	<u>0.85</u>
10.	Forecasted Equity Risk Premium	<u><u>6.71 %</u></u>

Notes:

- (1) From note 1 of page 16 of this Schedule.
- (2) From note 2 of page 16 of this Schedule.
- (3) From note 3 of page 16 of this Schedule.
- (4) From note 4 of page 16 of this Schedule.
- (5) From note 5 of page 16 of this Schedule.
- (6) From note 6 of page 16 of this Schedule.
- (7) Average of mean and median beta from page 31 of this Schedule.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2018 SBBi Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2018 and June 1, 2018
Bloomberg Professional Services

Carolina Water Service, Inc. of North Carolina
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

Proxy Group of Seventeen Non-Price Regulated Companies	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Value Line Adjusted Beta	Bloomberg Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
AutoZone Inc.	0.80	0.83	0.82	8.99 %	3.71 %	11.08 %	11.48 %	11.28 %
Cheesecake Factory	0.75	0.91	0.83	8.99	3.71	11.17	11.55	11.36
Cboe Global Markets	0.75	1.19	0.97	8.99	3.71	12.43	12.50	12.46
Cracker Barrel	0.80	0.98	0.89	8.99	3.71	11.71	11.96	11.83
Chemed Corp.	0.80	0.94	0.87	8.99	3.71	11.53	11.82	11.68
C.H. Robinson	0.80	0.94	0.87	8.99	3.71	11.53	11.82	11.68
Campbell Soup	0.70	0.55	0.62	8.99	3.71	9.28	10.14	9.71
Dollar General	0.90	0.71	0.81	8.99	3.71	10.99	11.42	11.20
Dunkin' Brands Group	0.65	0.94	0.79	8.99	3.71	10.81	11.28	11.05
Darden Restaurants	0.85	0.91	0.88	8.99	3.71	11.62	11.89	11.75
Forrester Research	0.70	1.06	0.88	8.99	3.71	11.62	11.89	11.75
HCA Holdings	0.85	0.65	0.75	8.99	3.71	10.45	11.01	10.73
Hormel Foods	0.75	0.58	0.67	8.99	3.71	9.73	10.47	10.10
Vail Resorts	0.85	0.97	0.91	8.99	3.71	11.89	12.09	11.99
NVR, Inc.	0.85	0.88	0.87	8.99	3.71	11.53	11.82	11.68
Pinnacle Foods	0.80	0.65	0.73	8.99	3.71	10.27	10.88	10.57
Texas Roadhouse	0.85	1.04	0.94	8.99	3.71	12.16	12.29	12.23
Mean			<u>0.83</u>			<u>11.16 %</u>	<u>11.55 %</u>	<u>11.36 %</u>
Median			<u>0.87</u>			<u>11.53 %</u>	<u>11.82 %</u>	<u>11.68 %</u>
Average of Mean and Median			<u>0.85</u>			<u>11.35 %</u>	<u>11.69 %</u>	<u>11.52 %</u>

Notes:

- (1) From note 1, page 22 of this Schedule.
- (2) From note 2, page 22 of this Schedule.
- (3) Average of CAPM and ECAPM cost rates.

Carolina Water Service, Inc. of North Carolina
Summary of Cost of Equity Models Applied to
Proxy Group of Seventeen Non-Price Regulated Companies
Comparable in Total Risk to the
Mr. Hinton's Water Proxy Group

Principal Methods	Proxy Group of Seventeen Non- Price Regulated Companies
Discounted Cash Flow Model (DCF) (1)	14.13 %
Risk Premium Model (RPM) (2)	12.32
Capital Asset Pricing Model (CAPM) (3)	11.52
	Mean <u>12.66 %</u>
	Median <u>12.32 %</u>
Average of Mean and Median	12.49 %

Notes:

- (1) From page 2 of this Schedule.
- (2) From page 28 of Schedule DWD-1R
- (3) From page 31 of Schedule DWD-1R

Carolina Water Service, Inc. of North Carolina
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Mr. Hinton's Water Proxy Group

	[1]	[2]	[3]	[4]	[5]
<u>Proxy Group of Seventeen Non-Price Regulated Companies</u>	<u>Average Dividend Yield</u>	<u>Value Line Projected Five Year Growth in EPS</u>	<u>Yahoo! Finance Projected Five Year Growth in EPS</u>	<u>Average Projected Five Year Growth Rate in EPS</u>	<u>Indicated Common Equity Cost Rate (1)</u>
AutoZone Inc.	- %	12.50 %	10.93 %	11.72 %	NA %
Cheesecake Factory	2.54	7.00	10.78	8.89	11.43
Cboe Global Markets	1.14	17.00	14.20	15.60	16.74
Cracker Barrel	3.34	12.00	7.25	9.63	12.97
Chemed Corp.	0.43	13.00	10.00	11.50	11.93
C.H. Robinson	2.12	10.50	13.21	11.86	13.98
Campbell Soup	3.43	3.50	NMF	3.50	6.93
Dollar General	1.18	13.00	15.13	14.07	15.25
Dunkin' Brands Group	2.06	12.50	13.35	12.93	14.99
Darden Restaurants	2.67	12.00	12.40	12.20	14.87
Forrester Research	1.84	8.00	12.00	10.00	11.84
HCA Holdings	1.20	14.00	15.08	14.54	15.74
Hormel Foods	2.11	9.50	10.50	10.00	12.11
Vail Resorts	2.04	18.00	23.09	20.55	22.59
NVR, Inc.	-	17.50	19.00	18.25	NA
Pinnacle Foods	2.32	10.00	9.67	9.84	12.16
Texas Roadhouse	1.60	20.50	17.20	18.85	20.45
				Mean	<u>14.27 %</u>
				Median	<u>13.98 %</u>
				Average of Mean and Median	<u>14.13 %</u>

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regulated comparable risk companies is identical to the corrected application of the DCF to Mr. Hinton's water proxy group. The dividend yield is derived by using the 13 week average price and the projected dividend as of September 28, 2018 and is added to the average expected EPS growth rate from Value Line and Yahoo! Finance.

Source of Information: Value Line Investment Survey
www.yahoo.com Downloaded on 09/28/2018

Carolina Water Service, Inc. of North Carolina
Corrected DCF Analysis Reflecting Exclusive Reliance on
Expected Growth in EPS

Line No.	Company Name	Yield	Value		Forecast EPS Growth Rate
			Line Forecast	Yahoo Forecast	
			EPS 5- Yr.	EPS 5-Yr.	
1	American States Water	1.9	6.0	4.0	5.0
2	American Water Works	2.2	10.0	8.1	9.1
3	Aqua America	2.5	7.5	5.0	6.3
4	California Water	1.9	9.5	9.8	9.7
5	Middlesex Water	2.1	8.0	2.7	5.4
6	York Water	2.1	9.0	4.9	7.0
	Average	2.1	8.3	5.8	7.0
	DCF Result		10.4	7.9	9.1

Source of Information:
Hinton Exhibit JRH-3

Carolina Water Service, Inc. of North Carolina
Demonstration of the Inadequacy of
a DCF Return Rate Related to Book Value
When Market Value is Greater than Book Value

<u>Line No.</u>	[A]	[B]
	Based on Mr. Hinton's Water Proxy Group	
	<u>Market Value</u>	<u>Book Value</u>
1. Per Share	\$ 50.04 (1)	\$ 15.56 (2)
2. DCF Cost Rate (3)	8.70%	8.70%
3. Return in Dollars (4)	\$ 4.354	\$ 1.354
4. Dividends (5)	\$ 1.051	\$ 1.051
5. Growth in Dollars (6)	\$ 3.303	\$ 0.303
6. Return on Market Value (7)	8.70%	2.71%
7. Rate of Growth on Market Value (8)	6.60%	0.61%

Notes:

- (1) Average of the average 13-week prices from Value Line as used by Mr. Hinton.
- (2) Average book value dividing total common equity at year-end 2017 by common shares outstanding at year-end 2017 for each proxy group company.
- (3) Mr. Hinton's Recommended DCF cost rate on from Hinton Exhibit JRH-3.
- (4) Line 1 x Line 2.
- (5) Dividends are based on a 2.10% dividend yield, from Hinton Exhibit JRH-3.
- (6) Line 3 - Line 4.
- (7) Line 3 / Line 1.
- (8) Line 5 / Line 1.

Carolina Water Service, Inc. of North Carolina
Calculation of Indicated DCF Applied to Book Value Capital Structure
of Mr. Hinton's Proxy Group

Un-lever Indicated Market Capital Structure DCF

$$\begin{aligned}
 Ku &= Ke - (((Ku - i) 1 - t) D / E) - (Ku - d) P / E \\
 Ku &= 8.70\% - (((Ku - 5.25\%) 1 - 21\%) 22.20\% / 77.74\%) - (Ku - 7.26\%) 0.06\% / 77.74\% \\
 Ku &= 8.70\% - (((Ku - 5.25\%) 79.00\%) 28.55\%) - (Ku - 7.26\%) 0.08\% \\
 Ku &= 8.70\% - ((79.00\% * Ku - 4.1463\%) 28.55\%) - (0.08\% * Ku - 0.01\%) \\
 Ku &= 8.70\% - (22.56\% * Ku - 1.18\%) -0.08\% * Ku + 0.01\% \\
 Ku &= 8.70\% -22.56\% * Ku + 1.18\% -0.08\% * Ku + 0.01\% \\
 Ku &= 9.89\% -22.64\% * Ku \\
 122.64\% * Ku &= 9.89\% \\
 Ku &= \mathbf{8.06\%}
 \end{aligned}$$

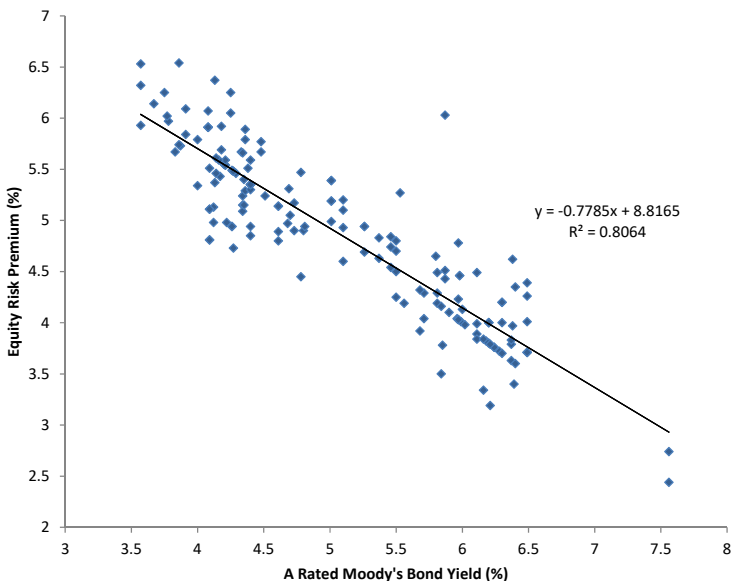
Re-lever to Indicated Book Value Capital Structure DCF

$$\begin{aligned}
 Ke &= Ku + (((Ku - i) 1 - t) D / E) + (Ku - d) P / E \\
 Ke &= 8.06\% + (((8.06\% - 5.25\%) 1 - 21\%) 45.27\% / 54.61\%) + (8.06\% - 7.26\%) 0.12\% / 54.61\% \\
 Ke &= 8.06\% + (((2.82\%) 79\%) 82.89\%) + (0.80\%) 0.22\% \\
 Ke &= 8.06\% + (2.22\%) 82.89\% + (0.00\%) \\
 Ke &= 8.06\% + (1.84\%) + 0.00\% \\
 Ke &= \mathbf{9.91\%}
 \end{aligned}$$

Where:

- Ku = Un-levered (i.e., 100% equity) cost of common equity
- Ke = Market determined cost of common equity
- i = Cost of debt
- t = Income tax rate
- D = Debt ratio
- E = Equity ratio
- d = Cost of preferred stock
- P = Preferred equity ratio

Carolina Water Service, Inc. of North Carolina
Prediction of Equity Risk Premiums Relative to
Moody's A Rated Utility Bond Yields



Constant	Slope	Prospective A Rated Utility Bond (1)	Prospective Equity Risk Premium	Indicated ROE
8.816452 %	-0.77848	5.07 %	4.87 %	9.94 %

Notes:

(1) Prospective Moody's A rated utility bond is calculated by first calculating the

	Aaa Bonds
Third Quarter 2018	4.10%
Fourth Quarter 2018	4.30%
First Quarter 2019	4.50%
Second Quarter 2019	4.60%
Third Quarter 2019	4.70%
Fourth Quarter 2019	4.80%
2020-2024	5.30%
2025-2029	<u>5.40%</u>
	<u>4.71%</u>

After calculating the prospective Moody's Aaa corporate yield, we apply a recent spread between Aaa corporate bonds and A rate utility bonds to arrive at a prospective Moody's A rated utility bond.

	Aaa Corp	A Utility	Spread
Jun-18	3.96%	4.27%	0.31%
Jul-18	3.87%	4.27%	0.40%
Aug-18	3.88%	4.26%	<u>0.38%</u>
Average			<u>0.36%</u>
Prospective Moody's A rated utility bond yield			<u>5.07%</u>

Sources of Information:

Blue Chip Financial Forecasts September 1, 2018 and June 1, 2018
Hinton Exhibit JRH-4
Bloomberg Professional Services

Carolina Water Service, Inc. of North Carolina
Calculation of Range of ROEs needed
to Obtain a Single "A" Rating

	Capitalization Ratio (1) (a)	Embedded Cost (b)	Overall Cost Rate (2) (c)	Pre-Tax Cost of Capital (d)
<u>Company Proposed Rates</u>				
Debt	49.09%	5.68% (1)	2.79%	2.79%
Equity	50.91%	10.80% (3)	5.50%	7.17% (4)
Total	<u>100.00%</u>		<u>8.29%</u>	<u>9.96%</u>
			Pre-Tax Interest Coverage	3.71
<u>Public Staff Proposed Rates</u>				
Debt	49.09%	5.68% (1)	2.79%	2.79%
Equity	50.91%	9.20% (5)	4.68%	6.11% (4)
Total	<u>100.00%</u>		<u>7.47%</u>	<u>8.90%</u>
			Pre-Tax Interest Coverage	3.31
<u>Highest Rate Scenario</u>				
Debt	49.09%	5.68% (1)	2.79%	2.79%
Equity	50.91%	20.08%	10.22%	13.34% (4)
Total	<u>100.00%</u>		<u>13.01%</u>	<u>16.13%</u>
			Pre-Tax Interest Coverage	6.00
<u>Lowest Rate Scenario</u>				
Debt	49.09%	5.68% (1)	2.79%	2.79%
Equity	50.91%	7.94%	4.04%	5.28% (4)
Total	<u>100.00%</u>		<u>6.83%</u>	<u>8.07%</u>
			Pre-Tax Interest Coverage	3.00

Notes

- (1) From Schedule DWD-1R, page 1.
- (2) Column (a) x Column (b)
- (3) Low end of updated recommended range as shown on Schedule DWD-1R, page 1.
- (4) Overall Equity Cost Rate x Tax Conversion Factor
- (5) Hinton Direct Testimony

Carolina Water Service, Inc. of North Carolina
Portfolio Ranks by Size and Risk Premiums over CAPM Results
as Compiled by Duff and Phelps 2018 Guide to Cost of Capital

Portfolio Rank by Size	B-1		B-2		B-3		B-4		B-5		B-6		B-7		B-8	
	Average Mkt. Value (in \$millions)	Smoothed Premium over CAPM	Average Book Val. (in \$millions)	Smoothed Premium over CAPM	5 Yr Average Net Inc. (in \$millions)	Smoothed Premium over CAPM	MVIC (in \$millions)	Smoothed Premium over CAPM	Total Assets (in \$millions)	Smoothed Premium over CAPM	5 Yr Average EBITDA (in \$millions)	Smoothed Premium over CAPM	Smoothed Premium over CAPM	Sales (in \$millions)	Smoothed Premium over CAPM	Average Number of Employees
1	\$ 246,026	0.00%	\$ 70,131	1.27%	\$ 10,793	1.43%	\$ 282,924	0.11%	\$ 172,815	1.25%	\$ 23,040	1.52%	\$ 135,727	1.57%	358,632	0.81%
2	246,026	0.38%	21,291	1.81%	2,897	1.98%	86,370	0.87%	54,941	1.77%	6,961	2.02%	39,303	2.11%	112,125	1.56%
3	41,102	0.98%	14,015	1.99%	1,769	2.18%	52,759	1.21%	37,285	1.99%	4,484	2.21%	21,626	2.39%	66,351	1.90%
4	21,190	1.29%	9,416	2.17%	1,205	2.34%	37,885	1.43%	26,976	2.09%	3,334	2.33%	16,108	2.53%	48,103	2.10%
5	21,248	1.48%	6,957	2.31%	871	2.48%	28,258	1.62%	19,360	2.25%	2,398	2.47%	12,532	2.64%	38,021	2.26%
6	15,920	1.69%	5,378	2.42%	672	2.58%	21,998	1.79%	14,739	2.37%	1,757	2.60%	10,086	2.74%	28,323	2.44%
7	12,280	1.89%	4,470	2.50%	533	2.68%	17,124	1.95%	11,278	2.49%	1,383	2.70%	8,162	2.84%	22,444	2.59%
8	10,250	2.03%	3,543	2.61%	420	2.78%	13,951	2.08%	9,212	2.59%	1,155	2.77%	6,839	2.92%	18,793	2.71%
9	8,702	2.15%	2,987	2.66%	342	2.86%	11,240	2.23%	7,802	2.66%	939	2.86%	5,917	2.99%	15,684	2.83%
10	7,220	2.29%	2,537	2.76%	289	2.93%	9,461	2.34%	6,671	2.73%	780	2.94%	5,040	3.07%	13,534	2.92%
11	6,058	2.42%	2,173	2.83%	248	3.00%	8,198	2.43%	5,581	2.81%	674	3.00%	4,261	3.14%	12,220	2.99%
12	5,049	2.56%	1,910	2.88%	223	3.04%	7,034	2.53%	4,715	2.89%	588	3.06%	3,675	3.23%	10,657	3.02%
13	4,279	2.68%	1,633	2.95%	194	3.10%	5,763	2.66%	4,143	2.85%	485	3.13%	3,139	3.29%	9,355	3.16%
14	3,683	2.79%	1,377	3.03%	169	3.16%	5,070	2.75%	3,553	3.02%	428	3.19%	2,792	3.34%	8,106	3.25%
15	3,116	2.92%	1,219	3.14%	145	3.22%	4,356	2.85%	3,076	3.09%	375	3.25%	2,518	3.39%	7,021	3.34%
16	2,711	3.03%	1,078	3.20%	120	3.24%	3,729	2.95%	2,636	3.16%	330	3.30%	2,242	3.44%	6,100	3.43%
17	2,388	3.12%	934	3.27%	103	3.36%	3,109	3.07%	2,314	3.22%	293	3.35%	1,909	3.52%	5,213	3.53%
18	2,052	3.24%	803	3.27%	86	3.43%	2,660	3.17%	1,915	3.30%	252	3.41%	1,641	3.59%	4,389	3.65%
19	1,709	3.37%	674	3.35%	68	3.53%	2,257	3.28%	1,561	3.40%	207	3.49%	1,394	3.66%	3,521	3.79%
20	1,449	3.50%	545	3.44%	54	3.62%	1,898	3.40%	1,305	3.48%	162	3.59%	1,140	3.76%	2,852	3.92%
21	1,190	3.65%	454	3.53%	42	3.73%	1,547	3.53%	1,063	3.57%	126	3.70%	934	3.85%	2,245	4.08%
22	909	3.85%	373	3.61%	33	3.83%	1,212	3.69%	792	3.71%	98	3.80%	751	3.95%	1,771	4.23%
23	683	4.06%	298	3.71%	24	3.96%	882	3.90%	597	3.84%	75	3.92%	561	4.09%	1,278	4.44%
24	456	4.37%	212	3.87%	16	4.13%	599	4.15%	418	4.00%	50	4.09%	372	4.28%	832	4.72%
25	148	5.22%	77	4.32%	5	4.58%	198	4.88%	159	4.44%	16	4.57%	124	4.79%	265	5.45%

Mr. Hinton's Water Proxy Group

CWSNC

Indicated Risk Premium
Relative to Mr. Hinton's
Water Proxy Group

2.18%

1.33%

1.35%

1.92%

1.59%

1.35%

0.94%

1.22%

Sources of Information:
Duff & Phelps 2018 Valuation Handbook Exhibit B-1 through B-8
SNL Financial
Company Annual Reports

Carolina Water Service, Inc. of North Carolina
R-Squareds of Mr. Hinton's Proxy Group

<u>Mr. Hinton's Water Proxy Group</u>	<u>R- Squared</u>
American States Water Co.	0.1043
American Water Works	0.0664
Aqua America inc.	0.1153
California Water Service Group	0.1023
Middlesex Water	0.0863
York Water Company	<u>0.0896</u>
Average	<u><u>0.0941</u></u>

Source of Information: Value Line Proprietary Database, September 2018

Carolina Water Service, Inc. of North Carolina
Rate Mechanisms in Place at Proxy Group Operating Subsidiaries

Ticker	Company (bold if parent)	State	Decoupling?		Mechanism Name	Type of Mechanism	Source
			Yes	No			
AWR	American States Water Company	CA	Yes		Water Revenue Adjustment Mechanism (WRAM)	Full Decoupling (Actual to Target Revenues)	Annual Report 2017, tariff
AWK	American Water						
	Golden State Water Company	CA	Yes		Water Revenue Adjustment Mechanism (WRAM); Modified Cost Balancing Adjustment (MCBA)	Full Decoupling (Actual to Target Revenues)	Annual Report 2017, tariff
	California American Water	CA	Yes		Water Revenue Adjustment Mechanism (WRAM); Modified Cost Balancing Adjustment (MCBA)	Full Decoupling (Actual to Target Revenues)	Annual Report 2017, tariff
	Hawaii American Water	HI	No				Annual Report 2017
	Illinois American Water	IL	Yes		Volume Balancing Adjustment Rider (VBA); Qualifying Infrastructure Plant (QIP); Surcharge	Full Decoupling (Actual to Target Revenues); Capital Recovery	Annual Report 2017; tariff; Commission Order dated December 13, 2016, Docket No. 16-0083
	Indiana American Water	IN	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017, tariff
	Iowa American Water	IA	No				Annual Report 2017, tariff
	Kentucky American Water	KY	No				Annual Report 2017, tariff
	Maryland American Water	MD	No				Annual Report 2017, tariff
	Michigan American Water	MI	No				Annual Report 2017
	Missouri American Water	MO	No		Infrastructure System Replacement		
	New Jersey American Water	NJ	No		Surcharge	Capital Recovery	Annual Report 2017, tariff
	New York American Water	NY	No		Revenue And Production Cost Reconciliation Adjustment Clause and Property Tax Clause (RAC/PTC)	Full Decoupling (Actual to Target Revenues)	Annual Report 2017, tariff; Commission Order in Case 07-W-0508 and Case 16-W-0259
	Pennsylvania American Water	PA	Yes		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017, tariff
	Tennessee American Water	TN	No				Annual Report 2017, tariff
	Virginia American Water (1)	VA	No		Water & Wastewater Infrastructure Service Charge "WWISC" Rider	Capital Recovery	Annual Report 2017, tariff
	West Virginia American Water	WV	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017, tariff
WTR	Aqua America						
	Aqua Illinois, Inc.	IL	No				Annual Report 2017
	Aqua Indiana, Inc.	IN	No				Annual Report 2017, tariff
	Aqua New Jersey, Inc.	NJ	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017, tariff
	Aqua North Carolina, Inc.	NC	No		Water and Sewer Improvement Charge (WSIC and SSIC)		Annual Report 2017
	Aqua Ohio, Inc.	OH	No				Annual Report 2017
	Aqua Pennsylvania, Inc.	PA	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017; tariff
	Aqua Texas, Inc.	TX	No				Annual Report 2017
	Aqua Virginia, Inc.	VA	No				Annual Report 2017
CWT	California Water Service Group						
	California Water Service Co.	CA	Yes		Water Revenue Adjustment Mechanism (WRAM); Modified Cost Balancing Adjustment (MCBA); and Sales Reconciliation Mechanism (SRM)	Full Decoupling (Actual to Target Revenues)	Annual Report 2017, tariff
	New Mexico Water Service Co.	NM	No				Annual Report 2017, tariff
	Washington Water Service Co.	WA	No				Annual Report 2017, tariff
	Hawaii Water Service Co.	HI	No				Annual Report 2017, tariff
MSEX	Middlesex Water Company						
	Middlesex Water Company	NJ	No				Annual Report 2017; tariff
	Southern Shores Water Company	DE	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017
	Tidewater Utilities, Inc.	DE	No				Annual Report 2017; tariff
	Pinelands Water Company	NJ	No				Annual Report 2017; tariff
	Twin Lakes Utilities, Inc.	PA	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017; tariff
YORW	York Water Company						
	York Water Company	PA	No		Distribution System Improvement Charge (DSC)	Capital Recovery	Annual Report 2017; tariff

Notes:
(1) WWISC is only applicable to customers under the Alexandria Rate Schedule.