



Pipe Leak



Pipe Tuberculation



Outdated 1978 Control Panel



Lime Feed- Original 1978 Equipment

RATE INCREASE
and
CAPITAL PROJECTS OVERVIEW
BOARD OF WATER COMMISSIONERS
Town of Cohasset

Glenn Pratt, Chairman
Nathaniel Palmer, Vice-Chairman
John K. McNabb, Jr., Clerk
March 7, 2007

Proposed Water Rate Increase

The Water Commission proposes a change in the water rates to accomplish the following:

(a) build the \$150,000 hydrant rental into the water rates instead of the current practice of charging the Town a per hydrant fee to pay from property taxes each year, and (b) to generate income for needed water system improvements as we continue our long range capital program. These water system improvements include (a) improvements to the Lily Pond Water Treatment Plant to better optimize drinking water quality, (b) replacement of undersized water mains in the Little Harbor area to take place at the same time as the Sewer Department pipe installation in that area, and (c) a major retrofit of the Treatment Plant to install a MIEX pretreatment system which will improve drinking water quality and allow us to meet increasingly stringent federal drinking water regulatory requirements.

Our rates change by 3% for quarterly charge and add a standby fire service fee of \$15 per quarter for customers in step one (56% of our customers are in this step). Water rates for step one increase 15% and 40% for step two. We expect the typical annual bill to be \$624. The typical bill for Hingham residents is \$665. The new rates change the private hydrant fee so it will be an ascending rate which increases with the size of the meter. Passage of this Article will allow the Water Department to continue its long term program to improve all areas of the Cohasset Water System to provide better quality drinking water, improved fire protection, and to meet federal regulatory requirements.

The following pages provide supporting data, for the requested rate increases.

New Rate Schedule

Revised Article 4:

Article 4 Water Rate Increase & Restructuring

To see if the Town will vote to amend the current schedule of water rates by adopting the following new schedule of Rate #1, Metered Residential and Non Residential Water Rates, to take effect April 15, 2007:

“RATE #1 (Metered Residential and Non Residential)

Size of Meter	Charge per quarter	plus charge per 100 cubic feet (cf) per quarter	no multiplier
1st Step	2nd Step		
0-2,000	2,001 or more		
cf/quarter	cf/quarter		
5/8”	\$ 37.85	\$5.16	\$10.32
3/4”	\$ 37.85	\$5.16	\$10.32
1”	\$ 88.74	\$5.16	\$10.32
1 1/2”	\$ 173.65	\$5.16	\$10.32
2”	\$ 275.36	\$5.16	\$10.32
3”	\$ 545.50	\$5.16	\$10.32
4”	\$ 802.60	\$5.16	\$10.32
6”	\$ 2,000.00	\$5.16	\$10.32

Stand-By Fire Service:

5/8”	\$ 15.00 per quarter
¾”	\$ 15.00 per quarter
1” or larger	\$ 40.00 per quarter

and further to see if the Town will amend the current schedule of water rates by deleting “RATE 2 Public Fire Protection Charge per Hydrant Per unit per year \$375.00”;

and further to see if the Town will amend the current schedule of water rates by adopting a new schedule of RATE 3 Private Fire Protection Charge Per Hydrant to take effect April 15, 2007

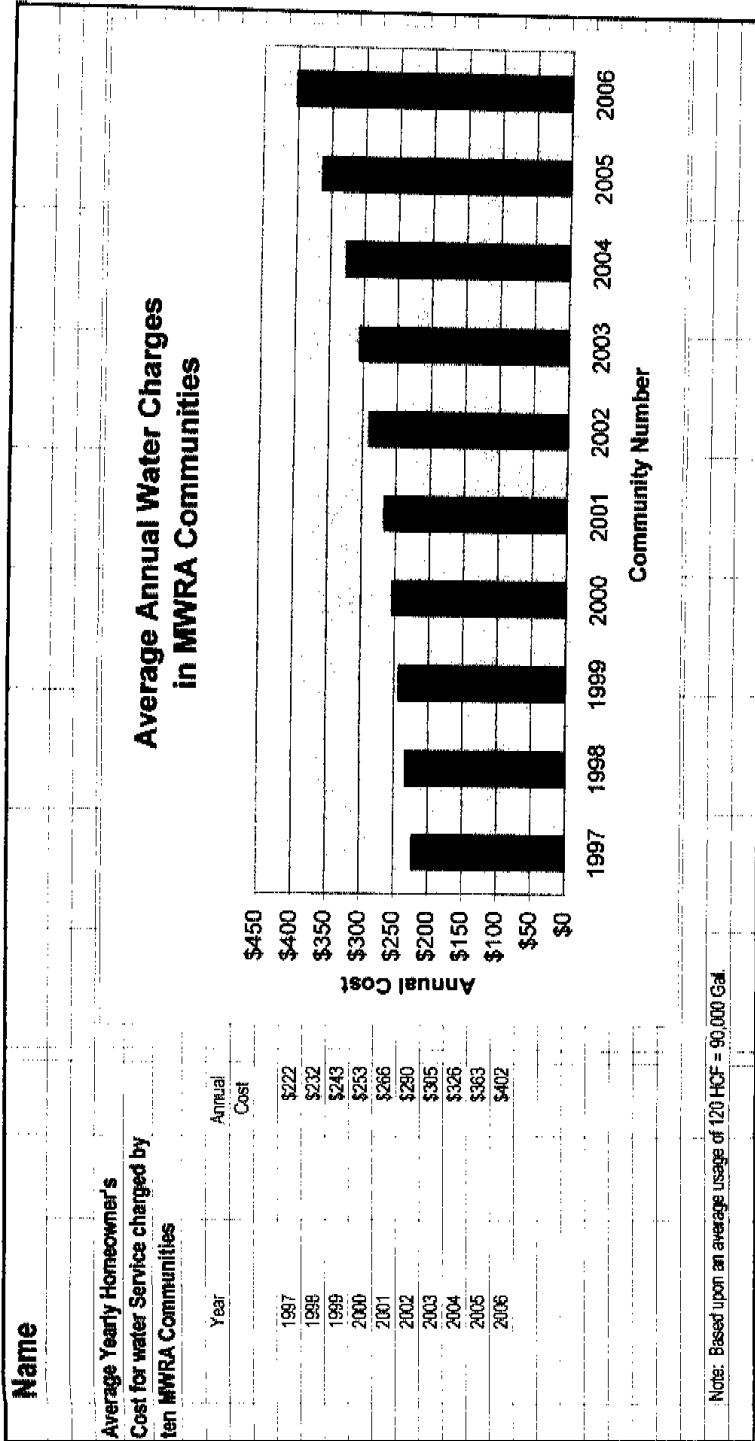
“RATE 3 Private Fire Protection Charge Per Hydrant

Size of Connection	Annual Charge
4” or less	\$207.00
6”	\$600.00
8”	\$1,280
10”	\$2,300
12”	\$3,700

; or to act on anything relating thereto.

Comparative Rates (MWRA)

Prepared for the Cohasset Water Department

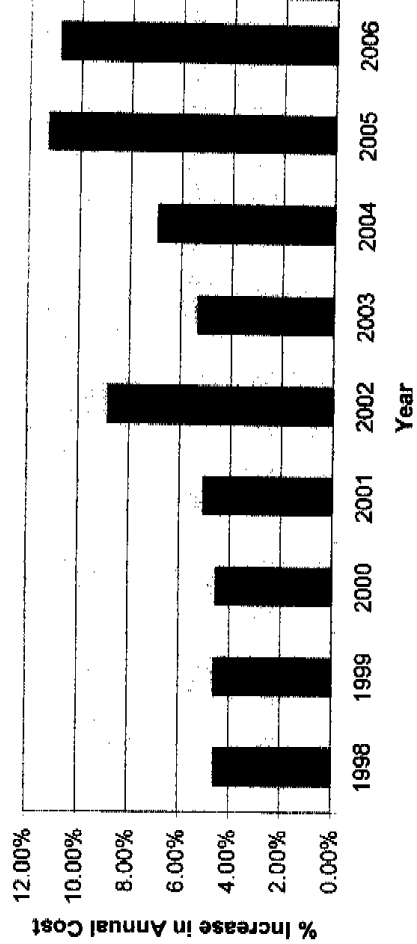


Prepared for the Cohasset Water Department

Average Yearly Homeowner's
Cost for water service charged by
ten MWRA Communities

Year	Percent Increase From Previous Year
1998	4.55%
1999	4.57%
2000	4.50%
2001	5.02%
2002	8.80%
2003	5.28%
2004	6.91%
2005	11.21%
2006	10.78%

% Increase in Average Annual Water Charges
in MWRA Communities



Note: Based upon an average usage of 120 HCF = 90,000 Gal.

Projections

Changes were made when we began our rate study to work with actual YTD information, thus the difference from the Budget submitted in November '06.

1. Our '07 projected revenue was recalculated based on an actual trend and the anticipated impact in the fourth billing period FY '07 of the proposed rate increase.
2. Our income projections were revised for FY '08 in two areas. Sale of water to Linden Ponds, reduced by \$100,000 because their project is not coming on line as originally scheduled. We also reduced System Development Charges payments to \$0 from \$150,000. We have projected income in this line item for the last two budget years, because of permitting delays, none of the projects have requested connection to our system, and we have not received the budgeted revenue. Our current plan is to book System Development Charges as they occur and not budget for them.

Cohasset Water Dept. - Fiscal Projections

Budget Year	2006	2007	2008	2009	2010	
EXPENSES						
General Budget	\$1,069,231	\$1,189,600	\$1,207,600	\$1,300,000	\$1,400,000	\$1,400,000
Town Services	\$31,296	\$32,000	\$32,000	\$32,000	\$35,000	\$35,000
Capital						
Maintenance	\$100,000	\$0	\$0	\$100,000		
Debt --Interest Payments Due	\$554,820	\$701,721	\$904,000	\$925,385	\$944,553	\$944,553
Debt --Principal Payments Due	\$726,618	\$680,159	\$852,000	\$883,443	\$977,913	\$977,913
SRF Loan (\$3 million)				\$213,000	\$93,000	\$93,000
SRF Loan (\$3 million)					\$291,000	\$291,000
New Debt (\$5 million) - Interest & principal					\$80,000	\$80,000
TOTAL BUDGET	\$2,481,965	\$2,603,480	\$2,995,600	\$3,453,828	\$3,821,466	\$3,821,466
INCOME						
User charges	\$2,239,137	\$2,293,280	\$2,682,971	\$2,771,207	\$2,899,242	\$2,899,242
Wholesale Water Sales	\$0	\$0				
Hydrant Rental	\$52,091	\$75,000	\$150,000	\$150,000	\$150,000	\$150,000
Private Fire Protection			\$31,000	\$31,000	\$32,000	\$32,000
Liens	\$0	\$0	\$0	\$0	\$0	\$0
Water Fees	\$94,000	\$44,000	\$44,000	\$44,000	\$50,000	\$50,000
Penalties & Interest	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000
System Development Charge	\$36,700	\$40,000	\$0	\$125,000	\$100,000	\$100,000
Sale of Water to Linden Ponds	\$37,562	\$100,000	\$125,000	\$300,000	\$465,000	\$465,000
User Increase due to New Development				\$40,000	\$40,000	\$40,000
TOTAL INCOME	\$2,477,490	\$2,570,280	\$3,050,971	\$3,479,207	\$3,754,242	\$3,754,242
Net Income/(deficit)	-\$4,475	-\$33,200	\$55,371	\$25,379	-\$67,224	-\$67,224

Current Capital Projects

Use of Debt

The following table shows how our use of debt has been allocated:

Treatment Plant	14%
Distributed	78%
Land/Resource Protection	8%

Insert Spread Sheet

Water Department Debt Use Summary

FY2008 WATER DEPT. BUDGET – DEBT SERVICE

Debt service accounts for 58.6% of the FY2008 Water Department Budget, because of the many capital improvement projects, most initiated after 1994, for the improvement, maintenance, and upgrade of the Departments capital assets. Most loans are for twenty years, and

TABLE 3				
WATER DEPARTMENT DEBT SERVICE Principal FY2007 - FY2010				
Debt Service - Principal	FY2007	FY2008	FY2009	FY2010
Water Treatment Plant	73,000	73,000	73,000	73,000
Water Distribution System	123,050	-		
Water Distribution System(Refi)	18,109	141,454	138,186	135,105
Water Distribution System	50,000	50,000	46,000	45,000
Lily Pond Land (Refi)				
Water Distribution System	100,000	100,000	100,000	90,000
Water Distribution System	120,000	120,000	120,000	120,000
Water Wolf Pit	10,000	10,000	10,000	10,000
Water Pipe & Wellhead (2,617,000)	5,000	25,000	25,000	25,000
Water Treatment Plant 1 (2,617,000)	20,000	25,000	25,000	25,000
Water Pipe Replacement 1 (2,617,000)	10,000	55,000	55,000	55,000
Water Pipe Replacement 2 (2,617,000)	5,000	30,000	30,000	30,000
Water Treatment Plant 2 (2,617,000)	30,000	35,000	35,000	35,000
Water Maintenance (2,617,000)	10,000	15,000	15,000	15,000
Water Planning 1 (2,617,000)	2,000	2,000	2,000	3,000
Water Planning 2 (2,617,000)	3,000	3,000	3,000	2,000
Hammond Ave Credit	(10,000)	(10,000)	(10,000)	(10,000)
Water Distribution (2,400,000)	15,000	15,000	15,000	15,000
Water Land Acquisition (2,400,000)	10,000	10,000	10,000	10,000
Water Protection (2,400,000)	5,000	5,000	5,000	5,000
Water Treatment Plant (2,400,000)	25,000	25,000	25,000	30,000
Newtonville Credit	(4,000)	(4,000)	(4,000)	(4,000)
Water Mains (3,000,000)	25,000	25,000	25,000	30,000
Water Land Acquisition (3,000,000)	15,000	15,000	15,000	15,000
Water Planning (3,000,000)	10,000	10,000	10,000	10,000
Water Equipment (3,000,000)	10,000	10,000	10,000	10,000
Water Note	-	15,000	45,000	99,000
Water Note	-	-	-	43,333
Water - SRF	-	49,452	57,761	58,928
Water - SRF	-	2,318	2,708	2,763
Water - SRF	97,000	-	-	-
PRINCIPAL - Subtotal	777,159	852,224	883,655	978,129

include increases in the required payments in the first few years. As you can see in Table 3, the Debt Service Principal Payments are expected to increase from \$777,159 in FY2007 to \$978,129 in FY129 just from existing debt. Total principal payments of \$852,224 are projected in FY2008. *(Note: While the Town Accountants office makes these projections based on the best information each year, there sometimes are changes or adjustments which result in different*

amounts actually having to be paid each year.) The debt for the construction of the Lily Pond Treatment Plant was a 36-year loan which we are still paying back principal at \$73,000 each year.

This spreadsheet also shows credits accrued to the Water Department for assisting the Town with drainage work in the Hammond Ave. area (\$10,000 credit per year) and construction work in the Newtonville area (\$4,000 credit per year). In those projects while the Water Department was replacing water mains we also installed drainage structures in a combined project to save money and reduce disruption from having two separate projects.

Many of the more recent projects have been financed through a \$21,000,000 authorization from the Drinking Water State Revolving Fund (SRF) program which allows us to

borrow at the low rate of 2%, which saves the Water Department ratepayers thousands of dollars in avoided interest costs.

Additional loan obligations will be need to be made in the next few years. We are preparing plans for a major retrofit of the Lily Pond Water Treatment Plant to improve its treatment process by installing a MIEX pretreatment system which will markedly improve drinking water quality and allow to us to be in compliance with upcoming stringent drinking water standards that we could not meet without this upgrade. Interest payments for loans are also a major expense. Usually when a loan is first written the interest cost is more than the principal and then is reduced according to a formula based on the interest rate for the remaining principal left to be paid.

Another category of loans is for land acquisition to protect watershed quality. Some of our acquisition costs have been supplemented by a 50% grant from the state, and Cohasset Preservation Committee assistance for some others.

These figures come directly from the Town Accountant.

Water (3670.000)40 WATERBODY DEPRECIATION INTEREST - \$3200,000 \$40,000

Summary - Distribution System Capital Improvements

Since the Water Emergency in 1994 the Water Commission has planned and implemented an aggressive Distribution System Capital Improvement Project. This began with the 1996 Tutela Report that recommended building a second water storage tank, which was completed on Scituate Hill in 2000, and a plan for improvements to the distribution system. That long range plan has been supplemented and updated year to year.

Distribution system improvements since 1994:

Phase	Year(s)	#feet improved	Principal results & benefits
Phase I	1995	9,250 (1.75 miles)	Ended water crisis; improved water flow
Phase II	1995-97	21,810 (4.13 miles)	Improved fire flows & water quality
Phase III+	1997-01	17,390 (3.29 miles)	Improved fire flows & water quality
Contract 7,8,9	2002-03	7,330 (1.40 miles)	Improved fire flows & water quality
Contract 10,11	2003-04	6,770 (1.28 miles)	Improved fire flows & water quality
Contract 12	2004	8,630 (1.63 miles)	Improved fire flows & water quality
Route 3A	2002-05	4,360 (0.82 miles)	Extended service area
Bow Street	2005	660 (0.13 miles)	Improved fire flows & water quality
Contract 1.01	2005	5,350 (1.01 miles)	SRF, Improved fire flows & water quality
Contract 3.01	2006	300 (0.06 miles)	SRF, Improved fire flows & water quality

Total 81,850 ft (15.50 miles) (Total 43% of the 36 miles of the system)

Impacts of Distribution System Improvements Since 1994

Water Distribution System Performance Characteristics	Without Improvements (i.e., 1994 levels)	With Improvements 1994 - 2006	% change
<u>System Age</u> , Weighted Average (feet)	74 Years	36 Years	49%
<u>System Pipe Diameter</u> , Weighted Average (feet)	7.5 inches	8.9 inches	119%
<u>System "C" Value</u> , Weighted Average (feet) Note- higher values indicate less pipe friction or a better conditioned pipe	68	100	147%
<u>System Pipe Capacity</u> , Weighted Average (feet) at a set Hydraulic Gradient (0.001 ft/ft)	121 gallons per minute	248 gallons per minute	205%

Summary - Lily Pond Water Treatment Plant Improvements

The Water Commission had Weston & Sampson complete a Lily Pond Treatment Plant Capital Improvement Plan in 2002 and has been implementing improvements to the Plant since then based on that Plan as adjusted to changing needs year to year. The CIP has been supplemented by a Disinfection Byproducts Report in 2005 which recommended short term and long term measures to reduce the levels of DBPs in finished water to comply with federal requirements.

**COHASSET, MASSACHUSETTS
LILY POND WATER TREATMENT PLANT
CAPITAL IMPROVEMENTS**

PROCESS	FISCAL YEAR									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Lily Pond										
Intake Structure										
Raw Water Pumping										
MIEX Pretreatment										
Rapid Mix										
Flocculation										
Sedimentation										
Filtration										
Clearwell										
Finished Water Pumping										
Disinfection										
Chemical Addition										
Instrumentation/SCADA										
Residuals										
Building										

	Completed improvements
	Planned improvements 2007-2008
	Planned improvements 2009-2010

COMPLETED FY 2002

- Replaced flocculator drives, paddles and shafts
- Replaced tube settlers and chain and flight sludge system in sedimentation basins
- Installed new mixing basin pH meter and probe
- Recauked exterior masonry control joints
- Waterproofed exterior architectural block on WTP building and garage
- Repaired WTP roof, installed new roof on garage
- Repaired/replaced HVAC components for lime dust collector

COMPLETED FY 2003

- Replaced finished water pumps and motors, installed VFDs on the new motors
- Installed clearwell level instrument, connected to SCADA
- Painted pump room, filter room, and hall ceilings, floor, and walls

COMPLETED FY 2005

- Replaced the filter media
- Installed clearwell baffles and new filter effluent chlorination point

PROJECTED WORK FY 2007-2008

- Replace rapid mixers
- Replace raw water flow meter
- Install air scour system for filters
- Construct third lagoon and make improvements to two existing lagoons
- Improve the intake structure, including construction of a building to house the intake
- Install in-pond aeration system
- Upgrade the permanganate system

ESTIMATED TOTAL FY 2007-2008 \$1,600,000

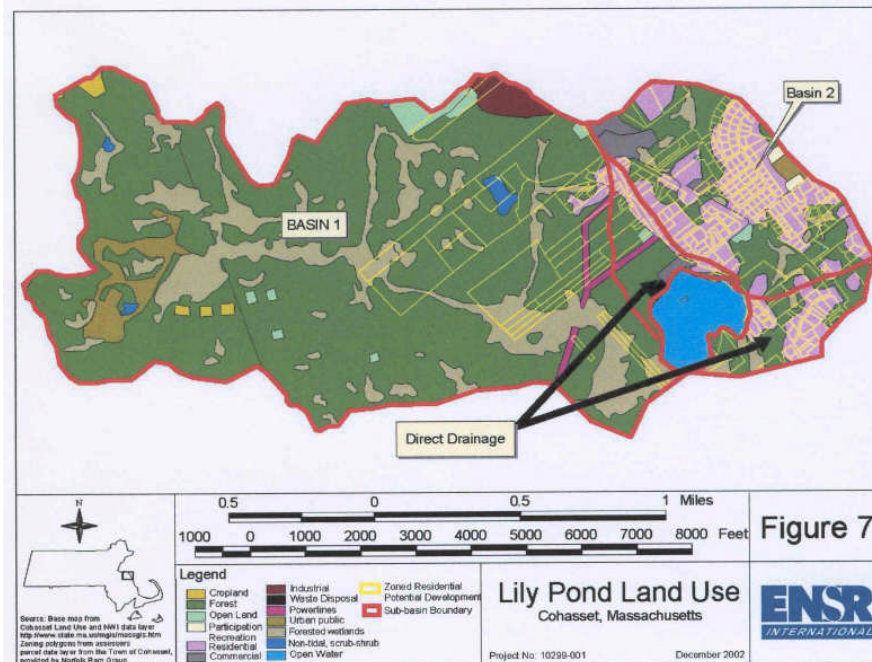
PROJECTED WORK FY 2009-2010

- Install MIEX pretreatment system
- Replace raw water pumps and install VFDs
- Replace generator ATS
- Construct residuals decant/recycle tank

ESTIMATED TOTAL FY 2009-2010 \$5,000,000

Summary - Watershed Protection Improvements

The Water Commission has been taking action to protect the sources of the public drinking water supply, by implementing the recommendations of the Source Water Supply Protection Plan, prepared in 2000 by Norfolk Ram for the Water Department. That Plan was followed by the Lily



Pond Limnology Report completed in 2002 by ENSR. The ENSR report included a map of the sub-basins for the Lily Pond Watershed, which showed Basin 1, the Brass Kettle Brook sub-watershed, which is almost completely undeveloped, and Basin 2, the Peppermint Brook sub-watershed, which is heavily developed. Therefore, the principal strategy for protection of

Lily Pond is to (1) acquire land in Basin 1 to prevent further development there, and (2) construct Raingardens in Basin 2 to reduce the adverse impacts of development.

Land Acquisition

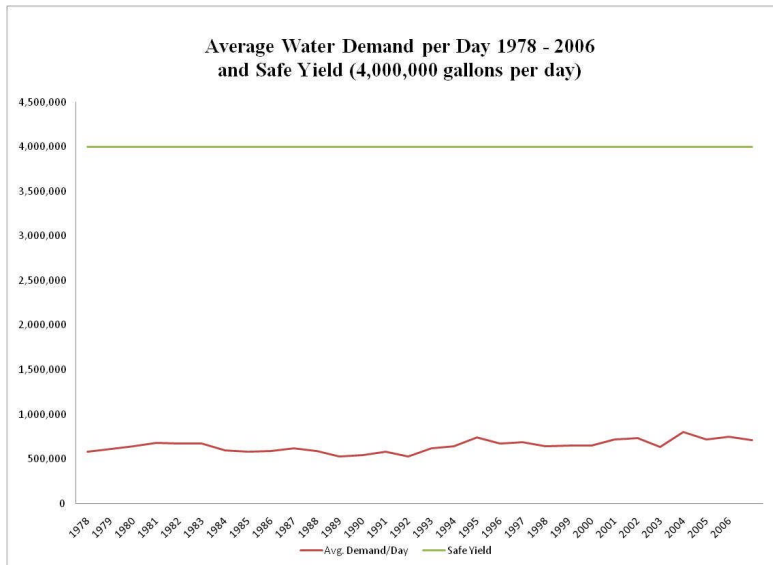
Since 2002 we have acquired over 115 acres to protect the watershed.

Parcel ID#	Owner Name	Owner Address	City	State	Zip	Acreage	Purchase Price	Location
65-010	Bigelow, Frederick S. Jr.	10 East Acres Dr.	Pennington	NJ	08534	6.8	\$170,000.00	Off King Street
56-016A	Brown, Dorothea Trust	1429 Majohn Ave.	Clearwater	FL	33756-2430	4	\$200,000.00	Off Doane
56-014	Brown, Dorothea Trustee	1429 Marjohn Ave.	Clearwater	FL	33756-2430	1		Off Doane
56-016	Brown, Dorothea Trustee	1429 Majohn Ave.	Clearwater	FL	33756-2430	1.9		Off Doane
60-012	Grosvenor Trust Co. Ltd. As/Of Freedom Trust					2.5	Donation	Behind Lily Pond
65-018	James, Laura & Basin & Mabel ET David B. Arnold	2 Monument Circle	Hingham	MA	02043	9.8	\$850,000.00	271 King Street
65-006	Leighton, Luther S & Phyllis B	309 King Street	Cohasset	MA	02025	4	\$400,000.00	Off King Street
85-020	Patterson, Maude	546 N. Hunt	Newark	NJ	07107			Off Doane
54-024	Rachel Ashton	15 Findial Drive	Newark	DE	19711	1	\$45,000.00	Off Riverview Drive
54-025	Rachel Ashton	15 Findial Drive	Newark	DE	19711	5.5		Off Riverview Drive
54-033	Sawchuk, Olga	302 N. Main St.	Cohasset	MA	02025	0.74		\$108,000.00
55-51/52	Cogill, David	Church Street	Cohasset	MA	02025			Church Street
66-005	Wadsworth, David H & Edward N	44 Fayette St.	Boston	MA	02116	4.5	\$33,000.00	Off King Street
59-011	Wadsworth, EN & DH & GN & Arragon R F	44 Fayette Street	Boston	MA	02116	5	\$50,000.00	Lily Pond Lane
65-008	Watson, Christina J & James O. c/o Tina Watson	118 S. Main St.	Cohasset	MA	02025	5.5	\$123,750.00	Off King Street
65-009	Williams, John R.	48 Fort Hill St.	Hingham	MA	02043	6	\$135,000.00	Off King Street
	James & Eleanor Campbell	44 Ripley Road	Cohasset	MA	02025	8	\$170,000.00	Whitney Woods
						66.24	\$2,284,750.00	

FY2008 WATER DEPARTMENT BUDGET

Performance Indicators (or, "What did I get for my money?")

1. Water Demand Compared to Safe Yield



Cohasset Water use has increased a little since the Lily Pond Water Treatment Plant and Aaron River Reservoir were built in 1978, but has always been way below the Safe Yield of 4,000,000 gallons per day.

In 1978 the average daily demand was 582,192 gallons, and in 2006 it was 752,592.

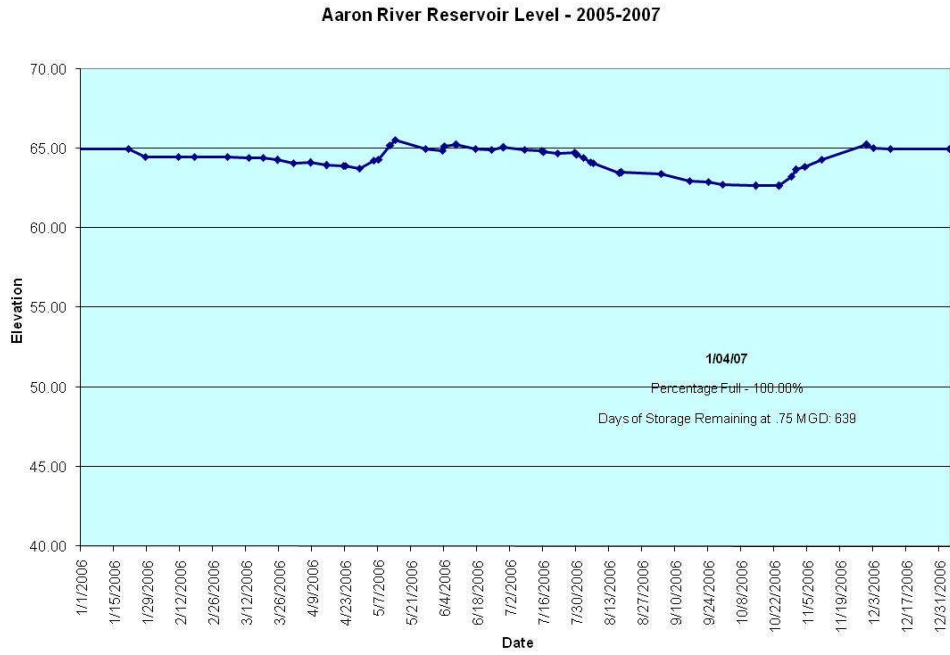
Currently the upper limit for water usage in Cohasset is 3 million gallons, the capacity of the Lily Pond Water Treatment Plant, but the Plant

can be expanded to supply up to the 4,000,000 gallons per day Safe Yield.

2.

Aaron River Reservoir levels.

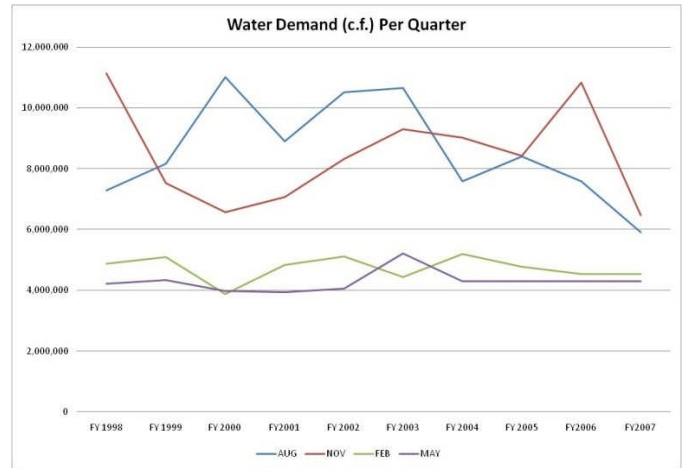
The Reservoir is almost always full, elevation 65 feet.



day

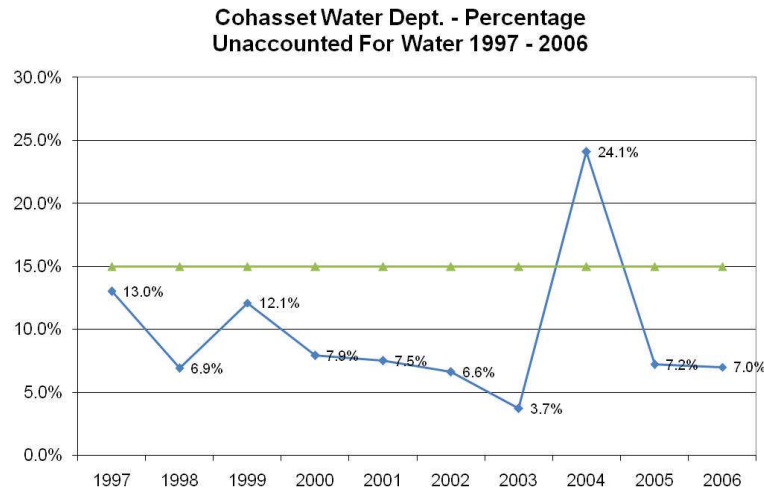
3. Quarterly Water Demand in Cubic Feet

Most water demand, not surprisingly, is in the last two quarters of a Fiscal Year, in the August and November quarters when homeowners run lawn sprinklers.



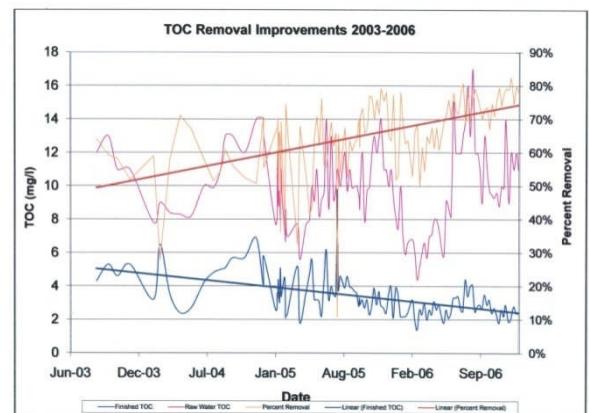
4. Unaccounted For Water

Note: the 24.1% in 2004 was from an error in the Master Meter. The 2006 figure is an estimate.



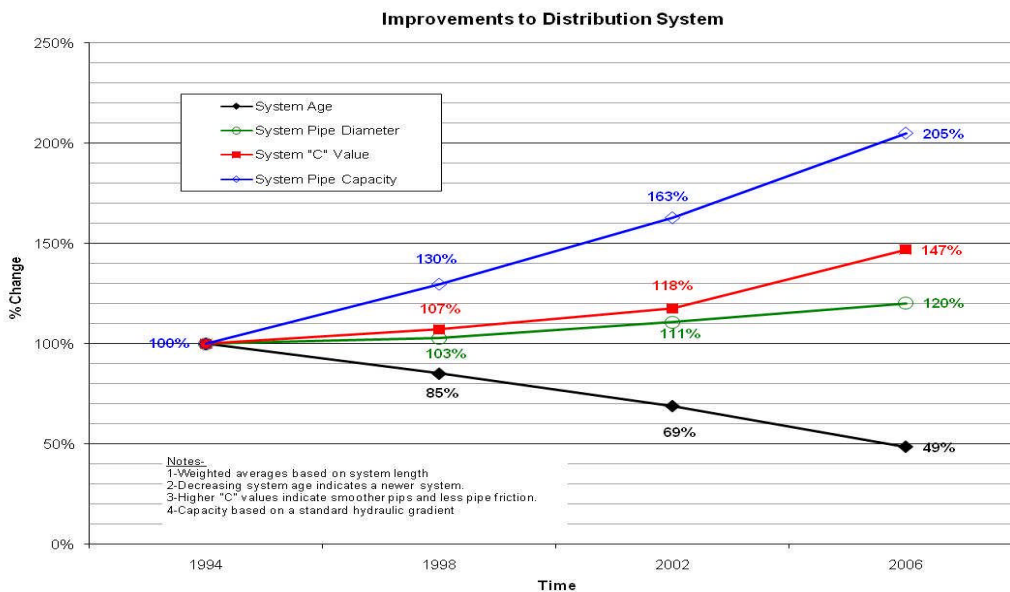
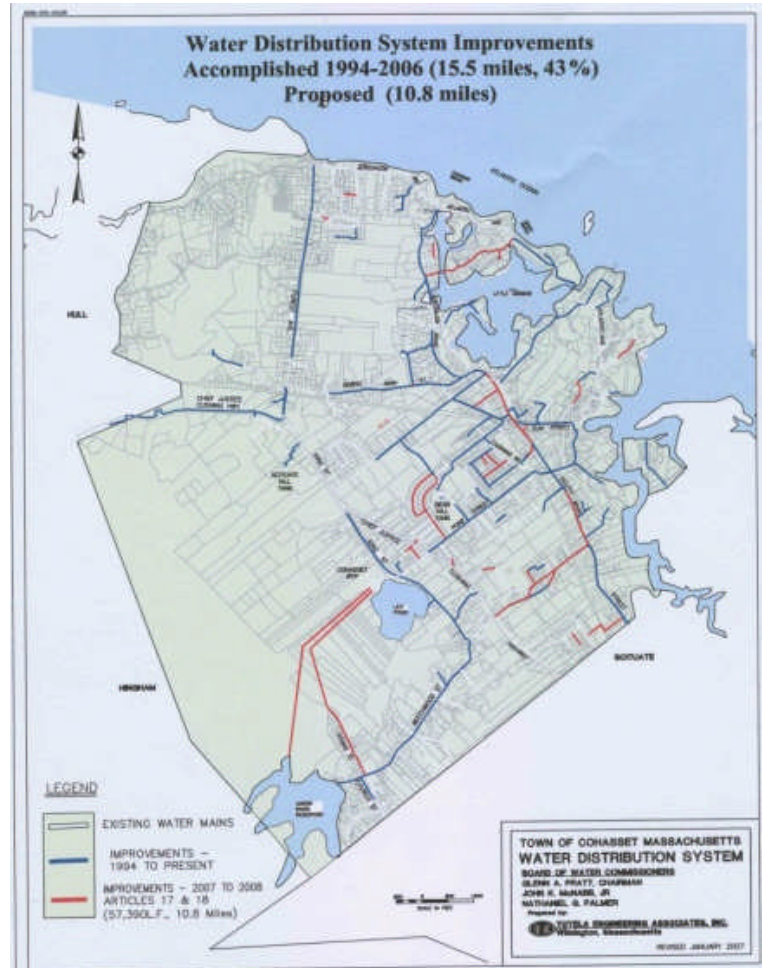
5. Drinking Water Quality

Removal of Total Organic Carbon (TOC) is a critical element in producing high quality drinking water. As the graph to the right shows, we have been very successful in TOC removal. Our continual optimization of the treatment process and many improvements to the Treatment Plant, including the recent replacement of the filter media, have resulted in dramatic measurable improvements like this in the quality of Cohasset's tap water.



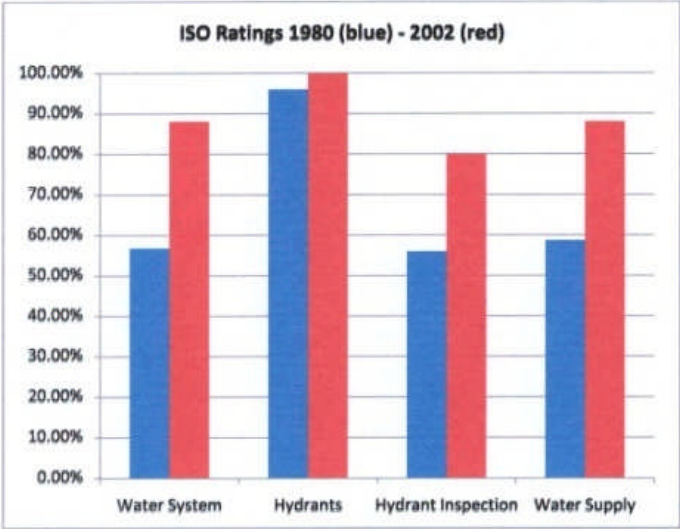
6. Improvements to the Distribution System

The water distribution and storage system is a critical element in the Towns fire protection service. Our ongoing distribution system improvement program has resulted in the replacement or rehabilitation of 15.5 miles of water mains, 43% of the 36 miles of mains, since 1994. This has resulted in dramatic improvements in the distribution system – increased “C” values which is better flow, reduced age of pipes, increased pipe diameter & capacity.



7. Fire Protection Improvements

These distribution system improvements have caused a dramatic improvement in our fire protection ratings from the independent Insurance Services Office (ISO). See the improvement at right for the Towns fire protection ratings for water system, hydrants, hydrant inspection, and water supply from 1980 to 2002



8. Watershed Protection

Protecting watershed land from development is universally recognized as one of the most effective measures to protect water supplies. Our aggressive land acquisition program, with funding assistance from the state and from the Cohasset Community Preservation Committee (CPC), has succeeded in protecting an additional 121 acres in the Lily Pond and Aaron River Reservoir watersheds from development since 2000. These acquisitions, in addition to the land already protected by the Trustees of Reservations and the state, has increased the amount of Lily Pond watershed land protected. We are also reducing the impact from stormwater from the Peppermint Brook sub-watershed area of Lily Pond by installing 56 Raingardens over the next few years. These Raingardens will passively clean the stormwater and overall reduce the discharge of pollutants into Lily Pond from this area by 50%.

