

**OFFICE OF THE
TOWN MANAGER**



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**Town of Shrewsbury
Massachusetts 01545-5398**

December 13, 2016

To: Board of Selectmen

From: Daniel J. Morgado

Re: Corrected Rate Scenarios

Reference is made to my memo to you dated September 9, 2016 (attached).

I note that base billed value projections shown on the Residential, Condominium, Commercial and Apartment rate codes shown on pages 8 to 12 inclusive are incorrect.

The corrected rate scenarios are attached.

The purpose of this memo is for record purposes as I am seeking no action from the Board at this time.

Rate:	Residential	No. of Bills Issued in FY 2016:	38,991
Current Cost Per Thousand:	\$4.23	FY 2016 Billed Value:	\$2,380,249
Average Consumption:	14,425 Gals	FY 2016 Billed Usage:	562,455,393
Median Consumption:	12,300 Gals	Target:	\$748,000

Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E
0 to 5,000 Gals	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00
5001 to 25,000 Gals	\$3.70	\$4.40	\$4.60	\$4.80	\$4.60	\$4.30
25,001 to 60,000 Gals	\$6.90	\$8.40	\$8.60	\$9.00	\$8.40	\$8.50
60,001+	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00

0 to 5,000 Gals	25.0%	29.2%	25.0%	25.0%	25.0%
5001 to 25,000 Gals	18.9%	24.3%	29.7%	24.3%	16.2%
25,001 to 60,000 Gals	21.7%	24.6%	30.4%	21.7%	23.2%
60,001+	0.0%	0.0%	0.0%	0.0%	0.0%

Billed Value (Based on FY 2016):	\$2,534,416	\$3,063,949	\$3,177,425	\$3,221,691	\$3,129,717	\$3,035,437
Projected Increase:		\$529,533	\$643,009	\$687,275	\$595,301	\$501,021
Cost Per Thousand:	\$4.51	\$5.45	\$5.65	\$5.73	\$5.56	\$5.40
Value of Base Charge:	\$935,784	\$1,169,730	\$1,208,721	\$1,169,730	\$1,169,730	\$1,169,730
Percent:	36.9%	38.2%	38.0%	36.3%	37.4%	38.5%

Impact on Selected Consumptions:

Minimum (13%)	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00
Increase		\$6.00	\$7.00	\$6.00	\$6.00	\$6.00
Percent		25.0%	29.2%	25.0%	25.0%	25.0%

Median (50%)	\$51.01	\$62.12	\$64.58	\$65.04	\$63.58	\$61.39
Increase		\$11.11	\$13.57	\$14.03	\$12.57	\$10.38
Percent		21.8%	26.6%	27.5%	24.6%	20.3%

Average (64%)	\$58.87	\$71.47	\$74.36	\$75.24	\$73.36	\$70.53
Increase		\$12.60	\$15.49	\$16.37	\$14.49	\$11.66
Percent		21.4%	26.3%	27.8%	24.6%	19.8%

25,000 Gallons (89%)	\$98.00	\$118.00	\$123.00	\$126.00	\$122.00	\$116.00
Increase		\$20.00	\$25.00	\$28.00	\$24.00	\$18.00
Percent		20.4%	25.5%	28.6%	24.5%	18.4%

35,000 Gallons (96%)	\$167.00	\$202.00	\$209.00	\$216.00	\$206.00	\$201.00
Increase		\$35.00	\$42.00	\$49.00	\$39.00	\$34.00
Percent		21.0%	25.1%	29.3%	23.4%	20.4%

60,000 Gallons (99%)	\$339.50	\$412.00	\$424.00	\$441.00	\$416.00	\$413.50
Increase		\$72.50	\$84.50	\$101.50	\$76.50	\$74.00
Percent		21.4%	24.9%	29.9%	22.5%	21.8%

70,000 Gallons (99%)	\$479.50	\$552.00	\$564.00	\$581.00	\$556.00	\$553.50
Increase		\$72.50	\$84.50	\$101.50	\$76.50	\$74.00
Percent		15.1%	17.6%	21.2%	16.0%	15.4%

Rate: Condominium
 Current Cost Per Thousand: \$4.43
 Average Consumption: 8,703 Gals
 Median Consumption: 7,565 Gals

No. of Bills Issued in FY 2016: 3,185
 FY 2016 Billed Value: \$122,798
 FY 2016 Billed Usage: 27,719,146
 Target: \$33,000

Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E
0 to 5,000 Gals	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00
5001 to 25,000 Gals	\$3.70	\$4.40	\$4.60	\$4.80	\$4.60	\$4.30
25,001 to 60,000 Gals	\$6.90	\$8.40	\$8.60	\$9.00	\$8.40	\$8.50
60,001+	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00

0 to 5,000 Gals	25.0%	29.2%	25.0%	25.0%	25.0%
5001 to 25,000 Gals	18.9%	24.3%	29.7%	24.3%	16.2%
25,001 to 60,000 Gals	21.7%	24.6%	30.4%	21.7%	23.2%
60,001+	0.0%	0.0%	0.0%	0.0%	0.0%

Billed Value (Based on FY 2016):	\$130,799	\$159,679	\$165,548	\$165,141	\$162,268	\$158,432
Projected Increase:		\$28,880	\$34,749	\$34,342	\$31,469	\$27,633
Cost Per Thousand:	\$4.72	\$5.76	\$5.97	\$5.96	\$5.85	\$5.72
Value of Base Charge:	\$76,440	\$95,550	\$98,735	\$95,550	\$95,550	\$95,550
Percent:	58.4%	59.8%	59.6%	57.9%	58.9%	60.3%

Impact on Selected Consumptions:

Minimum (31%)	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00
Increase		\$6.00	\$7.00	\$6.00	\$6.00	\$6.00
Percent		25.0%	29.2%	25.0%	25.0%	25.0%

Median (50%)	\$33.49	\$41.29	\$42.80	\$42.31	\$41.80	\$41.03
Increase		\$7.80	\$9.31	\$8.82	\$8.31	\$7.54
Percent		23.3%	27.8%	26.3%	24.8%	22.5%

Average (62%)	\$37.70	\$46.29	\$48.03	\$47.77	\$47.03	\$45.92
Increase		\$8.59	\$10.33	\$10.07	\$9.33	\$8.22
Percent		22.8%	27.4%	26.7%	24.7%	21.8%

25,000 Gallons (98%)	\$98.00	\$118.00	\$123.00	\$126.00	\$122.00	\$116.00
Increase		\$20.00	\$25.00	\$28.00	\$24.00	\$18.00
Percent		20.4%	25.5%	28.6%	24.5%	18.4%

35,000 Gallons (99.9%)	\$167.00	\$202.00	\$209.00	\$216.00	\$206.00	\$201.00
Increase		\$35.00	\$42.00	\$49.00	\$39.00	\$34.00
Percent		21.0%	25.1%	29.3%	23.4%	20.4%

Rate:	Commercial	No. of Bills Issued in FY 2016:	2,027
Current Cost Per Thousand:	\$4.31	FY 2016 Billed Value:	\$568,914
Average Consumption:	65,046 Gals	FY 2016 Billed Usage:	131,849,152
Median Consumption:	13,000 Gals	Target:	\$176,000

Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E
0 to 5,000 Gals	\$40.00	\$46.00	\$46.00	\$46.00	\$50.00	\$46.00
5001 to 25,000 Gals	\$3.30	\$4.00	\$4.00	\$4.10	\$3.90	\$4.40
25,001 to 50,000 Gals	\$4.30	\$5.40	\$5.20	\$5.30	\$5.40	\$5.40
50,001+	\$4.30	\$5.60	\$5.80	\$5.60	\$5.60	\$5.60
0 to 5,000 Gals		15.0%	15.0%	15.0%	25.0%	15.0%
5001 to 25,000 Gals		21.2%	21.2%	24.2%	18.2%	33.3%
25,001 to 50,000 Gals		25.6%	20.9%	23.3%	25.6%	25.6%
50,001+		30.2%	34.9%	30.2%	30.2%	30.2%

Billed Value (Based on FY 2016):	\$592,316	\$750,241	\$765,287	\$750,832	\$756,345	\$758,260
Projected Increase:		\$157,925	\$172,971	\$158,516	\$164,029	\$165,944
Cost Per Thousand:	\$4.49	\$5.69	\$5.80	\$5.69	\$5.74	\$5.75
Value of Base Charge:	\$81,080	\$93,242	\$93,242	\$93,242	\$101,350	\$93,242
Percent:	13.7%	12.4%	12.2%	12.4%	13.4%	12.3%

Impact on Selected Consumptions:

Minimum (30%)	\$40.00	\$46.00	\$46.00	\$46.00	\$50.00	\$46.00
Increase		\$6.00	\$6.00	\$6.00	\$10.00	\$6.00
Percent		15.0%	15.0%	15.0%	25.0%	15.0%
Median (50%)	\$66.40	\$78.00	\$78.00	\$78.80	\$81.20	\$81.20
Increase		\$11.60	\$11.60	\$12.40	\$14.80	\$14.80
Percent		17.5%	17.5%	18.7%	22.3%	22.3%
Average (≈80%)	\$279.00	\$345.26	\$343.27	\$344.76	\$347.26	\$353.26
Increase		\$66.26	\$64.27	\$65.76	\$68.26	\$74.26
Percent		23.7%	23.0%	23.6%	24.5%	26.6%
25,000 Gallons (64%)	\$106.00	\$126.00	\$126.00	\$128.00	\$128.00	\$134.00
Increase		\$20.00	\$20.00	\$22.00	\$22.00	\$28.00
Percent		18.9%	18.9%	20.8%	20.8%	26.4%
50,000 Gallons (77%)	\$213.50	\$261.00	\$256.00	\$260.50	\$263.00	\$269.00
Increase		\$47.50	\$42.50	\$47.00	\$49.50	\$55.50
Percent		22.2%	19.9%	22.0%	23.2%	26.0%
100,000 Gallons (86%)	\$428.50	\$541.00	\$546.00	\$540.50	\$543.00	\$549.00
Increase		\$112.50	\$117.50	\$112.00	\$114.50	\$120.50
Percent		26.3%	27.4%	26.1%	26.7%	28.1%
250,000 Gallons (94%)	\$1,073.50	\$1,381.00	\$1,416.00	\$1,380.50	\$1,383.00	\$1,389.00
Increase		\$307.50	\$342.50	\$307.00	\$309.50	\$315.50
Percent		28.6%	31.9%	28.6%	28.8%	29.4%
500,000 Gallons (97%)	\$2,148.50	\$2,781.00	\$2,866.00	\$2,780.50	\$2,738.00	\$2,789.00
Increase		\$632.50	\$717.50	\$632.00	\$589.50	\$640.50
Percent		29.4%	33.4%	29.4%	27.4%	29.8%
1,000,000 Gallons (98%)	\$4,298.50	\$5,581.00	\$5,766.00	\$5,580.50	\$5,583.00	\$5,589.00

	Increase		\$1,282.50	\$1,467.50	\$1,282.00	\$1,284.50	\$1,290.50
	Percent		29.8%	34.1%	29.8%	29.9%	30.0%
2,000,000 Gallons (99.9%)		\$8,598.50	\$11,181.00	\$11,566.00	\$11,180.50	\$11,183.00	\$11,189.00
	Increase		\$2,582.50	\$2,967.50	\$2,582.00	\$2,584.50	\$2,590.50
	Percent		30.0%	34.5%	30.0%	30.1%	30.1%

Rate:	Apartment	No. of Bills Issued in FY 2016:	624
Current Cost Per Thousand:	\$4.37	FY 2016 Billed Value:	\$452,116
Average Consumption:	165,918 Gals	FY 2016 Billed Usage:	103,533,070
Median Consumption:	90,950 Gals	Target:	\$143,000

Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D
0 to 9,999,999 Gals	\$4.50	\$5.50	\$5.75	\$6.00	\$6.25
		22.2%	27.8%	33.3%	38.9%
Billed Value (Based on FY 2016):	\$465,899	\$569,432	\$595,316	\$621,198	\$647,082
Projected Increase:		\$103,533	\$129,417	\$155,299	\$181,183
Cost Per Thousand:	\$4.50	\$5.50	\$5.75	\$6.00	\$6.25
Value of Base Charge:	\$0	\$0	\$0	\$0	\$0
Percent:	0.0%	0.0%	0.0%	0.0%	0.0%

Impact on Selected Consumptions:

Median (50%)	\$409.28	\$500.23	\$522.96	\$545.70	\$568.44
Increase		\$90.95	\$113.69	\$136.43	\$159.16
Percent		22.2%	27.8%	33.3%	38.9%
50,000 Gallons (27%)	\$225.00	\$275.00	\$287.50	\$300.00	\$312.50
Increase		\$50.00	\$62.50	\$75.00	\$87.50
Percent		22.2%	27.8%	33.3%	38.9%
100,000 Gallons (54%)	\$450.00	\$550.00	\$575.00	\$600.00	\$625.00
Increase		\$100.00	\$125.00	\$150.00	\$175.00
Percent		22.2%	27.8%	33.3%	38.9%
250,000 Gallons	\$1,125.00	\$1,375.00	\$1,437.50	\$1,500.00	\$1,562.50
Increase		\$250.00	\$312.50	\$375.00	\$437.50
Percent		22.2%	27.8%	33.3%	38.9%
500,000 Gallons	\$2,250.00	\$2,750.00	\$2,875.00	\$3,000.00	\$3,125.00
Increase		\$500.00	\$625.00	\$750.00	\$875.00
Percent		22.2%	27.8%	33.3%	38.9%
1,000,000 Gallons	\$4,500.00	\$5,500.00	\$5,750.00	\$6,000.00	\$6,250.00
Increase		\$1,000.00	\$1,250.00	\$1,500.00	\$1,750.00
Percent		22.2%	27.8%	33.3%	38.9%

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September 9, 2016

To: Board of Selectmen
From: Daniel J. Morgado
Re: Water Rates

Reference is made to my memos to you dated August 5, 2014 and August 7, 2015.

I have reviewed consumption and financial data for water bills issued in FY 2016 to ascertain the impact of the meter conversion program and the recent rate increases that became effective on January 1, 2016.

To date, I am not seeing any significant change in billed usage that I can attribute to the wholesale conversion to the new meters but it is still too early to fully conclude on this matter. This question will need to be revisited in March and then again next August once additional quarters can be evaluated and all of the residential meters are switched over prior to December 31, 2016, deadline. The same holds true on the matter of the rate increases. I have found in the past that it takes 18 to 24 months to gauge the impact of a rate increase. I expect that the severe drought conditions that required the enhanced water use restrictions, adopted by the Board, will impact revenue in FY 2017.

Reviewing consumption and revenue trends for bills issued in the FY 2012 to FY 2016 time period for the four major rate classes, I have found the following:

Residential

Year	# of Bills Issued*	Consumption*	% of Total Consumption	Value*	% of Total Value	Per Thousand
FY 2012	38,202	557,890,022	68.62%	\$2,089,615.31	68.40%	\$3.75
FY 2013	38,369	565,317,337	70.31%	\$2,168,432.77	69.90%	\$3.84
FY 2014	38,604	559,243,796	69.52%	\$2,248,216.40	68.81%	\$4.02
FY 2015	38,776	560,786,956	68.65%	\$2,281,674.10	68.26%	\$4.07
FY 2016	38,991	562,455,393	68.13%	\$2,380,248.83	67.54%	\$4.23
Change	789	4,565,371	-0.48%	\$290,633.52	-0.85%	\$0.49
	2.07%	0.82%		13.91%		12.98%

Condominium

Year	# of Bills Issued*	Consumption*	% of Total Consumption	Value*	% of Total Value	Per Thousand
FY 2012	3,018	26,007,572	3.20%	\$98,683.12	3.23%	\$3.79
FY 2013	3,069	27,387,538	3.41%	\$109,862.10	3.54%	\$4.01
FY 2014	3,153	28,031,730	3.48%	\$116,864.96	3.58%	\$4.17
FY 2015	3,184	27,617,855	3.38%	\$114,060.42	3.41%	\$4.13
FY 2016	3,185	27,719,146	3.36%	\$122,797.83	3.48%	\$4.43
Change	167 5.53%	1,711,574 6.58%	0.16%	\$24,114.71 24.44%	0.25%	\$0.64 16.75%

Commercial

Year	# of Bills Issued*	Consumption*	% of Total Consumption	Value*	% of Total Value	Per Thousand
FY 2012	1,959	130,397,510	16.04%	\$471,799.67	15.44%	\$3.62
FY 2013	1,996	115,614,500	14.38%	\$434,024.65	13.99%	\$3.75
FY 2014	2,034	116,955,975	14.54%	\$477,537.77	14.62%	\$4.08
FY 2015	2,032	124,003,378	15.18%	\$503,009.89	15.05%	\$4.06
FY 2016	2,027	131,849,152+	15.97%	\$568,913.81	16.14%	\$4.31
Change	68 3.47%	1,451,642 1.11%	-0.07%	\$97,114.14 20.58%	0.70%	\$0.70 19.26%

+ Table Talk Pies 5,996,500 gallons since November 2015

Apartment

Year	# of Bills Issued*	Consumption*	% of Total Consumption	Value*	% of Total Value	Per Thousand
FY 2012	651	98,762,500	12.15%	\$395,075.33	12.93%	\$4.00
FY 2013	648	95,731,090	11.91%	\$389,872.98	12.57%	\$4.07
FY 2014	618	100,159,296	12.45%	\$424,701.58	13.00%	\$4.24
FY 2015	607	104,479,491	12.79%	\$444,059.72	13.28%	\$4.25
FY 2016	624	103,533,070	12.54%	\$452,116.39	12.83%	\$4.37
Change	(27) -4.15%	4,770,570 4.83%	0.39%	\$57,041.06 14.44%	-0.10%	\$0.37 9.16%

Residential – Condominium – Commercial – Apartment Combined

Year	# of Bills Issued*	Consumption*	Value*	Per Thousand
FY 2012	43,830	813,057,604	\$3,055,173.43	\$3.76
FY 2013	44,082	804,050,465	\$3,102,192.50	\$3.86
FY 2014	44,409	804,390,797	\$3,267,320.71	\$4.06

Year	# of Bills Issued*	Consumption*	Value*	Per Thousand
FY 2015	44,599	816,887,680	\$3,342,804.13	\$4.09
FY 2016	44,827	825,556,761	\$3,524,076.86	\$4.27
Change	997 2.27%	12,499,157 1.54%	\$468,903.43 15.35%	\$0.51 13.60%

* Source: MUNIS Consumption Report previously the Consumption Analysis Report was used.

In my memos of August 5, 2014 and August 7, 2015, I advised that rate structures were not generating sufficient revenue to handle the necessary capital program. I had hoped that the rate increase adopted last year (effective on January 1, 2016), coupled with the new meters would achieve the necessary level of funding. I see little in the FY 2016 revenue summary to dispel this concern. The Water Treatment Plant upgrade proposal will exacerbate this condition and I will propose a rate increase to address that specific project. As stated previously, more time is needed to gauge the full impact of the last rate increases coupled with the new meters.

The current rate structures have generated the following revenue streams and have resulted in the following cash balances on hand:

Revenue Area	FY 2016 Actual	FY 2015 Actual	FY 2014 Actual	FY 2013 Actual	FY 2012 Actual
Water Rates	\$3,404,135	\$3,247,632	\$3,219,038	\$3,025,683	\$2,965,611
Water Charges (Misc.)	\$191,960	\$201,767	\$297,408	\$296,011	\$235,181
Backflow Charges	\$48,700	\$49,750	\$42,200	\$26,330	\$16,100
Water Liens	\$265,647	\$232,850	\$222,089	\$181,657	\$193,072
Penalties & Interest	\$11,724	\$12,339	\$12,460	\$10,748	\$11,317
Betterments & Comm Interest	\$5,874	\$1,041	\$0	\$6,086	\$3,542
Miscellaneous Revenue	\$308	\$3,126	\$8,123	\$2,339	\$1,687
Total	\$3,928,348	\$3,748,505	\$3,801,317	\$3,548,854	\$3,426,510
Balance Water Conservation (6/30)	\$38,466	\$146,147	\$249,023	\$217,158	\$171,672
Balance Water System Improvements (6/30)	\$752,025	\$702,417	\$820,418	\$2,686,023	\$2,771,023
Total	\$790,491	\$848,564	\$1,069,441	\$2,903,181	\$2,942,695

Outstanding debt on the water utility is \$262,813 for the new Masonic Water Tank (two years remaining to be retired in FY 2018) and \$502,125 for Harrington Avenue/Rte 9 (seven years remaining to be retired in FY 2023). Current Water Department O&M and debt service is running at:

Charge Area	FY 2017 Proposed	FY 2016 Actual	FY 2015 Actual	FY 2014 Actual	FY 2013 Actual
Operating Budget*	\$1,992,134	\$1,743,253	\$1,790,806	\$1,741,287	\$1,774,027
Debt Service*	\$211,963	\$217,075	\$222,188	\$228,173	\$174,348
Indirect Costs*	\$540,662	\$538,105	\$471,615	\$465,142	\$436,588
Capital Budget	\$180,000	\$1,202,000	\$155,000	\$185,000	\$200,000
Warrant Articles	\$975,241	\$1,866,698	\$2,375,000	\$2,061,000	\$2,468,000
Total Expenditures	\$3,900,000	\$5,567,131	\$5,014,609	\$4,680,602	\$5,052,963

	FY 2017 Proposed	FY 2016 Actual	FY 2015 Actual	FY 2014 Actual	FY 2013 Actual
Available = Revenue Less O&M*	TBD	\$1,429,914	\$1,263,895	\$1,366,715	\$1,163,891

As I advised last year, our equipment and infrastructure needs over the next few years should be \$1 Million or so for water line work annually with \$500,000 to \$1 Million for one off type projects such as equipment, vehicles, station improvements, engineering studies and design, technology improvements and the like. Again, the question remains if the most recent rate increase with the new meters will get the system to the point where \$2 Million is being generated annually for the capital needs of the department.

By example, at the last Annual Town Meeting, the following capital investments were authorized:

Art	Project	Amount
9	Replace ¾ ton pickup	\$55,000
9	New Dump Truck	\$125,000
22	OPEB Payment	\$107,468
23	Meter Replacement	\$100,000
24	Compliance Activities	\$50,000
25	Poor Farm Brook Habitat	\$5,000
26	South Street Water Main	\$90,000
27	Water System Improvements	\$572,773
28	Oakland Avenue Easements	\$50,000
	Total Capital Investments	\$1,155,241

I note that in addition to ongoing capital needs, operation and maintenance costs will be affected by sharp increases in energy, chemicals and other materials and supplies depending on what happens globally in the way of recession, inflation and/or commodity interruptions and other market distortions.

The recent history of the water rate structure are as follows:

Rate	Range	Effective Billing Dates					
		July 1, 1991	June 1, 2003	Aug 29, 2006	Sept 1, 2008	March 1, 2012	Jan 1, 2016
Residential & Condominiums	Minimum (0 to 5,000 Gallons)	\$24.00	\$15.00	\$16.50	\$19.00		
	5,001 to 25,000 Gallons/Thousand	\$1.80	\$2.50	\$2.85	\$3.20		
	25,001 to 50,000 Gallons/Thousand	\$1.80	\$4.50	\$5.20	\$6.00		
	Over 50,000 Gallons/Thousand	\$2.40	\$5.50	\$6.35	\$7.75		
	Minimum (0 to 5,000 Gallons)					\$21.00	\$24.00
	5,001 to 25,000 Gallons/Thousand					\$3.40	\$3.70
	25,001 to 60,000 Gallons/Thousand					\$6.30	\$6.90
	Over 60,000 Gallons/Thousand					\$10.00	\$14.00

Rate	Range	July 1, 1991	June 1, 2003	Aug 29, 2006	Sept 1, 2008	March 1, 2012	Jan 1, 2016
Commercial	Minimum (0 to 5,000 Gallons)	\$24.00	\$24.00	\$27.50	\$32.50	\$36.00	\$40.00
	5,001 to 25,000 Gallons/Thousand	\$1.80	\$1.80	\$2.10	\$2.50	\$2.80	\$3.30
	25,001 to 50,000 Gallons/Thousand	\$1.80	\$1.80	\$2.10	\$2.50	\$3.80	\$4.30
	Over 50,000 Gallons/Thousand	\$2.40	\$2.40	\$2.80	\$3.50	\$3.80	\$4.30
Apartments	Flat Rate/Thousand	\$3.00	\$3.00	\$3.45	\$4.00	\$4.25	\$4.50
Residential Lawns	Minimum (0 to 5,000 Gallons)	\$24.00	\$24.00				
	5,001 to 25,000 Gallons/Thousand	\$1.80	\$1.80				
	25,001 to 50,000 Gallons/Thousand	\$1.80	\$1.80				
	Over 50,000 Gallons/Thousand	\$2.40	\$2.40				
Residential Lawns	Minimum			N/A	\$19.00	\$21.00	\$24.00
	0 to 60,000 Gallons/Thousand			\$4.50	\$5.75	\$6.30	\$6.90
	over 60,001 Gallons/Thousand			\$4.75	\$6.00	\$10.00	\$14.00
Residential Summer	Flat Rate/Thousand	\$3.00	\$3.00				
	Minimum			N/A	\$19.00	\$21.00	\$24.00
	0 to 60,000 Gallons/Thousand			\$4.50	\$5.75	\$6.30	\$6.90
	over 60,001 Gallons/Thousand			\$4.75	\$6.00	\$10.00	\$14.00
Apartment Lawns	Flat Rate/Thousand	\$3.00	\$3.00				
	Minimum			N/A	\$19.00	\$21.00	\$24.00
	0 to 60,000 Gallons/Thousand			\$4.50	\$5.75	\$6.30	\$6.90
	over 60,001 Gallons/Thousand			\$4.75	\$6.00	\$10.00	\$14.00
Commercial Lawns	Flat Rate/Thousand	\$3.00	\$3.00				
	Minimum			N/A	\$19.00	\$21.00	\$24.00
	0 to 60,000 Gallons/Thousand			\$4.50	\$5.75	\$6.30	\$6.90
	over 60,001 Gallons/Thousand			\$4.75	\$6.00	\$10.00	\$14.00
Condominium Lawns	Flat Rate/Thousand	\$3.00	\$3.00				
	Minimum			N/A	\$19.00	\$21.00	\$24.00
	0 to 60,000 Gallons/Thousand			\$4.50	\$5.75	\$6.30	\$6.90
	over 60,001 Gallons/Thousand			\$4.75	\$6.00	\$10.00	\$14.00
School & Municipal	Minimum (0 to 5,000 Gallons)	\$24.00	\$24.00	\$24.00	\$24.00	\$36.00	\$40.00
	5,001 to 50,000 Gallons/Thousand	\$1.80	\$1.80	\$1.80	\$1.80	\$2.30	\$2.50
	Over 50,000 Gallons/Thousand	\$2.40	\$2.40	\$2.40	\$2.40	\$3.40	\$3.80

Rate	Range	July 1, 1991	June 1, 2003	Aug 29, 2006	Sept 1, 2008	March 1, 2012	Jan 1, 2016
School & Municipal Lawns	Flat Rate/Thousand	\$3.00	\$3.00	\$3.00	\$3.00	\$3.50	\$3.80

I have updated and expanded upon my rate comparison from last year as follows:

Community	Annual Water Cost - April 2008 Survey*	Annual Water Cost - August 2012 Survey**	Annual Water Cost - August 2016 Survey***	Change Since 2008	Percent Since 2008	Annual Base Rate/Min Charge	Consumption Charge Starts At
Natick	\$221	\$293	\$336	\$115	52.0%	\$20	0
Shrewsbury	\$266	\$300	\$355	\$89	33.5%	\$96	5,001
Ashland	\$436	\$398	\$406	(\$30)	-6.9%	\$64	0
Worcester	\$313	\$341	\$425	\$112	35.8%	\$18	0
Douglas	\$371	N/A	\$430	\$59	15.9%	\$50	0
Hudson	\$290	\$298	\$472	\$182	62.8%	\$58.72	0
Westborough	\$367	\$367	\$503	\$136	37.1%	\$164.52	7,481
Grafton	\$461	\$461	\$504	\$43	9.3%	\$90	0
W. Boylston (WD)	\$297	\$342	\$528	\$231	77.8%	\$102	0
Holden	\$278	\$414	\$530	\$252	90.6%	\$277.08	0
Auburn (AWD)+	\$399	\$535	\$576	\$177	44.4%	\$160	4,489
Northborough++	\$402	\$547	\$587	\$185	46.0%	\$40	0
Millbury	\$397	\$543	\$608	\$211	53.1%	\$187.32	0
Milford	\$310	\$310	\$628	\$318	102.6%	\$136.96	0
Bellingham	\$252	\$351	\$631	\$379	150.4%	\$286	0
Franklin	\$441	\$507	\$732	\$291	66.0%	\$0	0

Bills are based on consumption of 22,500 gals/quarter (90,000 Annual)

* Source: 2006 Massachusetts Water Rate Survey – Tighe & Bond

** Source: 2010 Massachusetts Water Rate Survey – Tighe & Bond

*** Source: 2014 Massachusetts Water Rate Survey – Tighe & Bond

+ AWD Website (2016)

++ New community added in 2016

Financing of the New Water Treatment Plant

On September 26, 2016, the Special Town Meeting will be asked to approve bond issues which will fund the construction of the new water treatment facility to address the ongoing manganese issue that is the source of the continuing and widespread water discoloration problem of this summer.

The current project budget is \$14,885,000 that will be funded via a \$13,985,000 bond accessed through the SRF Fund (2.0%) and a \$900,000 bond that will be through traditional financing (4.0% est).

In addition to the capital cost of the new plant, O&M will increase by \$200,000.

Accordingly, a rate increase will be necessary just to fund this improvement. The value of the rate increase should be \$1.1 Million with the funding needed in FY 2019 and continuing as follows:

Year	Proposed Debt Service/O&M - Treatment Facility					Current Debt Service		Total Debt Service and O&M
	Building & Equipment (\$14.0M)*	Construction Services (\$0.9M)	Total Debt Service	Additional O & M	Total Cost	Water Tank	Water System Imprv	
FY 2017						\$133,438	\$78,525	\$211,963
FY 2018						\$129,375	\$77,300	\$206,675
FY 2019	\$931,870	\$81,000	\$1,012,870	\$200,000	\$1,212,870		\$75,900	\$1,288,770
FY 2020	\$867,446	\$79,200	\$946,646	\$204,000	\$1,150,646		\$69,550	\$1,220,196
FY 2021	\$867,582	\$77,400	\$944,982	\$208,080	\$1,153,062		\$68,250	\$1,221,312
FY 2022	\$867,720	\$75,600	\$943,320	\$212,242	\$1,155,562		\$66,950	\$1,222,512
FY 2023	\$867,861	\$73,800	\$941,661	\$216,486	\$1,158,147		\$65,650	\$1,223,797
FY 2024	\$868,005	\$72,000	\$940,005	\$220,816	\$1,160,821			\$1,160,821
FY 2025	\$868,152	\$70,200	\$938,352	\$225,232	\$1,163,584			\$1,163,584
FY 2026	\$868,303	\$68,400	\$936,703	\$229,737	\$1,166,440			\$1,166,440
FY 2027	\$868,457	\$66,600	\$935,057	\$234,332	\$1,169,389			\$1,169,389
FY 2028	\$868,614	\$64,800	\$933,414	\$239,019	\$1,172,433			\$1,172,433
FY 2029	\$868,774	\$63,000	\$931,774	\$243,799	\$1,175,573			\$1,175,573
FY 2030	\$868,938	\$61,200	\$930,138	\$248,675	\$1,178,813			\$1,178,813
FY 2031	\$869,106	\$59,400	\$928,506	\$253,648	\$1,182,154			\$1,182,154
FY 2032	\$869,277	\$57,600	\$926,877	\$258,721	\$1,185,598			\$1,185,598
FY 2033	\$869,453	\$55,800	\$925,253	\$263,896	\$1,189,149			\$1,189,149
FY 2034	\$869,631	\$54,000	\$923,631	\$269,174	\$1,192,805			\$1,192,805
FY 2035	\$869,814	\$52,200	\$922,014	\$274,557	\$1,196,571			\$1,196,571
FY 2036	\$870,001	\$50,400	\$920,401	\$280,048	\$1,200,449			\$1,200,449
FY 2037	\$870,191	\$48,600	\$918,791	\$285,649	\$1,204,440			\$1,204,440
FY 2038	\$870,385	\$46,800	\$917,185	\$291,362	\$1,208,547			\$1,208,547
Totals	\$17,439,579	\$1,278,000	\$18,717,579	\$4,859,473	\$23,577,052	\$262,813	\$502,125	\$24,341,990

* \$14.0 Million used for illustrative purposes

In studying the rate structures of the four main rate codes it is important to understand the attributes of each of the structures and the nature of the water customer serviced through that rate.

To raise \$1.1 Million it will have to be via changes in the base rates and through adjustments to the block rates (to be effective on or about 1/1/2018). In the residential rate, 37% of revenue billed in FY 2016 was through the base rate. It was 58% for condominiums and 16% for commercial accounts with revenue generated through the apartment rate being entirely based on consumption.

Using consumption ratios of 68% residential, 3% condominium, 16% commercial and 13% apartment, to raise the necessary \$1.1 Million, the following targets are established:

Rate	Target
Residential	\$748,000
Condominium	\$33,000
Commercial	\$176,000
Apartment	\$143,000
	\$1,100,000

I propose the following rate scenarios for your consideration:

Rate Scenarios – Residential

Rate:	Residential						No. of Bills Issued in FY 2016:	38,991
Current Cost Per Thousand:	\$4.23						FY 2016 Billed Value:	\$2,380,249
Average Consumption:	14,425 Gals						FY 2016 Billed Usage:	562,455,393
Median Consumption:	12,300 Gals						Target:	\$748,000
Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E		
0 to 5,000 Gals	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00		
5001 to 25,000 Gals	\$3.70	\$4.40	\$4.60	\$4.80	\$4.60	\$4.30		
25,001 to 60,000 Gals	\$6.90	\$8.40	\$8.60	\$9.00	\$8.40	\$8.50		
60,001+	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00		
0 to 5,000 Gals		25.0%	29.2%	25.0%	25.0%	25.0%		
5001 to 25,000 Gals		18.9%	24.3%	29.7%	24.3%	16.2%		
25,001 to 60,000 Gals		21.7%	24.6%	30.4%	21.7%	23.2%		
60,001+		0.0%	0.0%	0.0%	0.0%	0.0%		
Billed Value (Based on FY 2016):	\$2,379,398	\$3,063,949	\$3,177,425	\$3,221,691	\$3,129,717	\$3,035,437		
Projected Increase:		\$684,551	\$798,027	\$842,293	\$750,319	\$656,039		
Cost Per Thousand:	\$4.23	\$5.45	\$5.65	\$5.73	\$5.56	\$5.40		
Value of Base Charge:	\$935,784	\$1,169,730	\$1,208,721	\$1,169,730	\$1,169,730	\$1,169,730		
Percent:	39.3%	38.2%	38.0%	36.3%	37.4%	38.5%		
Impact on Selected Consumptions:								
Minimum (13%)	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00		
Increase		\$6.00	\$7.00	\$6.00	\$6.00	\$6.00		
Percent		25.0%	29.2%	25.0%	25.0%	25.0%		
Median (50%)	\$51.01	\$62.12	\$64.58	\$65.04	\$63.58	\$61.39		
Increase		\$11.11	\$13.57	\$14.03	\$12.57	\$10.38		
Percent		21.8%	26.6%	27.5%	24.6%	20.3%		
Average (64%)	\$58.87	\$71.47	\$74.36	\$75.24	\$73.36	\$70.53		
Increase		\$12.60	\$15.49	\$16.37	\$14.49	\$11.66		
Percent		21.4%	26.3%	27.8%	24.6%	19.8%		
25,000 Gallons (89%)	\$98.00	\$118.00	\$123.00	\$126.00	\$122.00	\$116.00		
Increase		\$20.00	\$25.00	\$28.00	\$24.00	\$18.00		
Percent		20.4%	25.5%	28.6%	24.5%	18.4%		
35,000 Gallons (96%)	\$167.00	\$202.00	\$209.00	\$216.00	\$206.00	\$201.00		
Increase		\$35.00	\$42.00	\$49.00	\$39.00	\$34.00		
Percent		21.0%	25.1%	29.3%	23.4%	20.4%		
60,000 Gallons (99%)	\$339.50	\$412.00	\$424.00	\$441.00	\$416.00	\$413.50		
Increase		\$72.50	\$84.50	\$101.50	\$76.50	\$74.00		
Percent		21.4%	24.9%	29.9%	22.5%	21.8%		
70,000 Gallons (99%)	\$479.50	\$552.00	\$564.00	\$581.00	\$556.00	\$553.50		
Increase		\$72.50	\$84.50	\$101.50	\$76.50	\$74.00		
Percent		15.1%	17.6%	21.2%	16.0%	15.4%		

Rate Scenarios – Condominium

Rate:	Condominium						No. of Bills Issued in FY 2016:	3,185
Current Cost Per Thousand:	\$4.43						FY 2016 Billed Value:	\$122,798
Average Consumption:	8,703 Gals						FY 2016 Billed Usage:	27,719,146
Median Consumption:	7,565 Gals						Target:	\$33,000
Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E		
0 to 5,000 Gals	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00		
5001 to 25,000 Gals	\$3.70	\$4.40	\$4.60	\$4.80	\$4.60	\$4.30		
25,001 to 60,000 Gals	\$6.90	\$8.40	\$8.60	\$9.00	\$8.40	\$8.50		
60,001+	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00		
0 to 5,000 Gals		25.0%	29.2%	25.0%	25.0%	25.0%		
5001 to 25,000 Gals		18.9%	24.3%	29.7%	24.3%	16.2%		
25,001 to 60,000 Gals		21.7%	24.6%	30.4%	21.7%	23.2%		
60,001+		0.0%	0.0%	0.0%	0.0%	0.0%		
Billed Value (Based on FY 2016):	\$122,798	\$159,679	\$165,548	\$165,141	\$162,268	\$158,432		
Projected Increase:		\$36,881	\$42,750	\$42,343	\$39,470	\$35,634		
Cost Per Thousand:	\$4.43	\$5.76	\$5.97	\$5.96	\$5.85	\$5.72		
Value of Base Charge:	\$76,440	\$95,550	\$98,735	\$95,550	\$95,550	\$95,550		
Percent:	62.2%	59.8%	59.6%	57.9%	58.9%	60.3%		
Impact on Selected Consumptions:								
Minimum (31%)	\$24.00	\$30.00	\$31.00	\$30.00	\$30.00	\$30.00		
Increase		\$6.00	\$7.00	\$6.00	\$6.00	\$6.00		
Percent		25.0%	29.2%	25.0%	25.0%	25.0%		
Median (50%)	\$33.49	\$41.29	\$42.80	\$42.31	\$41.80	\$41.03		
Increase		\$7.80	\$9.31	\$8.82	\$8.31	\$7.54		
Percent		23.3%	27.8%	26.3%	24.8%	22.5%		
Average (62%)	\$37.70	\$46.29	\$48.03	\$47.77	\$47.03	\$45.92		
Increase		\$8.59	\$10.33	\$10.07	\$9.33	\$8.22		
Percent		22.8%	27.4%	26.7%	24.7%	21.8%		
25,000 Gallons (98%)	\$98.00	\$118.00	\$123.00	\$126.00	\$122.00	\$116.00		
Increase		\$20.00	\$25.00	\$28.00	\$24.00	\$18.00		
Percent		20.4%	25.5%	28.6%	24.5%	18.4%		
35,000 Gallons (99.9%)	\$167.00	\$202.00	\$209.00	\$216.00	\$206.00	\$201.00		
Increase		\$35.00	\$42.00	\$49.00	\$39.00	\$34.00		
Percent		21.0%	25.1%	29.3%	23.4%	20.4%		

Rate Scenarios – Commercial

Rate:	Commercial					No. of Bills Issued in FY 2016:	2,027
Current Cost Per Thousand:	\$4.31					FY 2016 Billed Value:	\$568,914
Average Consumption:	65,046 Gals					FY 2016 Billed Usage:	131,849,152
Median Consumption:	13,000 Gals					Target:	\$176,000
	Current						
Rate Blocks	Rate	Rate A	Rate B	Rate C	Rate D	Rate E	
0 to 5,000 Gals	\$40.00	\$46.00	\$46.00	\$46.00	\$50.00	\$46.00	
5001 to 25,000 Gals	\$3.30	\$4.00	\$4.00	\$4.10	\$3.90	\$4.40	
25,001 to 50,000 Gals	\$4.30	\$5.40	\$5.20	\$5.30	\$5.40	\$5.40	
50,001+	\$4.30	\$5.60	\$5.80	\$5.60	\$5.60	\$5.60	
0 to 5,000 Gals		15.0%	15.0%	15.0%	25.0%	15.0%	
5001 to 25,000 Gals		21.2%	21.2%	24.2%	18.2%	33.3%	
25,001 to 50,000 Gals		25.6%	20.9%	23.3%	25.6%	25.6%	
50,001+		30.2%	34.9%	30.2%	30.2%	30.2%	
Billed Value (Based on FY 2016):	\$568,914	\$750,241	\$765,287	\$750,832	\$756,345	\$758,260	
Projected Increase:		\$181,327	\$196,373	\$181,918	\$187,431	\$189,346	
Cost Per Thousand:	\$4.31	\$5.69	\$5.80	\$5.69	\$5.74	\$5.75	
Value of Base Charge:	\$81,080	\$93,242	\$93,242	\$93,242	\$101,350	\$93,242	
Percent:	14.3%	12.4%	12.2%	12.4%	13.4%	12.3%	
Impact on Selected Consumptions:							
Minimum (30%)	\$40.00	\$46.00	\$46.00	\$46.00	\$50.00	\$46.00	
Increase		\$6.00	\$6.00	\$6.00	\$10.00	\$6.00	
Percent		15.0%	15.0%	15.0%	25.0%	15.0%	
Median (50%)	\$66.40	\$78.00	\$78.00	\$78.80	\$81.20	\$81.20	
Increase		\$11.60	\$11.60	\$12.40	\$14.80	\$14.80	
Percent		17.5%	17.5%	18.7%	22.3%	22.3%	
Average (~80%)	\$279.00	\$345.26	\$343.27	\$344.76	\$347.26	\$353.26	
Increase		\$66.26	\$64.27	\$65.76	\$68.26	\$74.26	
Percent		23.7%	23.0%	23.6%	24.5%	26.6%	
25,000 Gallons (64%)	\$106.00	\$126.00	\$126.00	\$128.00	\$128.00	\$134.00	
Increase		\$20.00	\$20.00	\$22.00	\$22.00	\$28.00	
Percent		18.9%	18.9%	20.8%	20.8%	26.4%	
50,000 Gallons (77%)	\$213.50	\$261.00	\$256.00	\$260.50	\$263.00	\$269.00	
Increase		\$47.50	\$42.50	\$47.00	\$49.50	\$55.50	
Percent		22.2%	19.9%	22.0%	23.2%	26.0%	
100,000 Gallons (86%)	\$428.50	\$541.00	\$546.00	\$540.50	\$543.00	\$549.00	
Increase		\$112.50	\$117.50	\$112.00	\$114.50	\$120.50	
Percent		26.3%	27.4%	26.1%	26.7%	28.1%	

	Current Rate	Rate A	Rate B	Rate C	Rate D	Rate E
250,000 Gallons (94%)	\$1,073.50	\$1,381.00	\$1,416.00	\$1,380.50	\$1,383.00	\$1,389.00
Increase		\$307.50	\$342.50	\$307.00	\$309.50	\$315.50
Percent		28.6%	31.9%	28.6%	28.8%	29.4%
500,000 Gallons (97%)	\$2,148.50	\$2,781.00	\$2,866.00	\$2,780.50	\$2,738.00	\$2,789.00
Increase		\$632.50	\$717.50	\$632.00	\$589.50	\$640.50
Percent		29.4%	33.4%	29.4%	27.4%	29.8%
1,000,000 Gallons (98%)	\$4,298.50	\$5,581.00	\$5,766.00	\$5,580.50	\$5,583.00	\$5,589.00
Increase		\$1,282.50	\$1,467.50	\$1,282.00	\$1,284.50	\$1,290.50
Percent		29.8%	34.1%	29.8%	29.9%	30.0%
2,000,000 Gallons (99.9%)	\$8,598.50	\$11,181.00	\$11,566.00	\$11,180.50	\$11,183.00	\$11,189.00
Increase		\$2,582.50	\$2,967.50	\$2,582.00	\$2,584.50	\$2,590.50
Percent		30.0%	34.5%	30.0%	30.1%	30.1%

Rate Scenarios – Apartment

Rate:	Apartment	No. of Bills Issued in FY 2016:		624	
Current Cost Per Thousand:	\$4.37	FY 2016 Billed Value:		\$452,116	
Average Consumption:	165,918 Gals	FY 2016 Billed Usage:		103,533,07	
Median Consumption:	90,950 Gals	Target:		\$143,000	
Rate Blocks	Current Rate	Rate A	Rate B	Rate C	Rate D
0 to 9,999,999 Gals	\$4.50	\$5.50	\$5.75	\$6.00	\$6.25
		22.2%	27.8%	33.3%	38.9%
Billed Value (Based on FY 2016):	\$452,116	\$569,432	\$595,316	\$621,198	\$647,082
Projected Increase:		\$117,316	\$143,200	\$169,082	\$194,966
Cost Per Thousand:	\$4.37	\$5.50	\$5.75	\$6.00	\$6.25
Value of Base Charge:	\$0	\$0	\$0	\$0	\$0
Impact on Selected Consumptions:					
Median (50%)	\$409.28	\$500.23	\$522.96	\$545.70	\$568.44
Increase		\$90.95	\$113.69	\$136.43	\$159.16
Percent		22.2%	27.8%	33.3%	38.9%
50,000 Gallons (27%)	\$225.00	\$275.00	\$287.50	\$300.00	\$312.50
Increase		\$50.00	\$62.50	\$75.00	\$87.50
Percent		22.2%	27.8%	33.3%	38.9%
100,000 Gallons (54%)	\$450.00	\$550.00	\$575.00	\$600.00	\$625.00
Increase		\$100.00	\$125.00	\$150.00	\$175.00
Percent		22.2%	27.8%	33.3%	38.9%
250,000 Gallons	\$1,125.00	\$1,375.00	\$1,437.50	\$1,500.00	\$1,562.50
Increase		\$250.00	\$312.50	\$375.00	\$437.50
Percent		22.2%	27.8%	33.3%	38.9%

	Current Rate	Rate A	Rate B	Rate C	Rate D
500,000 Gallons	\$2,250.00	\$2,750.00	\$2,875.00	\$3,000.00	\$3,125.00
Increase		\$500.00	\$625.00	\$750.00	\$875.00
Percent		22.2%	27.8%	33.3%	38.9%
1,000,000 Gallons	\$4,500.00	\$5,500.00	\$5,750.00	\$6,000.00	\$6,250.00
Increase		\$1,000.00	\$1,250.00	\$1,500.00	\$1,750.00
Percent		22.2%	27.8%	33.3%	38.9%

Rate Scenarios – Various Outside Watering Accounts/Municipal - School - Field

The five special outside watering accounts (total value FY 2016; \$91,058) would be adjusted by the new residential base charge that is adopted along with the per thousand charge for the second and third tiers of the adopted residential tier rates. The Municipal, School and Field rates (total value FY 2016; \$44,833) would be factored by 25% - 30% with the base charge equal to the adopted Commercial base charge.

The result of each of the rate scenarios of the consumption charge for billed usage is:

Value Per Thousand of Billed Usage				
Year	Residential	Condominium	Commercial	Apartment
2012	\$3.75	\$3.79	\$3.62	\$4.00
2013	\$3.84	\$4.01	\$3.75	\$4.07
2014	\$4.01	\$4.17	\$4.08	\$4.24
2015	\$4.07	\$4.13	\$4.06	\$4.25
2016	\$4.23	\$4.43	\$4.31	\$4.37
Rate A	\$5.45	\$5.76	\$5.69	\$5.50
Rate B	\$5.65	\$5.97	\$5.80	\$5.75
Rate C	\$5.73	\$5.96	\$5.69	\$6.00
Rate D	\$5.56	\$5.85	\$5.74	\$6.25
Rate E	\$5.40	\$5.72	\$5.75	-

Deviation to Residential (2016 used for comparison for Rate A to Rate E)				
Year	Residential	Condominium	Commercial	Apartment
2012	-	1.011	0.965	1.067
2013	-	1.044	0.977	1.060
2014	-	1.040	1.017	1.057
2015	-	1.015	0.998	1.044
2016	-	1.047	1.019	1.033
Rate A	-	1.362	1.345	1.300
Rate B	-	1.411	1.371	1.359
Rate C	-	1.409	1.345	1.418
Rate D	-	1.383	1.357	1.478
Rate E	-	1.352	1.359	-

Deviation to Commercial (2016 used for comparison for Rate A to Rate E)				
Year	Residential	Condominium	Commercial	Apartment
2012	1.036	1.047	-	1.105
2013	1.024	1.069	-	1.085
2014	0.983	1.022	-	1.039
2015	1.002	1.017	-	1.047
2016	0.981	1.028	-	1.014
Rate A	1.265	1.336	-	1.276
Rate B	1.311	1.385	-	1.334
Rate C	1.329	1.383	-	1.392
Rate D	1.290	1.357	-	1.450
Rate E	1.253	1.327	-	-

In summary:

1. It is still too soon to determine the full impact of the new water meters installed in recent months but anecdotal evidence to date indicates that the pick-up in billed volume may not be significant.
2. The full impact of the rate increase that went into effect on January 1, 2016, is still unknown and will not be known for another 12-18 months.
3. Ideally we should be generating about \$2.0 Million annually above O&M.
4. Shrewsbury's residential water rate is still among the lowest in the region.
5. To fund the new water treatment facility, a rate increase valued at \$1.1 Million is necessary.

I have attached to this memo a series of exhibits for your review.

Please advise with any questions.

Cc Board of Sewer Commissioners
 Jeff Howland
 Robert Tozeski
 Mary Thompson
 Kristen Las
 John Decillis
 Vincent Thai
 Sharon Horne
 Mary Budzinski

Additional Reference Materials:

August 1, 2012, memo to the Board of Selectmen - Re: Water Rates
 September 5, 2012, memo the Board of Selectmen - Re: Water Rates

September 7, 2012, memo the Board of Selectmen - Re: Water Rates

June 20, 2014, memo to the Board of Selectmen - Re: Manganese Standards

July 18, 2014, memo to the Board of Selectmen - Re: Strategic Planning Exercise

August 5, 2015, memo to the Board of Selectmen – Re: Water Rates

Capital Efficiency Plan dated March 2014

Final Modified Water Management Act Permit dated July 2, 2015

August 7, 2015, memo to the Board of Selectmen – Re: Water Rates

January 20, 2016, Memo to the Board of Selectmen – Re: Alternate Water Supply Study

**Summary of Water Bills
Issued in FY 2016**

Residential			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	5,131	5,131	13.16%	13.16%	14,745,172	14,745,172	2.62%	2.62%
5,001	to	6,000	1,529	6,660	3.92%	17.08%	8,786,769	23,531,941	1.56%	4.18%
6,001	to	7,000	1,737	8,397	4.45%	21.54%	11,727,803	35,259,744	2.09%	6.27%
7,001	to	8,000	2,025	10,422	5.19%	26.73%	15,702,828	50,962,572	2.79%	9.06%
8,001	to	9,000	2,120	12,542	5.44%	32.17%	18,524,832	69,487,404	3.29%	12.35%
9,001	to	10,000	2,171	14,713	5.57%	37.73%	21,147,996	90,635,400	3.76%	16.11%
10,001	to	11,000	2,252	16,965	5.78%	43.51%	24,199,585	114,834,985	4.30%	20.42%
11,001	to	12,000	2,216	19,181	5.68%	49.19%	26,028,625	140,863,610	4.63%	25.04%
12,001	to	13,000	2,047	21,228	5.25%	54.44%	26,071,009	166,934,619	4.64%	29.68%
13,001	to	14,000	1,964	23,192	5.04%	59.48%	26,985,749	193,920,368	4.80%	34.48%
14,001	to	15,000	1,831	25,023	4.70%	64.18%	26,989,471	220,909,839	4.80%	39.28%
15,001	to	16,000	1,629	26,652	4.18%	68.35%	25,627,939	246,537,778	4.56%	43.83%
16,001	to	17,000	1,476	28,128	3.79%	72.14%	24,719,225	271,257,003	4.39%	48.23%
17,001	to	18,000	1,254	29,382	3.22%	75.36%	22,233,969	293,490,972	3.95%	52.18%
18,001	to	19,000	1,125	30,507	2.89%	78.24%	21,087,635	314,578,607	3.75%	55.93%
19,001	to	20,000	1,015	31,522	2.60%	80.84%	20,041,017	334,619,624	3.56%	59.49%
20,001	to	21,000	842	32,364	2.16%	83.00%	17,473,889	352,093,513	3.11%	62.60%
21,001	to	22,000	748	33,112	1.92%	84.92%	16,280,403	368,373,916	2.89%	65.49%
22,001	to	23,000	664	33,776	1.70%	86.63%	15,105,902	383,479,818	2.69%	68.18%
23,001	to	24,000	613	34,389	1.57%	88.20%	14,556,492	398,036,310	2.59%	70.77%
24,001	to	25,000	504	34,893	1.29%	89.49%	12,485,373	410,521,683	2.22%	72.99%
25,001	to	26,000	419	35,312	1.07%	90.56%	10,789,305	421,310,988	1.92%	74.91%
26,001	to	27,000	411	35,723	1.05%	91.62%	10,999,645	432,310,633	1.96%	76.86%
27,001	to	28,000	331	36,054	0.85%	92.47%	9,193,564	441,504,197	1.63%	78.50%
28,001	to	29,000	322	36,376	0.83%	93.29%	9,259,405	450,763,602	1.65%	80.14%
29,001	to	30,000	235	36,611	0.60%	93.90%	6,989,628	457,753,230	1.24%	81.39%
30,001	to	35,000	871	37,482	2.23%	96.13%	28,339,679	486,092,909	5.04%	86.42%
35,001	to	40,000	488	37,970	1.25%	97.38%	18,358,211	504,451,120	3.26%	89.69%
40,001	to	45,000	309	38,279	0.79%	98.17%	13,184,278	517,635,398	2.34%	92.03%
45,001	to	50,000	198	38,477	0.51%	98.68%	9,411,746	527,047,144	1.67%	93.71%
50,001	to	60,000	226	38,703	0.58%	99.26%	12,336,391	539,383,535	2.19%	95.90%
60,001	to	70,000	121	38,824	0.31%	99.57%	7,804,515	547,188,050	1.39%	97.29%
70,001	to	80,000	63	38,887	0.16%	99.73%	4,752,739	551,940,789	0.85%	98.13%
80,001	to	90,000	45	38,932	0.12%	99.85%	3,830,757	555,771,546	0.68%	98.81%
90,001	to	100,000	28	38,960	0.07%	99.92%	2,645,165	558,416,711	0.47%	99.28%
100,001	to	125,000	18	38,978	0.05%	99.97%	1,994,097	560,410,808	0.35%	99.64%
125,001	to	150,000	7	38,985	0.02%	99.98%	944,535	561,355,343	0.17%	99.81%
150,001	to	999,999	6	38,991	0.02%	100.00%	1,095,050	562,450,393	0.19%	100.00%
0	to	5,000	5,131	13.16%			14,745,172	2.62%		
5,001	to	25,000	29,762	76.33%			395,776,511	70.37%		
25,001	to	60,000	3,810	9.77%			128,861,852	22.91%		
60,001	to	999,999	288	0.74%			23,066,858	4.10%		
			38,991	100.00%			562,450,393	100.00%		

MUNIS Consumption 562,455,393 gallons; data shown is via Crystal Reports

Median	12,300	Billed	\$2,380,248.83
Average	14,425	Consumption	562,450,393
		Per Thousand	\$4.23

**Summary of Water Bills
Issued in FY 2016**

Condominium			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	1004	1,004	31.52%	31.52%	3,167,315	3,167,315	11.43%	11.43%
5,001	to	6,000	249	1,253	7.82%	39.34%	1,426,726	4,594,041	5.15%	16.57%
6,001	to	7,000	252	1,505	7.91%	47.25%	1,695,712	6,289,753	6.12%	22.69%
7,001	to	8,000	273	1,778	8.57%	55.82%	2,106,883	8,396,636	7.60%	30.29%
8,001	to	9,000	201	1,979	6.31%	62.14%	1,755,247	10,151,883	6.33%	36.62%
9,001	to	10,000	212	2,191	6.66%	68.79%	2,066,285	12,218,168	7.45%	44.08%
10,001	to	11,000	181	2,372	5.68%	74.47%	1,951,552	14,169,720	7.04%	51.12%
11,001	to	12,000	157	2,529	4.93%	79.40%	1,850,983	16,020,703	6.68%	57.80%
12,001	to	13,000	113	2,642	3.55%	82.95%	1,439,882	17,460,585	5.19%	62.99%
13,001	to	14,000	102	2,744	3.20%	86.15%	1,405,629	18,866,214	5.07%	68.06%
14,001	to	15,000	95	2,839	2.98%	89.14%	1,402,376	20,268,590	5.06%	73.12%
15,001	to	16,000	62	2,901	1.95%	91.08%	973,405	21,241,995	3.51%	76.63%
16,001	to	17,000	58	2,959	1.82%	92.90%	965,783	22,207,778	3.48%	80.12%
17,001	to	18,000	37	2,996	1.16%	94.07%	654,622	22,862,400	2.36%	82.48%
18,001	to	19,000	31	3,027	0.97%	95.04%	577,962	23,440,362	2.09%	84.56%
19,001	to	20,000	27	3,054	0.85%	95.89%	532,750	23,973,112	1.92%	86.49%
20,001	to	21,000	31	3,085	0.97%	96.86%	642,796	24,615,908	2.32%	88.80%
21,001	to	22,000	19	3,104	0.60%	97.46%	414,809	25,030,717	1.50%	90.30%
22,001	to	23,000	10	3,114	0.31%	97.77%	226,851	25,257,568	0.82%	91.12%
23,001	to	24,000	7	3,121	0.22%	97.99%	165,922	25,423,490	0.60%	91.72%
24,001	to	25,000	14	3,135	0.44%	98.43%	344,939	25,768,429	1.24%	92.96%
25,001	to	26,000	6	3,141	0.19%	98.62%	153,290	25,921,719	0.55%	93.52%
26,001	to	27,000	6	3,147	0.19%	98.81%	164,503	26,086,222	0.59%	94.11%
27,001	to	28,000	0	3,147	0.00%	98.81%	0	26,086,222	0.00%	94.11%
28,001	to	29,000	7	3,154	0.22%	99.03%	201,017	26,287,239	0.73%	94.83%
29,001	to	30,000	5	3,159	0.16%	99.18%	148,138	26,435,377	0.53%	95.37%
30,001	to	35,000	12	3,171	0.38%	99.56%	387,852	26,823,229	1.40%	96.77%
35,001	to	40,000	3	3,174	0.09%	99.65%	111,967	26,935,196	0.40%	97.17%
40,001	to	45,000	3	3,177	0.09%	99.75%	128,671	27,063,867	0.46%	97.64%
45,001	to	50,000	3	3,180	0.09%	99.84%	141,828	27,205,695	0.51%	98.15%
50,001	to	55,000	3	3,183	0.09%	99.94%	174,051	27,379,746	0.63%	98.78%
55,001	to	60,000	0	3,183	0.00%	99.94%	0	27,379,746	0.00%	98.78%
60,001	to	999,999	2	3,185	0.06%	100.00%	339,400	27,719,146	1.22%	100.00%
0	to	5,000	1,004	31.52%			3,167,315	11.43%		
5,001	to	25,000	2,131	66.91%			22,601,114	81.54%		
25,001	to	60,000	48	1.51%			1,611,317	5.81%		
60,001	to	999,999	2	0.06%			339,400	1.22%		
			3,185	100.00%			27,719,146	100.00%		
								Billed Amount	\$122,797.83	
					Median	7,565		Consumption	27,719,146	
					Average	8,703		Per Thousand	\$4.43	

**Summary of Water Bills
Issued in FY 2016**

Commercial			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	602	602	29.70%	29.70%	1,170,533	1,170,533	0.89%	0.89%
5,001	to	6,000	63	665	3.11%	32.81%	367,315	1,537,848	0.28%	1.17%
6,001	to	7,000	52	717	2.57%	35.37%	353,546	1,891,394	0.27%	1.43%
7,001	to	8,000	66	783	3.26%	38.63%	518,283	2,409,677	0.39%	1.83%
8,001	to	9,000	56	839	2.76%	41.39%	496,858	2,906,535	0.38%	2.20%
9,001	to	10,000	50	889	2.47%	43.86%	491,458	3,397,993	0.37%	2.58%
10,001	to	15,000	194	1083	9.57%	53.43%	2,462,729	5,860,722	1.87%	4.45%
15,001	to	20,000	126	1209	6.22%	59.64%	2,241,652	8,102,374	1.70%	6.15%
20,001	to	25,000	95	1304	4.69%	64.33%	2,163,154	10,265,528	1.64%	7.79%
25,001	to	30,000	86	1390	4.24%	68.57%	2,377,097	12,642,625	1.80%	9.59%
30,001	to	35,000	56	1446	2.76%	71.34%	1,828,114	14,470,739	1.39%	10.98%
35,001	to	40,000	57	1503	2.81%	74.15%	2,155,322	16,626,061	1.63%	12.61%
40,001	to	45,000	40	1543	1.97%	76.12%	1,710,898	18,336,959	1.30%	13.91%
45,001	to	50,000	22	1565	1.09%	77.21%	1,045,839	19,382,798	0.79%	14.70%
50,001	to	60,000	48	1613	2.37%	79.58%	2,644,434	22,027,232	2.01%	16.71%
60,001	to	70,000	38	1651	1.87%	81.45%	2,491,010	24,518,242	1.89%	18.60%
70,001	to	80,000	33	1684	1.63%	83.08%	2,503,190	27,021,432	1.90%	20.49%
80,001	to	90,000	41	1725	2.02%	85.10%	3,513,873	30,535,305	2.67%	23.16%
90,001	to	100,000	29	1754	1.43%	86.53%	2,778,587	33,313,892	2.11%	25.27%
100,001	to	125,000	41	1795	2.02%	88.55%	4,557,958	37,871,850	3.46%	28.72%
125,001	to	150,000	31	1826	1.53%	90.08%	4,287,084	42,158,934	3.25%	31.98%
150,001	to	200,000	60	1886	2.96%	93.04%	10,293,130	52,452,064	7.81%	39.78%
200,001	to	250,000	25	1911	1.23%	94.28%	5,491,710	57,943,774	4.17%	43.95%
250,001	to	300,000	21	1932	1.04%	95.31%	5,775,378	63,719,152	4.38%	48.33%
300,001	to	350,000	10	1942	0.49%	95.81%	3,240,660	66,959,812	2.46%	50.79%
350,001	to	400,000	12	1954	0.59%	96.40%	4,505,140	71,464,952	3.42%	54.20%
400,001	to	500,000	22	1976	1.09%	97.48%	9,610,500	81,075,452	7.29%	61.49%
500,001	to	1,000,000	26	2002	1.28%	98.77%	18,515,600	99,591,052	14.04%	75.53%
1,000,001	to	2,000,000	23	2025	1.13%	99.90%	27,870,600	127,461,652	21.14%	96.67%
2,000,001	to	3,000,000	2	2027	0.10%	100.00%	4,387,500	131,849,152	3.33%	100.00%
3,000,001	to	99,999,999	0	2027	0.00%	100.00%	0	131,849,152	0.00%	100.00%
0	to	5,000	602	29.70%			1,170,533	0.89%		
5,001	to	25,000	702	34.63%			9,094,995	6.90%		
25,001	to	50,000	261	12.88%			9,117,270	6.91%		
50,001	to	9,999,999	462	22.79%			112,466,354	85.30%		
			2,027	100.00%			131,849,152	100.00%		
								Billed Amount		\$568,913.81
						Median	13,000	Consumption		131,849,152
						Average	65,046	Per Thousand		\$4.31

Summary of Water Bills
Issued in FY 2016

Apartment			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	38	38	6.09%	6.09%	46,027	46,027	0.04%	0.04%
5,001	to	6,000	3	41	0.48%	6.57%	17,320	63,347	0.02%	0.06%
6,001	to	7,000	3	44	0.48%	7.05%	22,150	85,497	0.02%	0.08%
7,001	to	8,000	2	46	0.32%	7.37%	39,470	124,967	0.04%	0.12%
8,001	to	9,000	1	47	0.16%	7.53%	9,000	133,967	0.01%	0.13%
9,001	to	10,000	1	48	0.16%	7.69%	10,000	143,967	0.01%	0.14%
10,001	to	15,000	10	58	1.60%	9.29%	126,980	270,947	0.12%	0.26%
15,001	to	20,000	14	72	2.24%	11.54%	256,790	527,737	0.25%	0.51%
20,001	to	25,000	15	87	2.40%	13.94%	347,336	875,073	0.34%	0.85%
25,001	to	30,000	15	102	2.40%	16.35%	416,879	1,291,952	0.40%	1.25%
30,001	to	35,000	9	111	1.44%	17.79%	294,360	1,586,312	0.28%	1.53%
35,001	to	40,000	16	127	2.56%	20.35%	601,120	2,187,432	0.58%	2.11%
40,001	to	45,000	16	143	2.56%	22.92%	685,690	2,873,122	0.66%	2.78%
45,001	to	50,000	25	168	4.01%	26.92%	1,265,910	4,139,032	1.22%	4.00%
50,001	to	60,000	34	202	5.45%	32.37%	1,870,269	6,009,301	1.81%	5.80%
60,001	to	70,000	40	242	6.41%	38.78%	2,617,496	8,626,797	2.53%	8.33%
70,001	to	80,000	35	277	5.61%	44.39%	2,640,213	11,267,010	2.55%	10.88%
80,001	to	90,000	33	310	5.29%	49.68%	2,796,980	14,063,990	2.70%	13.58%
90,001	to	100,000	31	341	4.97%	54.65%	2,952,430	17,016,420	2.85%	16.44%
100,001	to	9,999,999	283	624	45.35%	100.00%	86,516,650	103,533,070	83.56%	100.00%
0	to	5,000	38	6.09%			46,027	0.04%		
5,001	to	50,000	130	20.83%			4,093,005	3.95%		
50,001	to	100,000	173	27.72%			12,877,388	12.44%		
100,001	to	9,999,999	283	45.35%			86,516,650	83.56%		
			624	100.00%			103,533,070	100.00%		
						Median	90,950	Billed Amount	\$452,116.39	
						Average	165,918	Consumption	103,533,070	
								Per Thousand	\$4.37	

**Summary of Water Bills
Issued in FY 2016**

Residential Lawn 28 Accounts			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	60,000	101	101	90.18%	90.18%	978,712	978,712	45.92%	45.92%
60,001	to	999,999	11	112	9.82%	100.00%	1,152,559	2,131,271	54.08%	100.00%
Average							19,029	Billed Amount	\$18,179.55	
								Consumption	2,131,271	
								Per Thousand	\$8.53	
Summer Service 11 Accounts			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	60,000	36	36	97.30%	97.30%	258,585	258,585	61.23%	61.23%
60,001	to	999,999	1	37	2.70%	100.00%	163,716	422,301	38.77%	100.00%
Average							11,414	Billed Amount	\$3,883.59	
								Consumption	422,301	
								Per Thousand	\$9.20	
Apartment Lawn 13 Accounts			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	60,000	33	33	66.00%	66.00%	426,120	426,120	15.78%	15.78%
60,001	to	999,999	17	50	34.00%	100.00%	2,274,600	2,700,720	84.22%	100.00%
Average							54,014	Billed Amount	\$22,853.75	
								Consumption	2,700,720	
								Per Thousand	\$8.46	
Condominium Lawn 10 Accounts			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	60,000	22	22	57.89%	57.89%	73,020	73,020	1.74%	1.74%
60,001	to	999,999	16	38	42.11%	100.00%	4,123,150	4,196,170	98.26%	100.00%
Average							110,426	Billed Amount	\$38,998.74	
								Consumption	4,196,170	
								Per Thousand	\$9.29	
Commercial Lawn 4 Accounts			Bills Issued				Consumption			
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	60,000	13	13	81.25%	81.25%	49,800	49,800	6.90%	6.90%
60,001	to	999,999	3	16	18.75%	100.00%	672,200	722,000	93.10%	100.00%
Average							45,125	Billed Amount	\$7,142.74	
								Consumption	722,000	
								Per Thousand	\$9.89	

**Summary of Water Bills
Issued in FY 2016**

Municipal			18 Accounts		Bills Issued			Consumption		
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	27	27	37.50%	37.50%	37,915	37,915	3.92%	3.92%
5,001	to	50,000	45	72	62.50%	100.00%	929,020	966,935	96.08%	100.00%
50,001	to	999,999	0	72	0.00%	100.00%	0	966,935	0.00%	100.00%
							Average	13,430	Billed Amount	\$4,431.09
									Consumption	966,935
									Per Thousand	\$4.58

School			16 Accounts		Bills Issued			Consumption		
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	5,000	0	0	0.00%	0.00%	0	0	0.00%	0.00%
5,001	to	50,000	25	25	39.06%	39.06%	768,000	768,000	13.81%	13.81%
50,001	to	999,999	39	64	60.94%	100.00%	4,794,540	5,562,540	86.19%	100.00%
							Average	86,915	Billed Amount	\$18,513.36
									Consumption	5,562,540
									Per Thousand	\$3.33

School Lawn			5 Accounts		Bills Issued			Consumption		
Consumption Range			# of Bills	Cumulative	Percent	Cumulative	Consumption	Cumulative	Percent	Cumulative
0	to	9,999,999	22				6,206,944			
							Average	282,134	Billed Amount	\$21,888.95
									Consumption	6,206,944
									Per Thousand	\$3.53
									Total Billed Value	\$3,659,968.63
									Total Consumption	848,460,642
									Total Bills	45,238

