

SUMMARY REPORT
ON THE
PROPOSED SEWER RATES
TOWN OF CHARLTON, MASSACUSETTS
PRESENTED TO THE
BOARD OF WATER & SEWER COMMISSIONERS
JUNE 26, 2006

* * *

REPORT DATE – August 31, 2006

ALCOTT ASSOCIATES

Delivery by electronic file

August 31, 2006

Board of Water & Sewer Commissioners
Town of Charlton
7 Worcester Road
Charlton, MA 01507

Subject: Summary Report on Sewer Rate Study

Dear Board Members:

We are pleased to submit this report on the sewer rate study summarizing the review, analysis and findings developed to date. Preliminary findings were submitted to the Board on June 6 and 23 and the proposed rates were presented to the Board on June 26, 2006. The Board voted to adopt the proposed rates effective October 1, 2006.

The analysis undertaken involved the collection and review of operating and financial data and the development of user charges based on metered water consumption to replace the current flat rate charge per bedroom. The analysis also included a review of prior studies of the strong waste loading from two service areas of the Massachusetts Turnpike Authority ("MTA").

Background

Developing consumption based sewer rates for Charlton presented a relatively unique challenge in that the majority of sewer users are not supplied with public water but rather have private, generally un-metered, well supplies. Therefore it was necessary to estimate metered water consumption data for most of the proposed rate calculations.

The current system of user charges is based on the committed treatment capacity allocated to each sewer user. For residential and most commercial users this capacity is based on the Title V capacity requirements defined by the Massachusetts Department of Environmental Protection ("DEP") as 110 gallons per day per bedroom or bedroom equivalent. Two sewer users, the MTA and Masonic Home, have specified committed capacities by agreement with the Town. Under the current system of user charges operating costs are assigned to each sewer user in proportion to their committed capacity. In effect this system uses the committed capacity as a basis for estimating the actual use by each sewer user. Given the fact that very few of the sewer users have metered sewer flow or metered water consumption, the current system of user charges provides a reasonable basis for allocating operating costs.

Proposed Rates

The proposed system of user charges is based on a combination of the committed capacity and actual metered water consumption. Under the proposed system of user charges, operating costs have been divided between costs which vary with actual consumption (i.e., sewer flow) called “variable costs” and costs which do not vary with actual consumption called “fixed costs”. The proposed system of charges consists of a “capacity charge” to recover the fixed costs and a volume rate to recover the variable costs.

The proposed user charge system also includes surcharge rates for wastewater discharged from the two MTA service areas.

As a result of changing the basic structure of the user charge system, some sewer users will experience **increased** bills under the proposed rates, while others will experience **decreased** bills, depending on the relationship between each users committed capacity and their “actual” use. (As used herein “actual” use has been estimated. As meters are installed on the private well supplies, the actual usage data will be used for billing purposes. It may be necessary to revise the proposed rates when sufficient actual usage data has been accumulated.)

COMPARISON OF CURRENT AND PROPOSED SEWER RATES

Current rates for all users, effective through Sept 30, 2006

A Quarterly Charge of \$65.25 per bedroom or bedroom equivalent

Proposed rates to be effective Oct. 1, 2006*

For unmetered users: a Quarterly Charge of \$70.00 per bedroom or bedroom equivalent

For metered users:

A Capacity Charge of \$93.75 per equivalent dwelling unit

Plus a Volume Charge of \$0.0046 per gallon

* *Include proposed increase in revenues of approximately 7.3%.*

Supporting Data and Calculations

Summary tables are attached to this report as follows:

Table 1 sets forth the revenue required for the sewer department for fiscal year 2007. As shown the total revenue required per the budget is \$1,019,562.

Table 2 sets forth the calculated revenues from user fees at current rates. Based on current billing data (numbers of customers, bedroom units, etc.) and the current rates currently in effect, user fee revenues are calculated to be \$879,407.

Table 3 sets forth total estimated revenues, which consist of the user fee revenues from Table 2, plus other revenues. The total estimated revenues are \$963,507. This amount is \$56,055 short of the total revenue requirement \$1,019,562 shown on Table 1.

Table 3 also sets forth the proposed “un-metered rates” and the proposed “metered” rates.

Table 4 summarizes the calculation of the proposed metered rates. As indicated above the proposed metered rates consist of a capacity charge per equivalent dwelling unit to recover the fixed costs and a volume rate per gallon to recover the variable costs.

Tables 5A, 5B and 5C set forth comparisons of bill impacts for typical users under the proposed rates. Impacts on un-metered residential users are shown on Table 5A. The impact of converting from un-metered rates to metered rates for residential users is shown on Table 5B. And the impact on other users is shown on Table 5C. It is noted that these three tables deal with standard strength waste users.

Table 6 sets forth bill impacts on two exceptional users, Masonic Home and the MTA.

Workpapers are also attached, as follows:

WP-01	Analysis of Sewer Department Billing Data
WP-02	Estimated User Fee Revenues at Proposed Metered Rates
WP-03	Allocation of Operating Costs to MTA and Calculation of Extra Strength Surcharge Rates
WP-04	Plant Loadings – MTA as Percent of WWTP

Note on Proposed Surcharge Rates

Since the MTA is the only currently known sewer user discharging wastes stronger than normal domestic wastes, the proposed surcharge rates have been designed to derive revenues approximately equal to the costs allocated to the MTA. As shown on workpaper WP-03, this has been achieved by adjusting the rate per pound of BOD and ammonia. The data available at the time of preparing this study indicated that the suspended solids component of MTA wastes was

approximately the same as normal domestic strength wastes and no adjustment was made to the surcharge rate for TSS.

Additional Issues

A number of additional issues need attention as the proposed rates are implemented, including the following.

- REVENUE STABILITY The current fixed charge rate structure makes for very stable cash revenues. As metered rates are implemented, cash revenues will become relatively unstable because of such factors as weather – less water is used during wet summers than during dry summers. Managing this risk generally involves building a contingency factor into the rate design. A contingency factor should also be included for unexpected expenses.
- CASHFLOW The current rates are billed entirely in advance. When metered rates are applied to customers the Capacity Charge would be billed in advance but Volume Charges would be billed in arrears, so there will be a shortfall in cash receipts. The calculated revenue from the proposed metered rates is slightly higher than the budget requirement and should at least partially offset this effect (as well as providing for the contingencies referenced above).
- ACTUAL vs. ESTIMATED USAGE VOLUMES Actual metered consumption may be more or less than the average usage estimated in this rate study, so the adopted rates effective October 1, 2006, may require adjustment in the future.
- UPDATED DATA ON WASTE STRENGTH This study was based on the data collected through March 2006. It is understood that improvements in wastewater sampling are being made. Again, as new data is obtained the proposed rates may need to be adjusted.
- CHANGES IN CONTRACT or PERMITTED CAPACITIES There have been discussions with the two largest users, Masonic Home and the MTA, regarding their respective committed capacities. If changes in those capacities occur, then adjustment of the proposed rates also may be required.

We appreciate the opportunity to assist the Town in these matters and look forward to discussing the results of the study at your convenience.

Very truly yours,
ALCOTT ASSOCIATES

Stephen B. Alcott

ATTACHMENTS:

- Rates adopted by Charlton Board of Water & Sewer Commissioners
- Sewer Rate Study (supporting detailed calculations)

CHARLTON SEWER RATES AND CHARGES

ADOPTED BY

CHARLTON BOARD OF WATER & SEWER COMMISSIONERS

For all users, effective from July 1, 2006 through September 30, 2006

A Quarterly Charge of \$65.25 per bedroom or bedroom equivalent

For all users, effective beginning October 1, 2006

A. For unmetered users: a Quarterly Charge of \$70.00 per bedroom or bedroom equivalent

B. For metered users:

(1) A Capacity Charge of \$93.75 per equivalent dwelling unit

(2) Plus a volume charge of \$0.0046 per gallon

(3) Plus Surcharges per pound of Excess Strength Waste*:

For TSS	\$1.93 per pound
For BOD.....	\$3.28 per pound
For Ammonia	\$4.29 per pound

* Surcharges are applicable to large users who discharge on average more than 10,000 gallons per day and have wastes exceeding standard domestic strength wastes. The surcharges apply to the pounds in excess of any of the following concentrations:

Total Suspended Solids (TSS)	250 mg/L
Biochemical Oxygen Demand (BOD)	250 mg/L
Ammonia (NH ₃ -N)	40 mg/L

ATTACHMENT TO SUMMARY REPORT

TOWN OF CHARLTON
WATER AND SEWER COMMISSION

SEWER RATE STUDY

Proposed Rates presented to Commissioners June 26, 2006

SUMMARY TABLES

TABLE 1	Revenue Required - FY 2007
TABLE 2	Calculated Revenues from User Fees at Current Rates
TABLE 3	Proposed Rates Needed to Meet FY 2007 Budget
TABLE 4	Calculation of Metered Rates for Standard Strength Uses
TABLE 5A	Bill Comparison Current & Proposed Un-Metered Rates - RESIDENTIAL USERS
TABLE 5B	Bill Comparison Proposed Metered Rates & Un-Metered Rates - RESIDENTIAL USERS
TABLE 5C	Bill Comparison Proposed Metered and Un-Metered Rates - OTHER STANDARD STRENGTH USERS
TABLE 6	Bill Comparison Current & Proposed Rates - VERY LARGE USERS

Workpapers

Workpaper WP-01	Analysis of Sewer Department Billing Data
Workpaper WP-02	Estimated User Fee Revenues at Proposed Metered Rates Assuming All Private Wells Convert To Metered Rates
Workpaper WP-03	Allocation of Operating Costs to MTA And Calculation of Surcharge Rates
Workpaper WP-04	PLANT LOADINGS - MTA as PERCENT OF WWTP

Revenue Required - FY 2007
2007 Budget (July 1, 2006-June 30,2007)

Description	Annual Amount
Contract Operations	\$441,204
Local Costs	
Salaries & Wages	\$43,000
Electricity	145,000
Fuel	16,122
Equipment	25,000
Phones	6,592
Maint/Billing	1,583
Office Supplies	2,900
Admin	3,000
Phosphorous Removal	38,000
Meters	60,000
Subtotal Local Costs	<u>341,197</u>
subtotal (Operation & Maintenance)	782,401
Capital and Replacement	40,000
Engineering - Consultation	40,000
Old Line Decommission	15,000
Supporting (indirect) Costs	Note [a] <u>134,898</u>
subtotal (Budget)	1,012,299
Debt Service (Water Resource Project)	Note [b] <u>7,263</u>
Total Revenue Required	<u><u>\$1,019,562</u></u>

Note (a)	Commissioners Wages	\$6,000
	Legal	35,000
	Loan Admin Fees	18,125
	Group Insurance	54,000
	FICA	740
	Pension	4,845
	Other Dept Offsets	16,188
	Supporting (indirect) Costs	<u>\$134,898</u>

Note [b] Debt Service - Water Resource Project			
	Principal due	8/1/2006	\$19,813.00
	Interest due	8/1/2006	7,029.05
	Interest due	2/1/2007	8,253.57
		Total - FY 2007	<u>\$35,095.62</u>
	Water Portion		\$458,744
	Wastewater Portion		119,718
	Total amount borrowed		<u>\$578,462</u>
	Wastewater Percentage		20.70%
	Debt service for wastewater FY 2007		<u>\$7,263</u>

Calculated Revenues from User Fees at Current Rates

Description	Billing Basis		Quarterly Amount	Annual Amount
Commercial Customers				
	Units	Rate/Unit		
MTA 5E	399.96	\$65.25	\$26,097	
MTA 6W	399.96	\$65.25	26,097	
Total MTA			\$52,194	\$208,776
Masonic Home	556.36	\$65.25	36,302	145,208
Apartments included as Commercial (16 accounts) [a]	302	\$65.25	19,706	78,824
Others (48 accounts)	340.73	\$65.25	22,233	88,932
Total Commercial - 67 Accounts			130,435	521,740
Public Accounts				
	Gallons	Rate/Gal.		
Six (6) metered accounts	818,615	\$0.0065	5,321	21,284
	Units	Rate/Unit		
One flat rate account	4.28	\$65.25	279	1,116
Total Public - 7 Accounts				22,400
Residential Accounts				
	Units	Rate/Unit		
Regular accounts (425 accounts)	1,197.00	\$65.25	78,104	312,416
Senior discounted accts (37 accounts)	103.00	\$65.25	6,721	26,884
subtotals	1,300.00		84,825	339,300
less 15% of Sr. Discounted Revenue [b]			(1,008)	(4,033)
Total Residential - 462 Accounts			83,817	335,267
Total User Fee Revenue at current rates - 536 Accounts				\$879,407

Notes:

[a] Includes all known multi-family dwellings.

[b] Estimated impact of new senior discount policy on revenues at current rates.

Proposed Rates Needed to Meet FY 2007 Budget

Description	Annual Amount
Total User Fee Revenue at current rates - 536 Accounts	\$879,407
Revenues from Meter Fees (equals Budgeted Meter Costs)	60,000
Other Revenue:	
Connection Fees	\$2,100
Other Department Revenue	2,000
Investment Income	20,000
Other Revenue per Budget	24,100
Total Estimated Revenue	\$963,507
Revenue required (from TABLE 1)	(1,019,562)
Deficiency	(\$56,055)
Total User Fee Revenue at current rates - 536 Accounts	\$879,407
Percent Increase Required	6.37%
PROPOSED RATE FOR UNMETERED USERS - QUARTERLY CHARGE PER BEDROOM or BEDROOM UNIT EQUIVALENT	
	\$70.00
Current quarterly charge	\$65.25
Increase per quarter per bedroom	\$4.75
Percent Increase [a]	7.28%
PROPOSED RATES FOR STANDARD WASTE STRENGTH METERED USE:	
QUARTERLY CAPACITY CHARGE PER EQUIVALENT DWELLING UNIT	\$93.75
plus:	
VOLUME CHARGE PER GALLON	\$0.0046

Notes:

[a] Since the proposed increase will be effective October 1st, it is larger than the required percent to partially offset the lower revenue billed in the first quarter of FY 2007.

[b] Proposed surcharges for wastes stonger than normal domestic wastes are used in the estimated bill for the MTA as set forth on TABLE 6 and developed on Workpaper WP-03.

**Calculation of Metered Rates for Standard Strength Uses
based on analysis of fixed and variable costs**

STEP ONE: DETERMINE FIXED/VARIABLE COST PERCENTAGES

	Amount	Percent
Revenue required (from TABLE 1)	\$1,019,562	
Revenues from Meter Fees (equals Budgeted Meter Costs)	<u>(60,000)</u>	
Revenue required for Operation, Maintenance, Replacement & Debt Servic	\$959,562	100%
Costs which vary with influent loading to WWTP:		
Electricity	\$145,000	
Chemicals*	59,000	
Sludge*	<u>135,000</u>	
Total Variable Costs	<u>339,000</u>	35%
Balance equals "Fixed" Costs (costs which do not vary with short term changes in loading)	\$620,562	65%

* Estimated amounts. These costs are included in the Contract Op Fee.

STEP TWO: APPLY FIXED/VARIABLE COST PERCENTAGES TO REVENUE REQUIRED FROM RATES

Revenue required for Operation, Maintenance, Replacement & Debt Servic	\$959,562
Subtract Other Revenues (from TABLE 3)	<u>(24,100)</u>
Revenue required from user fees	<u>\$935,462</u>
Fixed cost portion	65% <u>\$604,976</u>
Variable cost portion	35% <u>\$330,486</u>

STEP THREE: CALCULATE CAPACITY CHARGE AND VOLUME RATE FOR METERED USERS

<u>Rates applicable to standard strength use</u>	
Fixed Cost	\$604,976
Total EDUs (from Workpaper WP-01)	<u>1,612.61</u>
Annual Capacity Charge per EDU (rounded)	\$375
<u>Proposed Quarterly Capacity Charge per EDU</u>	<u>\$93.75</u>
Variable Cost	\$330,486
Estimated metered usage - Gallons/Year (old WP-02)	<u>71,229,750</u>
<u>Proposed Volumetric Rate per Gallon</u>	<u>\$0.0046</u>

Bill Comparison Current & Proposed Un-Metered Rates - RESIDENTIAL USERS
Current Rates Increased Approximately 7.3% Effective October 1, 2006

No. of Bedrooms	Assumed Daily Usage GPD	Equivalent Gallons per Quarter	Rates for Unmetered Sewer Users				Current Rates Annual Bill	Proposed Un-Metered Rates Annual Bill
			Current Quarterly Charge \$65.25 per Bedroom	Oct 1, 2006 Quarterly Charge \$70 per Bedroom	Change	Percent		
Single Family Residential Users								
1	75	6,750	\$65.25	\$70.00	\$4.75	7.28%	\$261.00	\$280.00
1	100	9,000	65.25	70.00	4.75	7.28%	261.00	280.00
1	150	13,500	65.25	70.00	4.75	7.28%	261.00	280.00
1	200	18,000	65.25	70.00	4.75	7.28%	261.00	280.00
2	75	6,750	130.50	140.00	9.50	7.28%	522.00	560.00
2	100	9,000	130.50	140.00	9.50	7.28%	522.00	560.00
2	150	13,500	130.50	140.00	9.50	7.28%	522.00	560.00
2	200	18,000	130.50	140.00	9.50	7.28%	522.00	560.00
2	250	22,500	130.50	140.00	9.50	7.28%	522.00	560.00
2	300	27,000	130.50	140.00	9.50	7.28%	522.00	560.00
3	75	6,750	195.75	210.00	14.25	7.28%	783.00	840.00
3	100	9,000	195.75	210.00	14.25	7.28%	783.00	840.00
3	150	13,500	195.75	210.00	14.25	7.28%	783.00	840.00
3	200	18,000	195.75	210.00	14.25	7.28%	783.00	840.00
3	250	22,500	195.75	210.00	14.25	7.28%	783.00	840.00
3	300	27,000	195.75	210.00	14.25	7.28%	783.00	840.00
4	75	6,750	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
4	100	9,000	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
4	150	13,500	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
4	200	18,000	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
4	250	22,500	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
4	300	27,000	261.00	280.00	19.00	7.28%	1,044.00	1,120.00
5	200	18,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
5	300	27,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
5	400	36,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
Two Family Residential Users								
5	300	27,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
5	400	36,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
5	500	45,000	326.25	350.00	23.75	7.28%	1,305.00	1,400.00
6	300	27,000	391.50	420.00	28.50	7.28%	1,566.00	1,680.00
6	400	36,000	391.50	420.00	28.50	7.28%	1,566.00	1,680.00
6	500	45,000	391.50	420.00	28.50	7.28%	1,566.00	1,680.00

Bill Comparison Proposed Metered Rates & Un-Metered Rates - RESIDENTIAL USERS
CURRENT RATES INCREASED APPROXIMATELY 7.3% EFFECTIVE OCTOBER 1, 2006

No. of Bedrooms	Assumed Daily Usage GPD	Equivalent Gallons per Quarter	Proposed Un-Metered Quarterly Charge \$70 per Bedroom	Proposed Metered Rates					Proposed Un-Metered Rates Annual Bill	Proposed Metered Rates Annual Bill
				Quarterly Capacity Charge per EDU \$93.75	Quarterly Volume Charge \$0.0046 per gallon	Total Quarterly Charge	Change	Percent		
Single Family Residential Users										
1	75	6,750	\$70.00	\$93.75	\$31.05	\$124.80	\$54.80	78%	\$280.00	\$499.20
1	100	9,000	70.00	93.75	41.40	135.15	65.15	93%	280.00	540.60
1	150	13,500	70.00	93.75	62.10	155.85	85.85	123%	280.00	623.40
1	200	18,000	70.00	93.75	82.80	176.55	106.55	152%	280.00	706.20
2	75	6,750	140.00	93.75	31.05	124.80	(15.20)	-11%	560.00	499.20
2	100	9,000	140.00	93.75	41.40	135.15	(4.85)	-3%	560.00	540.60
2	150	13,500	140.00	93.75	62.10	155.85	15.85	11%	560.00	623.40
2	200	18,000	140.00	93.75	82.80	176.55	36.55	26%	560.00	706.20
2	250	22,500	140.00	93.75	103.50	197.25	57.25	41%	560.00	789.00
2	300	27,000	140.00	93.75	124.20	217.95	77.95	56%	560.00	871.80
3	75	6,750	210.00	93.75	31.05	124.80	(85.20)	-41%	840.00	499.20
3	100	9,000	210.00	93.75	41.40	135.15	(74.85)	-36%	840.00	540.60
3	150	13,500	210.00	93.75	62.10	155.85	(54.15)	-26%	840.00	623.40
3	200	18,000	210.00	93.75	82.80	176.55	(33.45)	-16%	840.00	706.20
3	250	22,500	210.00	93.75	103.50	197.25	(12.75)	-6%	840.00	789.00
3	300	27,000	210.00	93.75	124.20	217.95	7.95	4%	840.00	871.80
4	75	6,750	280.00	93.75	31.05	124.80	(155.20)	-55%	1,120.00	499.20
4	100	9,000	280.00	93.75	41.40	135.15	(144.85)	-52%	1,120.00	540.60
4	150	13,500	280.00	93.75	62.10	155.85	(124.15)	-44%	1,120.00	623.40
4	200	18,000	280.00	93.75	82.80	176.55	(103.45)	-37%	1,120.00	706.20
4	250	22,500	280.00	93.75	103.50	197.25	(82.75)	-30%	1,120.00	789.00
4	300	27,000	280.00	93.75	124.20	217.95	(62.05)	-22%	1,120.00	871.80
5	200	18,000	350.00	93.75	82.80	176.55	(173.45)	-50%	1,400.00	706.20
5	300	27,000	350.00	93.75	124.20	217.95	(132.05)	-38%	1,400.00	871.80
5	400	36,000	350.00	93.75	165.60	259.35	(90.65)	-26%	1,400.00	1,037.40
Two Family Residential Users										
5	300	27,000	350.00	187.50	124.20	311.70	(38.30)	-11%	1,400.00	1,246.80
5	400	36,000	350.00	187.50	165.60	353.10	3.10	1%	1,400.00	1,412.40
5	500	45,000	350.00	187.50	207.00	394.50	44.50	13%	1,400.00	1,578.00
6	300	27,000	420.00	187.50	124.20	311.70	(108.30)	-26%	1,680.00	1,246.80
6	400	36,000	420.00	187.50	165.60	353.10	(66.90)	-16%	1,680.00	1,412.40
6	500	45,000	420.00	187.50	207.00	394.50	(25.50)	-6%	1,680.00	1,578.00

Bill Comparison Proposed Metered and Un-Metered Rates - OTHER STANDARD STRENGTH USERS

Description	No. of BRs or Title V Units	No. of EDUs	Assumed Daily Usage GPD	Equivalent Gallons per Quarter	Proposed Un-Metered Quarterly Charge \$70.00 per Bedroom	Proposed Metered Rates				
						Quarterly Capacity Charge per EDU \$93.75	Quarterly Volume Charge \$0.0046 per gallon	Total Quarterly Charge	Change	Percent
Large apartment building	92	42	8400	756,000	\$6,440	\$3,938	\$3,478	\$7,415	\$975	15%
Large apartment building	48	20	4000	360,000	\$3,360	\$1,875	\$1,656	\$3,531	\$171	5%
Housing Authority	48	38	7600	684,000	\$3,360	\$3,563	\$3,146	\$6,709	\$3,349	100%
2-family	4	2	400	36,000	\$280	\$188	\$166	\$353	\$73	26%
3-family	5	3	600	54,000	\$350	\$281	\$248	\$530	\$180	51%
3-family	6	3	600	54,000	\$420	\$281	\$248	\$530	\$110	26%
apartments	10	10	2000	180,000	\$700	\$938	\$828	\$1,766	\$1,066	152%
apartments	13	13	2600	234,000	\$910	\$1,219	\$1,076	\$2,295	\$1,385	152%
rented single family	6	1	200	18,000	\$392	\$94	\$83	\$177	(\$215)	-55%

CURRENTLY METERED PUBLIC ACCOUNTS

Proposed Metered Rates

	No. of EDUs	Actual Metered Use GPD	Equivalent Gallons per Quarter	Quarterly Bill At Title V Rate \$0.0070	Quarterly Capacity Charge per EDU \$93.75	Quarterly Volume Charge \$0.0046 per gallon	Total Quarterly Charge	Change	Percent
Elementary School	9	1777	159,930	\$1,120	\$844	\$736	\$1,579	\$460	41%
Library	4	733	65,970	\$462	\$375	\$303	\$678	\$217	47%
Town Hall	1	248	22,320	\$156	\$94	\$103	\$196	\$40	26%

Notes:

- EDU = Equivalent Dwelling Unit. Assumed usage = 200 GPD.

Bill Comparison Current & Proposed Rates - VERY LARGE USERS
Current Rates Increased Approximately 7.3% Effective October 1, 2006

MASONIC HOME

Un-Metered Rates		No. of Title V Units	Quarterly Charge per Unit	Quarterly Bill
Current Rates		556.36	\$65.25	\$36,302
Proposed Effective Oct. 1, 2006		556.36	\$70.00	\$38,945
Proposed Metered Rates		No. of EDUs	Quarterly Charge per EDU	
Capacity Charge		380	\$93.75	\$35,625
Volume Charge			Rate per Gallon	
Average Use		19,368 GPD		
x 90 days = gallons per quarter		1,743,120	\$0.0046	\$8,018
<u>Total Estimated Quarterly Bill</u>				\$43,643
Change from proposed un-metered				\$4,698
Percent				12%

MTA

Un-Metered Rates		No. of Title V Units	Quarterly Charge per Unit	Quarterly Bill
Current Rates	Service Area 5E	399.96		
	Service Area 6W	399.96		
	Total	799.92	\$65.25	\$52,195
Proposed Effective Oct. 1, 2006		799.92	\$70.00	\$55,994
Proposed Metered Rates		No. of EDUs	Quarterly Charge per EDU	
Standard strength rates applied to MTA				
Capacity Charge		440	\$93.75	\$41,250
Volume Charge			Rate per Gallon	
gallons per quarter		4,015,000	\$0.0046	\$18,469
MTA quarterly charge at proposed rates for standard strength waste				\$59,719
Surcharge		Pounds/Qtr	Rate per Pound	
Pounds of Extra-strength BOD		5,740	\$3.28	\$18,831
Pounds of Extra-strength NH3-N		2,697	\$4.29	\$11,579
Total estimated surcharge				\$30,410
<u>Total Estimated Quarterly Bill</u>				\$90,129
Change from proposed un-metered				\$34,135
Percent				61%

Notes:

For proposed rates for standard strength use see TABLE 3.

For proposed extra-strength surcharge rates see Workpaper WP-03.

ATTACHMENT TO SUMMARY REPORT

TOWN OF CHARLTON
WATER AND SEWER COMMISSION

SEWER RATE STUDY

Proposed Rates presented to Commissioners June 26, 2006

Workpapers

Workpaper WP-01	Analysis of Sewer Department Billing Data
Workpaper WP-02	Estimated User Fee Revenues at Proposed Metered Rates Assuming All Private Wells Convert To Metered Rates
Workpaper WP-03	Allocation of Operating Costs to MTA And Calculation of Surcharge Rates
Workpaper WP-04	PLANT LOADINGS - MTA as PERCENT OF WWTP

Analysis of Sewer Department Billing Data

Description	Billing Basis	Quarterly Amount	Annual Amount	CAPACITY BASIS (110 GPD/BR)				No. of Customers	No. of Title V Brs/Units	No. of EDUs	Percent	Est'd Avg		Ratio to Capacity
				subtotals GPD	Total GPD	Percent	GPD					Percent	GPD	
Customers Coded as "Commercial"														
	Units	Rate/Unit												
MTA 5E	399.96	\$65.25	\$26,097		43,996									
MTA 6W	399.96	\$65.25	26,097		43,996									
Total MTAA	799.92		52,194	\$208,776	87,991	23.6%	2	799.92	440.00	27.28%	44,000	23%	2.0	
Masonic Home	556.36		36,302	145,208	61,200	16.4%	1	556.36	306.00	18.98%	18,000	9%	3.4	
subtotal	1356.28		88,496	353,984		40.1%						31.8%	2.4	
Apartments (16 accounts)	302	\$65.25	19,706	78,824	33,220	8.9%	16	302.00	170.00	10.54%	16,600	9%	2.0	
Others (48 accounts)	340.73	\$65.25	22,233	88,932	37,480	10.1%	48	340.73	187.40	11.62%	15,000	8%	2.5	
Total Commercial Account	1999.01		\$130,435	\$521,740		59.1%	67	1,999.01	1,103.40	68.42%	93,600	48%	2.3	
Customers Coded as "Public"														
	Gallons	Rate/Gal.												
Six (6) metered accounts	818,615	\$0.0065	5,321	21,284	8,971		6	81.55	44.86	2.78%	8,950	5%	1.0	
	Units	Rate/Unit												
One flat rate account	4.28	\$65.25	279	1,116	471		1	4.28	2.35	0.15%	200	0.1%	2.4	
Total Public Accounts			\$5,600	\$22,400		2.5%	7	85.83	47.21	2.93%	9,150	5%	1.0	
Customers Coded as "Residential"														
# of BRs	Rate/BR	Qtrly Bill	No. Accts											
1	\$65.25	\$65.25	28	1,827	3,080		28	28.00	28.00	1.74%				
2	\$65.25	\$130.50	134	17,487	29,480		134	268.00	134.00	8.31%				
3	\$65.25	\$195.75	172	33,669	56,760		172	516.00	172.00	10.67%				
4	\$65.25	\$261.00	79	20,619	34,760		79	316.00	79.00	4.90%				
5	\$65.25	\$326.25	8	2,610	4,400		8	40.00	8.00	0.50%				
6	\$65.25	\$391.50	1	392	660		1	6.00	1.00	0.06%				
7	\$65.25	\$456.75	1	457	770		1	7.00	1.00	0.06%				
8	\$65.25	\$522.00	2	1,044	1,760	131,670	2	16.00	2.00	0.12%				
1	\$65.25	\$65.25	2	SrDisc.	131		2	2.00	2.00	0.12%				
2	\$65.25	\$130.50	10	SrDisc.	1,305		10	20.00	10.00	0.62%				
3	\$65.25	\$195.75	21	SrDisc.	4,111		21	63.00	21.00	1.30%				
4	\$65.25	\$261.00	3	SrDisc.	783		3	12.00	3.00	0.19%				
6	\$65.25	\$391.50	1	SrDisc.	392	6,722	1	6.00	1.00	0.06%				
			37											
Total Residential			462	\$84,827	339,308		462	1,300.00	462.00	28.65%	92,400	47%	1.5	
Est'd impact of new 15% senior discount policy				(\$1,008)										
TOTALS				(\$4,033)	\$883,448			372,333	100%		536	3,384.84	1,612.61	100.00%
				\$879,415								71.230	MG/yr	1.9

Estimated User Fee Revenues at Proposed Metered Rates
Assuming All Private Wells Convert To Metered Rates

Description	Gallons	EDUx	Est'd Loadings	Vol / Use charge	Capacity Charge	Quarterly Amount	Annual Amount
Proposed regular strength rates					\$0.0046 per gallon	\$93.75 per EDU	
Commercial Customers							
MTA	Capacity (GPD)	88,000	440.00		\$41,250	\$41,250	
	Volumetric (GPD)			44,000	\$18,469	18,469	
	Pounds of Extra-strength BOD			5,740	\$3.28	18,831	
	Pounds of Extra-strength NH3-N			2,697	\$4.29	11,579	
Total MTA (2 accounts)						90,129	\$360,516
Masonic Home		306.00	18,000	7,556	28,687	36,243	144,971
GPD							
Apartments (16 accounts)		170.00	34,000	14,272	15,938	30,209	120,836
Others (48 accounts)		187.40	15,000	6,296	17,569	23,865	95,461
Total Commercial - 67 Accounts							721,784
Public Accounts							
Six (6) metered accounts							
	Capacity (GPD)	8,971	44.86		4,205		
	Volumetric (Gal/Qtr)	818,615		3,766			
Total						7,971	31,883
One flat rate account		2.35	200	84	221	305	1,219
Total Public - 7 Accounts							33,102
Residential Accounts							
	# BRs		Est'd use based on 200 GPD/EDU				
	1	28.00			2,625		
	2	134.00			12,563		
	3	172.00			16,125		
	4	79.00			7,406		
	5	8.00			750		
	6	1.00			94		
	7	1.00			94		
	8	2.00			188		
		425	85,000		\$35,679	39,844	75,523
	1 Sr Discounts	2.00				188	
	2 Sr Discounts	10.00				938	
	3 Sr Discounts	21.00				1,969	
	4 Sr Discounts	3.00				281	
	6 Sr Discounts	1.00				94	
		37	7,400		\$3,106	3,469	6,575
Est'd impact of new senior discount policy							(3,945)
Total Residential - 462 Accounts							324,445
Total Commercial - 67 Accounts							721,784
Total Public - 7 Accounts							33,102
Total calculated revenue							\$1,079,330
							(assumes all users convert to metered rates)

**Allocation of Operating Costs to MTA
And Calculation of Surcharge Rates**

The following analysis separates the costs of wastewater collection and treatment and allocates costs to the MTA facilities based on the data available, engineering principles and experience with other utility systems. The results are subject to change as additional data becomes available.

Total Budget - FY 2007 (excluding "meter costs")	\$959,562
less: Costs related to collection system and general administration	
Old Line Decommission	\$15,000
Maint/Billing	1,583
Office Supplies	2,900
Admin Salaries & Wages	22,000
Admin Benefits	10,800
Admin Expenses	3,000
Debt Service (Water Resource Project)	7,263
Total deductions for collection system and general administration	<u>(62,546)</u>
Subtotal	897,016
less: Costs related directly to serving MTA (not any yet determined)	\$0
	<u>0</u>
Estimated cost of treating all wastewater	<u><u>\$897,016</u></u>

Allocation to load parameters

	FLOW	TSS	BOD	NH3-N	Totals
Allocation Factors:					
Percent	30%	30%	30%	10%	100%
Allocated costs	\$269,105	\$269,105	\$269,105	\$89,702	\$897,016

Portion attributable to MTA (preliminary estimate)

(Percentage based on Workpaper WP-04)	24%	24%	65%	73%	
Allocated cost of treating MTA	\$64,585	\$64,585	\$174,918	\$65,482	\$369,571
Directly allocable costs (none yet determined)					0
Add back allocation of costs related to collection system and general administration, - allocation based on number of accounts:					
MTA accounts	2				
Total accounts	536	Allocation	0.37%	\$62,546	233
Total allocated cost of serving MTA (preliminary estimate)					\$369,804
less prorated portion of Other Revenues			(24,100)	38.5%	<u>(9,288)</u>
Net cost of serving MTA					\$360,516

Calculation of Surcharge Rates

	TSS	BOD	NH3-N
Allocated cost of treating MTA	\$64,585	\$174,918	\$65,482
MTA Loadings: pounds per year	33,485	56,444	16,144
Calculated cost per pound	\$1.93	\$3.10	\$4.06
adjustment to recover MTA net cost	\$0.00	\$0.18	\$0.24
Proposed Surcharge Rates	<u>\$1.93</u>	<u>\$3.28</u>	<u>\$4.29</u>

PLANT LOADINGS - MTA as PERCENT OF WWTP

	FLOW			Rolling 12 month Average			BOD - 12 month rolling averages					NH3-N - 12 month rolling averages				
	WWTP MGD	MTA MGD	percent MTA	WWTP MGD	MTA MGD	percent MTA	WWTP mg/l	MTA mg/l	WWTP #/mo.	MTA #/mo.	percent MTA	WWTP mg/l	MTA mg/l	WWTP #/mo.	MTA #/mo.	percent MTA
							Rolling 12 month Average					Rolling 12 month Average				
May 03	0.210	0.037	17.69%	0.216	0.035	16.11%	123	280	6,752	2,518	37.29%	40	91	2,205	818	37.12%
June	0.320	0.043	13.38%	0.231	0.035	15.38%	119	280	6,949	2,487	35.78%	38	91	2,238	808	36.11%
July	0.257	0.048	18.81%	0.243	0.036	14.97%	117	280	7,193	2,630	36.56%	38	91	2,359	855	36.23%
Aug	0.254	0.052	20.34%	0.253	0.037	14.61%	122	280	7,842	2,681	34.18%	40	91	2,545	871	34.24%
Sept	0.225	0.036	16.19%	0.259	0.037	14.38%	125	280	8,212	2,610	31.78%	41	91	2,673	848	31.73%
Oct	0.259	0.035	13.54%	0.265	0.037	14.05%	128	280	8,606	2,698	31.35%	42	91	2,819	877	31.10%
Nov	0.290	0.035	12.09%	0.268	0.037	13.83%	130	280	8,884	2,601	29.27%	43	91	2,933	845	28.81%
Dec	0.367	0.034	9.26%	0.273	0.037	13.61%	128	280	8,854	2,688	30.35%	43	91	2,994	873	29.17%
Jan 04	0.298	0.028	9.22%	0.275	0.037	13.50%	129	429	9,033	4,120	45.61%	44	124	3,111	1,191	38.27%
Feb	0.238	0.027	11.51%	0.277	0.037	13.43%	130	429	9,152	3,854	42.11%	45	124	3,175	1,114	35.09%
Mar	0.261	0.029	10.99%	0.271	0.037	13.57%	137	429	9,421	4,080	43.31%	47	124	3,231	1,179	36.51%
Apr	0.295	0.044	14.86%	0.273	0.037	13.68%	130	429	9,010	4,008	44.48%	44	124	3,071	1,158	37.72%
May	0.329	0.039	11.91%	0.283	0.038	13.26%	131	429	9,398	4,160	44.27%	43	124	3,063	1,202	39.25%
June	0.267	0.039	14.53%	0.278	0.037	13.35%	146	429	10,314	3,990	38.68%	44	124	3,103	1,153	37.17%
July	0.242	0.045	18.69%	0.277	0.037	13.32%	164	429	11,508	4,095	35.58%	44	124	3,070	1,183	38.56%
Aug	0.128	0.048	37.23%	0.267	0.037	13.72%	165	429	11,137	4,059	36.45%	42	124	2,840	1,173	41.31%
Sept	0.148	0.039	26.56%	0.260	0.037	14.15%	168	429	11,034	3,954	35.83%	40	124	2,634	1,143	43.38%
Oct	0.161	0.039	24.27%	0.252	0.037	14.74%	173	429	10,949	4,121	37.64%	38	124	2,431	1,191	49.00%
Nov	0.175	0.040	22.98%	0.242	0.038	15.50%	181	429	10,995	4,034	36.69%	39	124	2,359	1,166	49.42%
Dec	0.232	0.047	20.27%	0.231	0.039	16.72%	201	429	11,553	4,288	37.11%	39	124	2,254	1,239	54.99%
Jan 05	0.262	0.032	12.35%	0.228	0.039	17.12%	202	439	11,460	4,433	38.68%	37	122	2,086	1,232	59.05%
Feb	0.223	0.031	14.03%	0.227	0.039	17.36%	203	439	11,406	4,037	35.40%	36	122	2,029	1,122	55.31%
Mar	0.215	0.032	14.75%	0.223	0.040	17.77%	205	439	11,259	4,499	39.96%	36	122	1,991	1,250	62.79%
Apr	0.193	0.041	20.96%	0.215	0.039	18.34%	205	439	11,259	4,323	38.40%	36	122	1,991	1,201	60.34%
May	0.171	0.040	23.21%	0.201	0.039	19.56%	215	439	11,046	4,473	40.50%	38	122	1,944	1,243	63.95%
June	0.170	0.039	23.17%	0.193	0.039	20.41%	213	439	10,450	4,334	41.48%	39	122	1,892	1,204	63.65%
July	0.164	0.072	44.07%	0.187	0.042	22.33%	202	439	9,559	4,735	49.54%	38	122	1,809	1,316	72.76%
Aug	0.150	0.061	40.82%	0.189	0.043	22.70%	198	439	9,454	4,860	51.41%	38	122	1,816	1,351	74.37%
Sept	0.142	0.049	34.43%	0.188	0.044	23.19%	195	439	9,276	4,791	51.64%	38	122	1,819	1,331	73.20%
Oct	0.264	0.049	18.71%	0.197	0.044	22.61%	183	439	9,165	5,048	55.08%	37	122	1,835	1,403	76.47%
Nov	0.198	0.041	20.72%	0.199	0.045	22.43%	179	439	9,054	4,894	54.05%	35	122	1,781	1,360	76.37%
Dec	0.191	0.038	19.72%	0.195	0.044	22.42%	165	439	8,191	4,969	60.67%	35	122	1,757	1,381	78.60%
Jan 06	0.200	0.033	16.56%	0.190	0.044	23.06%	164	439	7,894	4,978	63.06%	37	122	1,797	1,383	76.97%
Feb	0.184	0.035	18.72%	0.187	0.044	23.60%	163	439	7,717	4,524	58.62%	39	122	1,839	1,257	68.38%
Mar	0.175	0.029	16.43%	0.184	0.044	23.90%	166	439	7,708	4,980	64.61%	41	122	1,883	1,384	73.48%

per year	67.01274	16.01525	24%	92497.939	59760.53	65%	22600.62	16607.71	73%
USE FOR PRELIMINARY ANALYSIS									
MG/L				166	447		40	124	