

MWRA Advisory Board

COMMENTS AND RECOMMENDATIONS

on the MWRA's Proposed
Fiscal Year 2006
Capital Improvement
Program and Budget



The Community Advisory Board to the
Massachusetts Water Resources Authority

APRIL 2005

The MWRA Advisory Board...

was established by the state Legislature to represent the 60 communities in the MWRA service area. Through annual comments and recommendations on the Authority's proposed capital and current expense budgets and rates, the Advisory Board provides a ratepayer perspective on the MWRA's plans and policies to improve the region's water and sewer systems.

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Comments and Recommendations

on the MWRA's Proposed
Fiscal Year 2006
Capital Improvement Program and Budget

April 2005

| Joseph E. Favaloro
| Executive Director

Executive Summary

Total Spending for FY04-08 Meets the Provisions of the Capital Spending Cap

The Advisory Board has recommended capital spending limits for at least ten years. Even before that, starting in 1988, the Advisory Board emphasized the need for a comprehensive master planning process, which would identify system needs, prioritize project schedules and provide justification for proposed budgets. In the absence of a master plan, the need for a capital spending cap has been increasingly important.

The MWRA has proposed a capital budget totaling \$3.6 billion. With spending through FY05 expected to reach \$2.4 billion, \$1.2 billion remains to be spent, including \$0.7 billion during the next three years (the remaining three years of the cap period, FY04-08) and \$0.5 billion over the following five years, FY09-13.

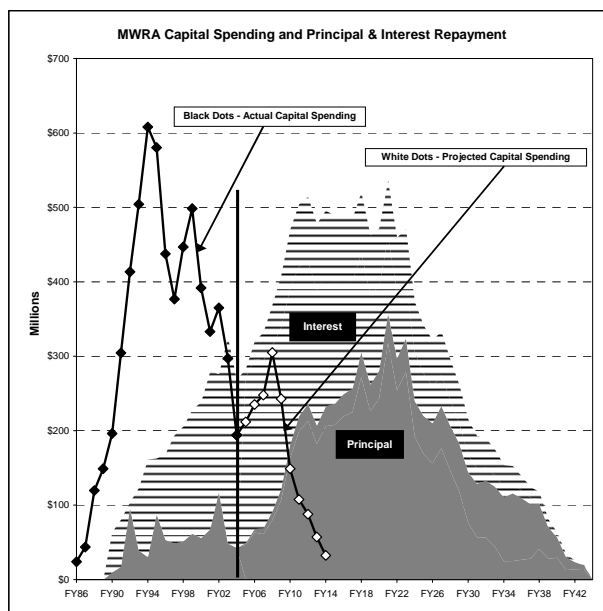
The Advisory Board supports the Authority's preparation of a capital budget that complies with the provisions of the FY04-08 five-year capital spending cap of \$1,134.5 million. The Proposed FY06 cap calculation comes to \$1,129.9 million, or \$4.6 million below the cap limit. The cap was adopted in June 2003 as part of the process of approving the Final FY04 CIP.

The mix of projects, however, has changed, as increases of \$108 million for the CSO program and \$42 million for Water Transmission projects, during the cap period, were partially offset by \$52 million in reductions, primarily to Wastewater Interception and Pumping projects and Water Distribution and Pumping projects.

The Shape of the Proposed FY06 Capital Budget

Total future capital spending has dropped from the nearly \$1.8 billion approved in the Final FY05 CIP for the years FY05 forward, a reduction of nearly \$400 million, or 22%, to the \$1.4 billion for the same multi-year period in the Proposed FY06 budget. Most of the reductions come during the FY09-13 period. Of total capital spending, the budget for the CSO Control Program makes up nearly 40%.

From FY86 through FY04, total capital spending was \$6.365 billion (including the costs of the Boston Harbor Project). (See graph.) Principal payments have been relatively low during this period and the Authority states that it has over \$5 billion in principal outstanding. The changes in capital spending were also made to move the Authority toward reducing its overall debt burden. The FY06 Proposed budget reduces spending after FY08, so that by FY10 total indebtedness will begin to decline as the amount of principal being repaid on outstanding debt will be greater than new capital borrowing.



The Authority also reported that while approximately \$195 million in new projects and revised costs were incorporated into the new budget, another \$605 million in projects and subphases were deleted and \$165 million in proposed new and expanded projects that had been under consideration were excluded. Thus, some \$770 million in water and wastewater capital needs have been identified but not included in the capital budget.

These reductions reflect heightened concern regarding the cost of the Authority's debt and the impact of debt service payments on rate revenue requirements in the coming years. The Authority projects that debt service, now 60% of the entire current expense budget, will grow to 65% in the next several years. In addition, the recent affordability study, prepared as part of the analyses being conducted through the CSO Control Program, reveals sewer rates are already causing a significant economic burden on ratepayers. Increased spending on

capital projects, including CSO control, will exacerbate these burdens, particularly among lower income households.

Despite the significant reduction in future capital spending, the Authority is projecting rate increases for the five years FY07-11 that are \$33 million higher than projected in the Final FY05 CIP, an average of \$6.6 million per year higher. This is due to significant additional spending in the four years, primarily for the CSO Control Program, before the substantial reductions take hold. By FY07, rates will have crossed the \$500 million mark and are projected to cross the \$600 million mark just two years later, as rate stabilization funds run out.

Master Planning Should be Expedited

The changing face of the capital budget gives further weight to the importance of developing the Master Plan. Scarce resources, additional regulatory requirements, the significant reduction of debt service assistance and rising rate revenue requirements make careful planning and scheduling of future capital projects key to supporting future capital budgets. Balancing the finite dollars available for the capital improvement program with court dictated mandates is a significant challenge. The Authority reports 80% of the capital program is for mandated projects. As long as CSO projects, or any other court-ordered initiative, are placed at the top of the funding priority list, MWRA risks jeopardizing the long-term integrity of the water and sewer systems. The Authority must embrace a capital project prioritization process that ranks projects based on need, cost and demonstrated benefit, regardless of court mandates. Staff anticipate reevaluating the need, priority and schedules for the \$770 million in eliminated and excluded projects as part of the master planning process. The Advisory Board recommends the Authority **rebuild its internal master planning process by organizing a Master Planning Committee with representation from all areas within the organization**. The Authority should **reevaluate the schedule for the Master Plan and report to the Board on the restructured and accelerated outline for the master planning effort**.

Until Consensus Can Be Reached on the Final CSO Program, Spending on the Projects Under Discussion Should be Suspended

The single major driver of the cost increases and shifts in capital spending is the CSO Control Program. Spending increases by nearly \$110 million, to \$385 million, during the FY04-08 cap period, or 35%. The increase reflects cost updates and acceleration of the start of construction particularly for the North Dorchester Bay CSO project, the largest project in the capital program. CSO spending of just over \$495 million (for the period FY05 and beyond) is nearly 40% of all current and future capital spending.

The Authority has been discussing the resolution of the four projects whose scope and schedules have yet to be finalized. The Authority is also working to gain regulatory approvals on a final plan for CSO control. Until these discussions are resolved, the Advisory Board recommends that the Authority **freeze spending on the four projects under discussion: the North Dorchester Bay/Reserved Channel project, the East Boston Branch Sewer Relief project, and projects affecting CSO controls for the Charles River and the Alewife Brook**. As part of reaching consensus on the final CSO plan, the **water quality standards for the Alewife Brook and the Charles River should be set at the Bcso designation**. Because the increased costs and accelerated schedules for the North Dorchester Bay group of projects are the principal drivers of the even higher rate increases that have been most recently projected, the Authority should **revisit design and construction schedules for the North Dorchester Bay projects, as assumed in the Proposed FY06 CIP and adopt schedules that do not exacerbate rate increases over the next several years**.

The Authority Must Continue to Maintain Its Budget Within the Cap

In recent months, the Authority has awarded several contracts that are higher than the budgeted amounts in the FY06 Proposed CIP, including the BOS019 CSO project and the Upper Neponset Valley Sewer System project. **Several Advisory Board recommendations to reduce or update other contract costs identify a total of \$9.2 million to offset the cost increases and remain within the five-year cap**.

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PREFACE

Pursuant to its responsibility under Sections 8 and 23 of Chapter 372 of the Acts of 1984, the MWRA Advisory Board has undertaken a comprehensive review of the Authority's proposed Capital Improvement Program for fiscal years 2006 through 2015. The Advisory Board's review has produced these *COMMENTS AND RECOMMENDATIONS*, which summarize important features of the budget document, provide highlights of each of the capital projects, and state the Advisory Board's opinions on a number of important projects and policies in the proposed budget document. These Comments and Recommendations were approved at the April 28, 2005 meeting of the full Advisory Board.

These Comments and Recommendations were prepared by Joseph Favaloro, Ryan Ferrara and Cornelia Potter of the Advisory Board staff. Overall direction was provided by Vice Chairman for Finance, Bernard Cooper, with the participation of Advisory Board members.

All base information for figures and tables, schematics and photographs contained within the *COMMENTS AND RECOMMENDATIONS* document are provided by MWRA or their consultants, unless otherwise noted.

The Advisory Board extends our appreciation to MWRA staff for their assistance in reviewing the FY06 Capital Improvement Program.

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I. INTRODUCTION

A Note on the Budget Review Schedule

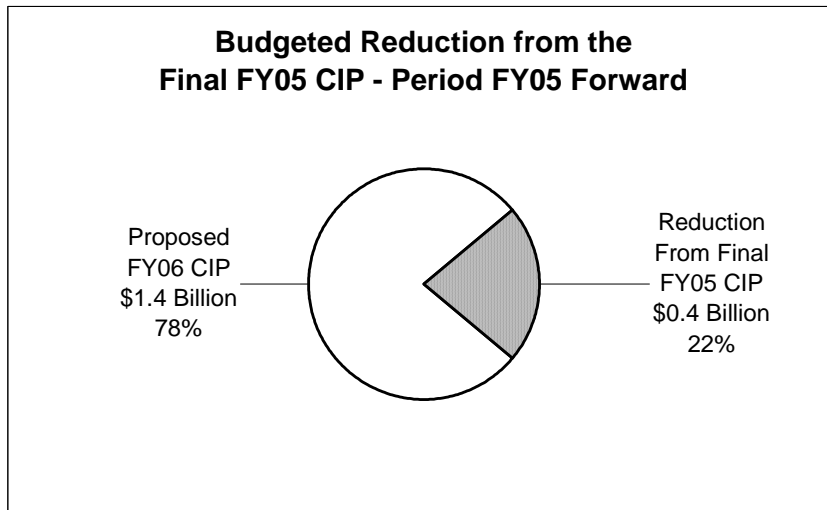
The review process stretched from January to late-April. This extended period reflects the late January publication of the Proposed FY06 CIP and the cancellation of the March 24th Advisory Board Meeting due to weather. The Proposed FY06 CIP is available on the Authority’s website at: www.mwra.com. Review of the Proposed FY06 Current Expense Budget will also be extended one month. The Authority transmitted the proposed budget to the Advisory Board in Mid-March. The review period will run to the third week of May, with discussion and the vote on the *Comments and Recommendations* scheduled for May 19, 2005.

Overview

The Authority is proposing a capital program and budget totaling \$3.57 billion (including contingency fund allowances). Spending through FY05 is projected at \$2.37 billion, leaving a remaining balance of \$1.2 billion: \$737.3 million during FY06-08 (years three, four and five of the cap period FY04 through FY08), \$508.2 million during the next five year period FY09-13, and \$7.4 million in FY14 and \$6.6 million in FY15.

Total future capital spending has dropped from the nearly \$1.8 billion approved in the Final FY05 CIP for the years FY05 forward to \$1.4 billion for the same period in the Proposed FY06 CIP, a reduction of nearly \$400 million or 22%. Spending increased during the current capital spending cap period (FY04-08) by just over \$100 million. During the next five-year period, FY09-13, spending dropped by \$345 million. Over the following two year period, FY14-15, spending was reduced by \$65 million; and for the period beyond FY15, spending was reduced by another \$100 million. (All numbers include contingency allowance adjustments.)

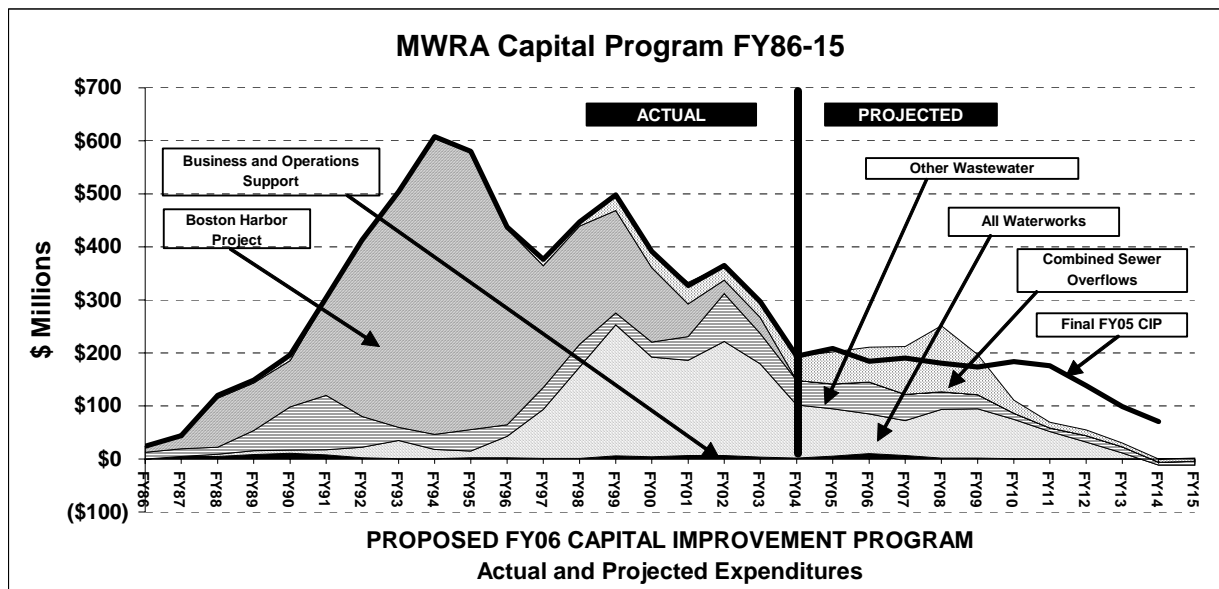
Figure 1



The Authority has spent more than \$6.3 billion in the twenty-five years since the capital program got under way. Principal payments have been relatively low during this

period and the Authority states that it has over \$5 billion in principal outstanding. The changes in capital spending were also made to move the Authority toward reducing its overall debt burden. The Proposed FY06 budget reduces spending after FY08, so that by FY10 total indebtedness will begin to decline as the amount of principal being repaid on outstanding debt will be greater than new capital borrowing. (See Figure 2.)

Figure 2; Table 1



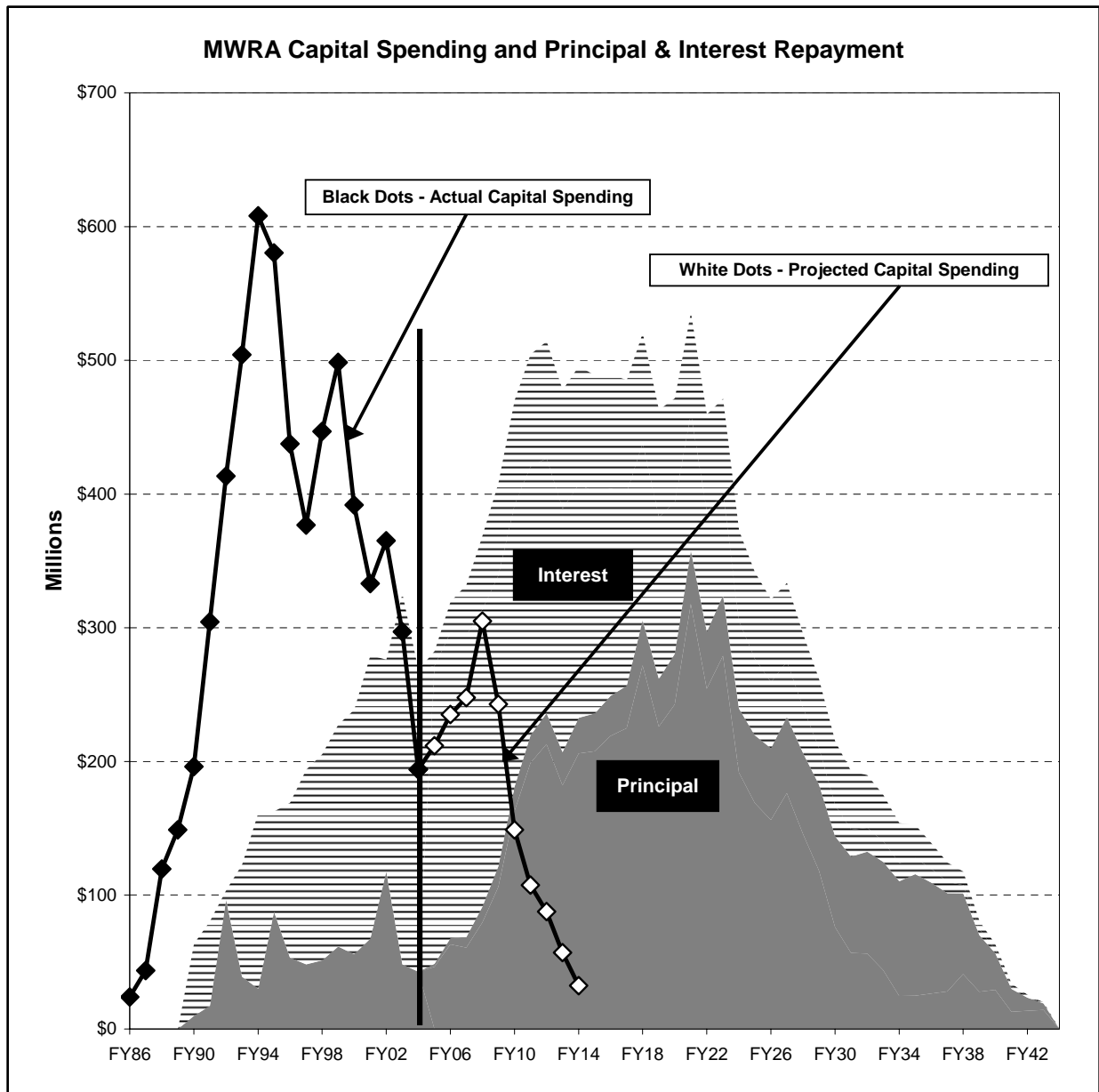
PROPOSED FY06 CAPITAL IMPROVEMENT PROGRAM EXPENDITURE FORECAST FY 2004 - 2015 (\$000)													
Expenditure Forecast Report	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY06-15 Ten-Year Total
Boston Harbor Project	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Wastewater System Improvements	92,163	107,212	126,124	139,982	157,544	102,600	36,396	17,503	23,286	18,840	11,458	13,035	\$646,768
Waterworks System Improvements	100,093	89,105	75,010	65,290	91,558	92,706	73,724	51,271	30,892	10,746	-11,570	-11,491	468,136
Business and Operations Support	1,761	5,193	9,941	6,764	1,899	1,659	790	779	797	750	0	0	\$23,379
Contingency	0	0	16,627	19,751	26,776	20,127	10,879	7,013	4,825	2,586	7,500	5,100	\$121,184
Total MWRA	\$194,017	\$201,510	\$227,702	\$231,787	\$277,777	\$217,092	\$121,789	\$76,566	\$59,800	\$32,922	\$7,388	\$6,644	\$1,259,467
Total FY04-08	\$194,017	\$201,510	\$227,702	\$231,787	\$277,777	\$1,132,793							
Total FY09-13						\$217,092	\$121,789	\$76,566	\$59,800	\$32,922	\$508,169		
Total FY06-15			\$227,702	\$231,787	\$277,777	\$217,092	\$121,789	\$76,566	\$59,800	\$32,922	\$7,388	\$6,644	\$1,259,467

The Authority reports that \$605 million in projects and subphases were removed from the budget. Cost increases and new projects, scope changes and inflation adjustments totaling \$195 million bring the reduction from previous spending plans to \$409 million. Staff also reported that another \$165 million in proposed new and expanded projects that had been under consideration for addition to the CIP were excluded. Thus, some \$770 million in water and wastewater capital needs have been identified but not included in the capital budget.

As the staff has pointed out, the demands to maintain the Authority's system are very large and collide with the reality of its financial condition.

These reductions reflect heightened concern regarding the cost of the Authority's debt, both existing debt and the projections of new borrowing needs, and the impact of debt service payments on rate revenue requirements in the coming years. In addition, the recent affordability study, prepared as part of the analyses being conducted through the CSO Control Program, concluded that ratepayers are already experiencing a significant economic burden. Increased spending on capital projects, including CSO control, will exacerbate these burdens, particularly among lower income households.

Figure 3

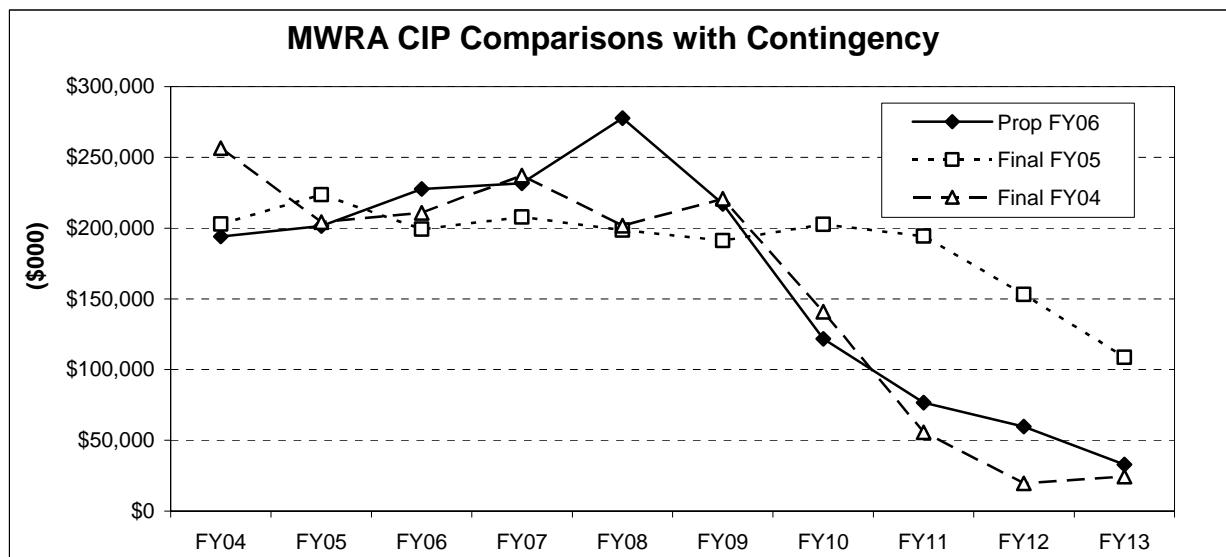


The reductions were also made to reverse the rapid growth in planned capital spending that occurred during the FY05 CIP process. Staff reported that some \$400

million had been added to the multi-year capital program during the last budget cycle. The decreases in the Proposed FY06 CIP were designed to bring total capital spending down closer to the levels of the Final FY04 CIP, which included \$1,571 million (in December 2003 dollars) for the FY04-13 ten-year period. The Proposed FY06 CIP includes \$1,641 million (in December 2005 dollars), a difference of \$70 million. Spending for the period FY09-13 is close to the assumed spending in the Final FY04 CIP for the same period, although the mix of projects is different.

At the same time, the Proposed FY06 CIP calls for FY04-08 spending of \$1,132.8 million, as compared to the Final FY05 budget for the same period of \$1,032.1 million, an increase of \$100.7 million. The pace of spending is also different, with spending accelerating in FY06, FY07 and FY08 and then dropping sharply in the FY06 CIP, whereas the Final FY05 CIP had spending in the \$200 million range for eight years, from FY04 through FY11.

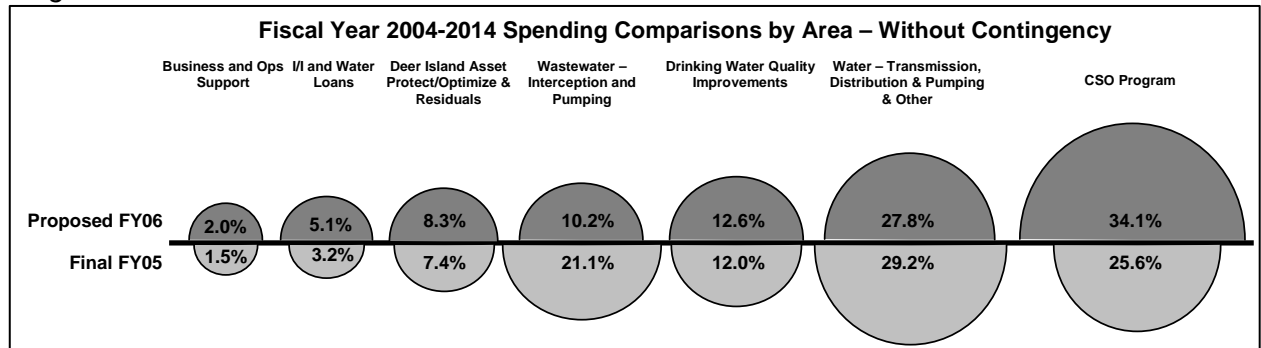
Figure 4



The Role of the CSO Control Program

The single major driver of the cost increases and shifts in capital spending is the CSO Control Program. CSO Control Program spending (before contingency fund allowances) increases \$108.5 million, to \$385.8 million for the period FY04-08, an increase of 35%. This increase reflects cost increases and acceleration of the start of construction, particularly for the North Dorchester Bay CSO project.

Figure 5



No matter what timeframe one uses to view CSO spending, it dominates the capital program. CSO spending of \$521.8 million for the period FY04 forward is 34% of all spending (net of contingency fund allowances) as compared to the 25.6% of all spending for the same period in the FY05 CIP. CSO spending of \$495.8 million (from FY05 forward) grows to nearly 40% of all current and future capital spending in the Proposed FY06 CIP. That same spending is 65% of all planned Wastewater system spending of \$766.4 million. CSO spending is 36% of all spending during the current cap period of FY04-08. By FY08, CSO spending is projected to be half of all capital spending for that year.

To accommodate the increased CSO spending during the remaining three years of the cap period, the Authority reduced other water and wastewater spending by \$52 million, primarily in Wastewater Interceptor and Pumping projects and Water Distribution and Pumping projects. To return planned spending for the period FY09-13 to the levels shown in the FY04 CIP, even more significant reductions were taken, totaling \$311 million. More than half those reductions were to the Wastewater Interception and Pumping projects. Just \$5.4 million is now budgeted for these wastewater pipeline and pumping projects and other facility projects for the entire five-year period.

Discussions of some elements of the CSO Control Program are ongoing and scope and costs could grow. Staff estimate that the current total cost of the program, \$747 million (in December 2005 dollars), could grow to as much as \$1 billion.

Total Spending, Including Completed Projects Removed from the Budget

For the second year, the CIP is presented without spending for the Boston Harbor Project (BHP). Just under \$4.0 billion in Wastewater spending, including \$3.52 billion for the Boston Harbor Project, has been removed from the “active” section of the CIP. Another \$167 million in completed Waterworks projects and \$33 million in completed Business and Operations Support projects have also been removed, for a total of \$4.2 billion. (See Appendix 6 of the Proposed FY06 CIP.)

Tables 2 and 3

Total CIP From FY86 Through FY15 and Beyond (\$000)		
<i>Proposed FY06 CIP</i>		
A	Projected Payments Through FY04	\$2,164,595
B	All Future Spending FY05-15 and Beyond (Without Contingency)	1,285,928
C	Budgeted Contingency FY05-FY14	121,184
D	Subtotal of Future Spending [B+C]	\$1,407,112
A+D	Total Proposed FY06 CIP	\$3,571,707
<i>Completed and Removed Projects From the FY06 CIP</i>		
E	Wastewater	3,998,920
F	Waterworks	167,781
G	Business and Operations Support	33,644
H	Subtotal	\$4,200,345
A+H	Total Completed Spending FY86-04	6,364,940
D	FY05 Through FY15 and Beyond Spending (With Contingency)	1,407,112
A+D+H	Total Capital Spending FY86 through FY15 and Beyond	\$7,772,052

Proposed Future CIP Spending (\$000)	
<i>Line D*</i>	
FY05-09	1,072,587
FY10-14	265,662
FY15	1,544
Beyond FY15	(53,866)
Budgeted Contingency FY06-FY14	121,184
Total	1,407,112

*Without Contingency

This spending, plus the projected payments through FY04 of \$2.165 billion for the active projects in the capital budget, totals \$6.365 billion from FY86 through FY04. Together with the planned future spending of \$1.4 billion, total capital spending through FY15 and beyond (including loan program repayments) comes to \$7.77 billion.

The Largest Capital Projects

During the next three fiscal years, twenty projects (including the amount budgeted for contingency allowances) make up nearly 80% of all capital spending (\$586 million of the \$737 million budgeted). The three largest projects during the next three years are the North Dorchester Bay CSO project, the East Boston Branch Sewer Relief CSO project and the Upper Neponset Valley Sewer System project. Together these projects make up 30% of all capital spending for the next three years. (See Tables 4 and 5; CSO projects are shaded.)

For the ten-year period, the North Dorchester Bay project is also the single largest project in the capital program. The Deer Island Wastewater Treatment Plant Asset Protection project is second, while continuing work on the MetroWest Water Supply Tunnel and the Walnut Hill Water Treatment Plant are the third and fourth largest projects. Six of the top twenty projects are part of the CSO Control Program. Of those six, three are part of the expanded program for CSO control in South Boston: the North Dorchester Bay Tunnel, Reserved Channel Sewer Separation and the Morrissey Boulevard Drain project.

Tables 4 and 5

Twenty Largest MWRA Capital Projects (\$ Thousands): Over Three Years FY06-08				
Rank	Project Name	Total Contract Amount	3-Year Spending FY06-08	% of Total 3-Year Spending
1	North Dorchester Bay & Reserved Channel	\$223,692	135,810	18.4%
2	Contingency	0	63,154	8.6%
3	East Boston Branch Sewer Relief	68,058	47,654	6.5%
4	Upper Neponset Valley Sewer System	40,028	35,301	4.8%
5	MetroWest Water Supply Tunnel	703,384	32,309	4.4%
6	Deer Island Treatment Plant Asset Protection	95,360	27,515	3.7%
7	Blue Hills Covered Storage	35,956	25,421	3.4%
8	Local Water Infrastructure Rehabilitation Assistance Program	7,488	24,888	3.4%
9	Braintree-Weymouth Relief Facilities	219,288	21,858	3.0%
10	South Dorchester Bay Sewer Separation (Commercial Point)	62,993	20,542	2.8%
11	Spot Pond Supply Mains - Rehabilitation	60,886	20,334	2.8%
12	Walnut Hill Water Treatment Plant	419,525	20,220	2.7%
13	Southern Spine Distribution Mains	60,805	17,805	2.4%
14	Deer Island Plant Optimization	43,971	15,644	2.1%
15	Interception & Pumping Facility Asset Protection	20,455	15,147	2.1%
16	New Connecting Mains - Shaft 7 to WASM 3	49,267	13,760	1.9%
17	Morrissey Boulevard Drain	20,883	13,222	1.8%
18	Wastewater Central Monitoring	15,475	12,156	1.6%
19	CSO Support	51,334	12,100	1.6%
20	Rehabilitation of Other Water Pumping Stations	22,811	11,493	1.6%
Total CIP		\$3,450,522	\$737,265	
Twenty Largest Projects		\$2,221,659	\$586,333	79.5%
Twenty Largest MWRA Capital Projects (\$ Thousands): Over Ten Years FY06-15				
Rank	Project Name	Total Contract Amount	Ten-Year Spending FY06-15	% of Total Ten Year Spending
1	North Dorchester Bay & Reserved Channel	\$223,692	203,975	16.2%
2	Contingency	0	121,184	9.6%
3	Deer Island Treatment Plant Asset Protection	95,360	86,888	6.9%
4	MetroWest Water Supply Tunnel	703,384	76,878	6.1%
5	Walnut Hill Water Treatment Plant	419,525	61,718	4.9%
6	East Boston Branch Sewer Relief	68,058	59,059	4.7%
7	Southern Spine Distribution Mains	60,805	47,668	3.8%
8	New Connecting Mains - Shaft 7 to WASM 3	49,267	45,311	3.6%
9	Weston Aqueduct Supply Mains (WASMs)	113,627	44,820	3.6%
10	Reserved Channel Sewer Separation	54,372	40,283	3.2%
11	Upper Neponset Valley Sewer System	40,028	35,458	2.8%
12	Blue Hills Covered Storage	35,956	34,297	2.7%
13	Deer Island Plant Optimization	43,971	23,392	1.9%
14	Braintree-Weymouth Relief Facilities	219,288	22,213	1.8%
15	South Dorchester Bay Sewer Separation (Commercial Point)	62,993	21,365	1.7%
16	Spot Pond Supply Mains - Rehabilitation	60,886	21,228	1.7%
17	Cambridge CAM002-004 Sewer Separation	39,467	21,222	1.7%
18	Morrissey Boulevard Drain	20,883	20,838	1.7%
19	Rehabilitation of Other Pumping Stations (Water)	22,811	18,471	1.5%
20	Interception & Pumping Facility Asset Protection	20,455	18,241	1.4%
Total CIP		\$3,450,522	\$1,259,471	
Twenty Largest Projects		\$2,354,828	\$1,024,509	81.3%

Spending Increases and Decreases *Tables 6 and 7*

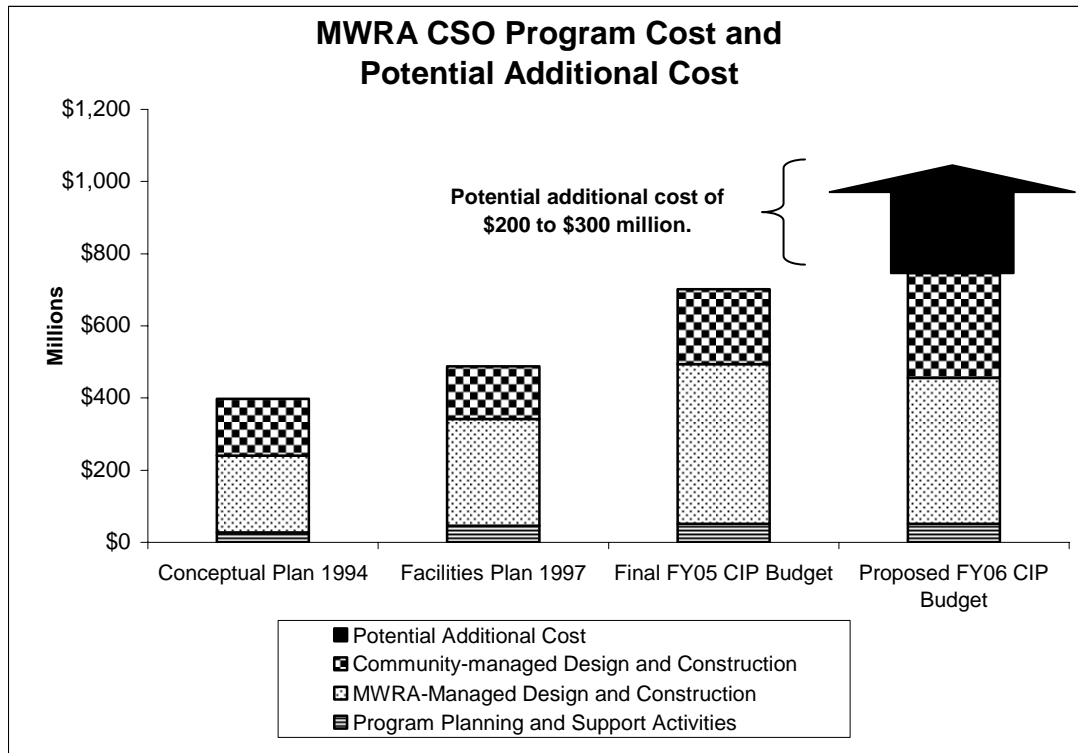
Spending Increases. The largest increases to the Proposed FY06 CIP were for the North Dorchester Bay CSO project of \$28.3 million and for the MetroWest Water Supply Tunnel project of \$27.2 million. Total increases for the CSO Control Program since the Final FY05 CIP were \$45.7 million. Of the total increases of \$175 million for capital spending in the Proposed FY06 budget, new projects and subphases made up \$57 million of the increase and inflation pushed costs \$46 million higher. Revised costs, scope changes, change orders and amendments and actual contract awards contributed the remaining \$72 million of the cost increases. Including contingency fund allowances, total increases are estimated at \$195 million. Table 6 highlights increases of \$1 million or more.

Spending Decreases. The Advisory Board has identified decreases in project spending of nearly \$550 million involving nearly 50 projects or project phases: \$284.9 million in reduced Wastewater project spending, \$260.5 million in reduced Waterworks spending and \$2.6 million in lower spending on Business and Operations Support projects. Including contingency fund allowances, the total decreases are estimated at \$605 million. (See Table 14 in Appendix A.) (See also, discussion under *Master Planning*.) The Authority also considered, but excluded, another \$150 million in new projects or phases, which with contingency allowances amounts to \$165 million in potential future needs not reflected in the Proposed FY06CIP.

Increases in Spending From the Final FY05 to the Proposed FY06 CIP (\$000)		
Project	Total Budget Increase Over \$1 Million	
Wastewater		
Interception and Pumping		
Upper Neponset Valley Sewer System	\$4,193	
Cummingsville Replacement Sewer	1,138	
Wastewater Central Monitoring	1,043	
Subtotal	\$6,374	
Wastewater Treatment		
Deer Island Plant Optimization	\$10,951	
Combined Sewer Overflows		
North Dorchester Bay & Reserved Channel	\$28,284	
East Boston Branch Sewer Relief	4,943	
Union Park Detention Treatment Facility	1,590	
South Dorchester Bay Sewer Separation (Commercial Point)	4,537	
Stony Brook Sewer Separation	1,065	
Cambridge CAM002-004 Sewer Separation	1,592	
Subtotal	\$42,011	
All Other Wastewater Increases	\$4,742	
Total Wastewater Increases	\$64,078	
Waterworks		
Drinking Water Quality Improvements		
Walnut Hill Water Treatment Plant	\$5,099	
Norumbega Covered Storage	1,026	
Blue Hills Covered Storage	3,126	
Subtotal	\$9,251	
Transmission		
MetroWest Water Supply Tunnel	\$27,235	
Winsor Dam Repair	1,200	
Wachusett Reservoir Spillway Improvement	8,200	
Watershed Land Purchase	9,000	
Subtotal	\$45,635	
Distribution and Pumping		
Weston Aqueduct Supply Mains (WASM)	\$4,783	
Northern Intermediate High Redundancy & Covered Storage	3,346	
Northern Low Service Rehabilitation Sections 8,37,38 & 57	2,095	
New Connecting Mains - Shaft 7 to WASM 3	11,426	
Subtotal	\$21,650	
Other Waterworks		
Waterworks Facility Asset Protection	\$1,224	
All Other Waterworks Increases	\$5,341	
Total Waterworks Increases	\$83,101	
Business and Operations		
Capital Maintenance Planning/Development	\$4,061	
All Other Business and Operations	99	
Total Business and Operations Increases	\$4,160	
Total FY06 Increases	\$151,339	
Eliminated Spending From the Final FY05 CIP to the Proposed FY06 CIP - By Category		
	FY05-14 Ten-Year Budget Reduction	Total FY05 and Beyond Budget Reduction
Wastewater		
Interception and Pumping	\$239,421	\$277,950
Treatment/Deer Island Asset Protection	7,096	7,096
CSO Program	0	0
Wastewater Other	0	0
Wastewater Subtotal	\$246,517	\$285,046
Waterworks		
Drinking Water Improvements	\$36,205	\$41,677
Transmission	67,201	87,956
Distribution and Pumping	92,949	132,473
Waterworks Other	0	0
Water Subtotal	\$196,355	\$262,106
Business and Operations Support	\$2,638	\$2,638
Total Reduction	\$445,510	\$549,790

Cost Risks. Authority staff note there are still risks, which are not yet funded in the CIP. Most notable are potential increases for the Alewife Brook CSO project, the East Boston CSO project and the potential for additional projects and tasks associated with the Cottage Farm CSO facility and Charles River water quality. Also, the projects and subphases that were removed from the FY05 CIP and the project needs that were proposed but not included in the FY06 CIP still represent potential additional costs for future capital budgets.

Figure 6



Expanding Regulatory Requirements and Regulatory Interpretations. Another source of cost risk is the potential of expanded regulatory requirements and interpretations of the appropriate responsibilities of the Authority. Notable in the past few years is the extended discussion regarding the responsibility for the control of stormwater. The Advisory Board has repeatedly maintained that the Clean Water Act does not assign responsibility for stormwater control to the MWRA. Yet a significant exception has been made for the North Dorchester Bay CSO project, which includes control of stormwater from Pleasure Bay and the transfer of stormwater from the Carson Beach area to South Dorchester Bay. These two contracts have added \$24.5 million to the cost of the project.

The Advisory Board and the Board of Directors have requested **Authority staff to seek written statements assuring that implementing these two elements of the North Dorchester Bay project do not constitute a precedent for any other MWRA project.** (See related discussion on page 19.)

Sources of Funds

Borrowings. The principal source of funds for the Authority's capital program is debt issuance. Following the most recent bond issuance, in August 2004, the Authority had \$5.347 billion in outstanding debt: \$2.7 billion of bonds, \$688 million of SRF bonds, \$1.7 billion of subordinated debt and \$259 million of tax-exempt commercial paper notes. The Authority also issued \$120 million in new SRF borrowings during fall 2004. Total secured bond debt service, as of the August 2004 borrowing, was \$8.584 billion.

The SRF loan program has been an important source of lower cost funding for the Authority's capital program. However, funding for the program is shrinking. The Bush Administration's proposed budget for EPA in FY06 cuts \$360 million from the Clean Water SRF, reducing the program by about one-third to \$730 million. It is reported that the Administration plans to phase out additional SRF funding in the following two fiscal years. The proposed budget for the Drinking Water SRF is set at \$850 million, up slightly from the \$843 million appropriated for FY05.

Federal and State Grants. In the early years of the Authority's operation, federal and state grants were available to support the capital program. The Authority received an estimated \$1.1 billion in grants, before these sources of funds were phased out. Included in this figure is \$882 million in federal grants, of which \$810 million were for the Boston Harbor Project.

Current Revenue. The Authority also budgets funds from the Current Expense Budget to support the capital program. In FY05, this amount was \$4.01 million. Current revenue to fund ongoing capital expenditures is not earmarked for specific projects. Funds are transferred to the construction fund and reduce borrowing requirements (slightly) for the year, thereby avoiding (some) interest costs. MWRA's planning estimates assume a gradual increase in CEB funding of some capital costs, to \$13 million by FY10 and \$15 million by FY12.

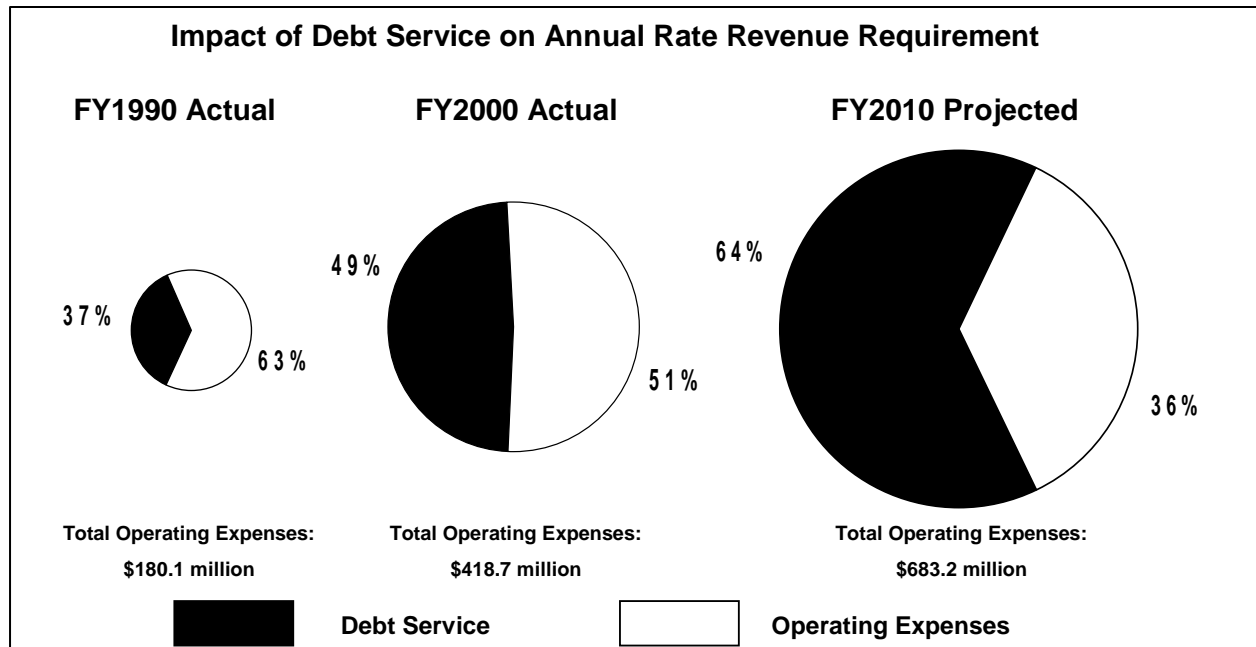
Debt Service Assistance. With the exception of FY03, the Authority has received funding through the Commonwealth's Water and Sewer Rate Relief Fund since FY94 to mitigate extraordinary rate increases. The Authority received \$46.5 million in FY00, \$51.3 million in FY01, and \$50.2 million in FY02. Due to state budgetary constraints, funding was eliminated in FY03. Just over \$4 million was received in FY04, and the Authority has assumed receipt of \$8.7 million in FY05. For the third year, the Governor's proposed budget contains no funding and recommends elimination of the program. However, the Advisory Board, as part of its legislative agenda, will seek debt service assistance funding in the Final FY06 state budget.

Regarding the FY06 state budget, the Massachusetts Taxpayers Foundation notes that the "state will be hard pressed to afford any significant spending increases for some time to come. ... Despite the widespread perception that the hard fiscal times are over, the annual spending growth needed to meet the state's commitments – especially

for health care – exceeds the rate of revenue growth that can reasonably be expected over the long term, even assuming a continued recovery of the state economy.”

Rate Revenue. The Authority raises rate revenue to pay the debt service on the borrowings issued to support the capital program. Debt service is the largest single driver of rate increases. Capital finance expense is now 60% of the entire current expense budget and is projected to increase to 65% in future years. The Proposed FY06 Current Expense Budget is nearly \$550 million (before offsets). Capital financing expense is nearly \$330 million, more than one and a half times the \$211 million budgeted for capital spending in FY06 (net of contingency fund allowances).

Figure 7



The Capital Spending Cap

The Proposed FY06 CIP has been prepared to comply with the provisions of the FY04-08 five-year capital spending cap of \$1,134.5 million. The cap was adopted in June 2003 as part of the process of approving the Final FY04 CIP. The Proposed FY06 CIP cap calculation (reflecting projected expenditures, contingency allowances and inflation adjustments, less the Chicopee Valley Aqueduct projects) comes to \$1,129.8 million, or \$4.7 million below the cap limit.

Increases in spending of \$108.5 million for the CSO Control Program and \$41.5 million for Water Transmission projects during the cap period were partially offset by \$52 million in reductions, primarily to Wastewater Interception and Pumping projects and Water Distribution and Pumping projects.

Table 8

Fiscal Year 2004-2008 CIP Cap \$ in Millions				
	Final FY04 Base Cap	Final FY05 CIP Cap	Proposed FY06 CIP Cap	Net Change From Final FY04 Base Cap to Proposed FY06 CIP Cap
Projected Expenditures	\$1,023.3	\$966.5	\$1,070.9	\$47.6
Contingency	86.9	65.6	63.2	(23.7)
Inflation	35.7	29.3	7.3	(28.4)
Less: Chicopee Valley Aqueduct Projects	(11.4)	(10.6)	(11.5)	(0.1)
Total	\$1,134.5	\$1,050.8	\$1,129.9	(\$4.6)

A second provision of the cap allows annual spending within the five-year period to vary within plus or minus 20% of the initial amounts calculated for those years as long as the five-year total is not exceeded. In the event an annual cap limit is exceeded, the MWRA may request approval by the Board of Directors to exceed the limit for an individual fiscal year. In this Proposed FY06 CIP, projected spending in FY08 does exceed the 20% limit by \$28.3 million. Fully half of all capital spending in FY08 is for the CSO Control Program. It is unclear at this time whether the Final FY06 CIP will also exceed the 20% limit for FY08.

Table 9

Comparison of Capital Spending by Cap Calculation Proposed FY06 to Final FY04 CIP (\$ millions)								
	FY04	FY05	FY06	FY07	FY08	Total FY04-08	Total FY09-13	Total FY14-15
Proposed FY06 CIP	\$193.3	\$200.4	\$220.2	\$229.9	\$286.1	\$1,129.9	\$534.7	\$14.6
Final FY04 CIP	250.9	203.5	215.2	250.1	214.8	1,134.5	528.8	
Change from Final FY04 CIP								
\$ Change	(\$57.6)	(\$3.1)	\$5.0	(\$20.2)	\$71.3	(\$4.6)	\$5.9	\$14.6
% Change	-23%	-2%	2%	-8%	33%	0%	1%	
FY08 \$ Over 20% Limit	\$28.3							

The cap calculation in the Proposed FY06 CIP is \$78.9 million more than the \$1,050.9 million in the Final FY05 CIP. The increase reflects additional capital spending during the cap period of \$104.2 million. The increase of \$108.5 million for the CSO Control Program is partially offset by reductions to Wastewater Interception and Pumping and Water Distribution and Pumping projects. The revised planning projections show that this increased capital spending translates into increased rate revenue requirements for each of the next five years after FY06, for a total of \$33 million over the period FY07-11, an average of \$5.5 million per year. It is only in FY12 and beyond that rate revenue requirements will be lower than what had been projected as part of the Final FY05 capital and current expense budget approvals.

In comparison to the first cap, set as part of the FY01 CIP process, spending (adjusted for the cap calculation) is virtually at \$2,307 million for the FY01-10 period plus three years at the \$126 million level for FY11-13, for a total of \$2,685 million.

The Advisory Board has long advocated for a comprehensive master planning process and, in the absence of a coordinated water and wastewater master plan, which

would take into account the impacts of limited resources and would set priorities for capital spending, the need for a capital spending cap has been increasingly important. The Authority cannot be insulated from the same constraints that federal, state, local and family budgets face.

Managing the capital program as a tool for controlling rate increases has long been emphasized by the Advisory Board. Over the years, the Advisory Board has identified a number of areas for reassessment and reconsideration. These recommendations have resulted in significant reductions to the capital program and budget. Most notable have been the reshaping of the CSO Program from the \$1.37 billion program that was advanced some 15 years ago to a much smaller program, although the 1994 estimates of \$378 million have nearly doubled to \$747 million in the Proposed FY06 CIP.

The Advisory Board also recommended the elimination of Battery D of secondary treatment at Deer Island, elimination of Module 4 of the Residuals Digesters, and reconsideration of the number of storage silos and centrifuges at the Fore River pelletizing facility, all based on revised and updates assumptions about wastewater flows and solids quantities. The Authority disagreed with the Advisory Board's assessment of the pellet quantities that could be expected with completion of the treatment and processing facilities and made its expansion decision based on predictions of 160 tons of pellets produced per day. Current, actual quantities put this number at 90 to 95 tons per day. Multi-year savings related to the changes that were agreed to have totaled more than \$1,200 million.

Even with these successes, the need for additional means to manage the capital program continued. The scale and timing of capital spending continued to change measurably from year to year. Additional cost pressures continued to arise, including requirements for additional water treatment and covered storage and the additional costs associated with expanded scopes for several CSO projects (such as the North Dorchester Bay/Reserved Channel project, the East Boston Branch Sewer Relief project and the Cambridge/Alewife Brook Sewer Separation project) and the potential for additional controls for other CSO areas (such as the Lower Charles River).

These capital cost increases translated directly into increased water and sewer rates just as debt service was growing quickly, first to more than half of all current expenses and then to nearly 60% of all current expenses. The Advisory Board sought specific spending limits to ensure that the capital program and budget were sustainable and predictable.

In March 1996, the Advisory Board recommended spending at no more than \$350 to \$400 million per year for the next five years. The following budget cycle, the Advisory Board urged the Authority to establish a working group to develop alternative spending scenarios and consider revising project priorities.

In March 1998, the Advisory Board recommended capital spending limits averaging between \$325 and \$350 million over the next six years. The Authority was urged to establish capital project priorities and smooth the pace of capital spending.

In the spring of 1999, the Advisory Board's recommendations reiterated prior themes and again emphasized the importance of managing the capital program as a tool for controlling rate increases. The Advisory Board recommended that the Authority convene a task force to develop capital program alternatives that would result in spending for the next three years that would be no higher than \$475 million in FY00, \$400 million in FY01 and \$300 million in FY02. This would result in spending over the three-year period of \$1,175 million, a reduction of \$180 million from the levels proposed by the Authority. Instead, the Authority responded with a Final FY00-02 capital budget of \$1,417 million, nearly \$250 million more than the Advisory Board had recommended.

For the FY01-03 CIP review, a revised approach was necessary. Throughout the winter of 1999 and the spring of 2000, Advisory Board staff met with mayors, town managers and other elected officials to preview future rate increases. Discussions focused on strategies to control rate increases as projected. In April 2000, the Advisory Board convened a meeting with Chief Executive Officers from member communities to discuss a multi-year action plan to control rates. Subsequently, forty-three member communities signed a resolution in support of a multi-year action plan to manage rate increases, the active pursuit of additional federal and state financial assistance and the setting of a hard capital spending cap. With the strong support of member communities, the cap became a reality. In June 2000, the Board of Directors voted unanimously in favor of a CIP spending limit of \$2,307 million for the period FY01-10. The first years of the ten-year program were set at \$500 million for FY01, \$402 million for FY02 and \$329 million for FY03, for a three-year total of no more than \$1,231 million.

Over the next three years, the Authority prepared capital budgets which it argued were within the multi-year cap. But for each new ten-year budget, the Authority remained within the ten-year cap by assuming that the \$126 million for each year after the original tenth year, FY10, was available to "cover" spending scheduled before that new tenth year. The Advisory Board argued that allocating dollars set aside for years beyond FY2010 was defeating the spirit and intent of the cap. The \$126 million added to the multi-year cap for each year after 2010 should be reserved for that specific year. Following extensive discussion with Authority staff and representatives of the Board of Directors, during the review of the Proposed FY04 CIP in the spring of 2003, the Authority adopted the new, five-year hard cap that we are working with today.

The Affordability Analysis

Last year, the Authority concluded an analysis of the economic impact of additional MWRA investment in CSO control. The analysis confirmed the EPA finding of widespread social and economic impact for 1997 and concluded that the economic burden from shelter costs in the MWRA service area already exceeds the burden that

would be associated with reaching the 2% preliminary screener value (as set by EPA) in almost every other metropolitan area in the country. In other words, rates are already presenting a significant burden on ratepayers. This conclusion is based on current sewer rates, which are projected to continue rising over the foreseeable future.

Another approach to viewing the impact of the Authority's capital program is per capita debt. The Authority's outstanding debt is now more than \$5.4 billion and is expected to peak at more than \$6 billion by 2010. Assuming the Authority serves 2.5 million people, the current outstanding debt of the Authority translates into \$2,174 per person. Local debt per capita for Massachusetts (based on data as of June 30, 2003) is \$1,589, on average.

The Massachusetts Taxpayers Foundation has reported that property taxes per capita rose almost twice as rapidly between 2001 and 2004 (the period of deep cuts in state aid) as in the previous eight years. Local revenue fell in both 2003 and 2004 because of cuts in local aid, and remains more than \$300 million, or 9%, below pre-crisis levels in 273 communities. Because of the structural deficit in the state budget, the Commonwealth has limited ability to restore significant amounts of those cuts.

The Authority, too, is facing tighter fiscal times given that the schedules for repayment of the more than \$5 billion in outstanding debt coincide with a period of rapid increases in CSO Control Program spending, modest at best growth in debt service assistance (as compared to the projections of \$50 and \$60 million in annual receipts) and rising interest rates.

Developing the Master Plan

The changing face of the capital budget gives further weight to the importance of developing the Master Plan. Scarce resources, additional regulatory requirements, the loss of debt service assistance, and the rising rate revenue requirements to support the repayment of the costs of capital projects already completed make careful planning and scheduling of future capital projects key to supporting future CIP's.

As part of last year's capital budget review, the Authority agreed to produce a formal master plan and have a document completed by July 2006. Three interim dates were also set for reports to the Board of Directors: Fall 2004 (on principles and policies for the water and wastewater systems); Spring/April 2005 (on the Interceptor Renewal Program, water system planning studies for the Northern Intermediate High and Southern Extra High pressure zones, and Headworks Condition Assessment); and Fall/October 2005 (on a detailed outline of the master planning document, a summary of planning studies undertaken to date, and major findings, and an update on other condition assessment work planned or underway). Following completion of the Master Plan by July 2006, staff plans to make a presentation to the Board of Directors in October 2006 on the implications of the Master Plan for capital planning purposes.

These dates were set before the elimination of the more than \$600 million in planned projects and programs, including the Interceptor Renewal Program and Condition Monitoring for the Field Operations facilities. To date, Authority staff have developed a reinvestment profile for the water and wastewater infrastructure and estimated the reinvestment needs for each decade ahead. Given how significantly the capital budget has changed and how costs have increased and the schedule has accelerated for the CSO Control Program, the Master Planning process will have to make increasingly difficult choices for future capital spending.

Balancing the finite dollars available for the capital improvement program with court dictated mandates is a significant challenge. The Authority reports 80% of the capital program is for mandated projects. As long as CSO projects, or any other court-ordered initiative, are placed at the top of the funding priority list, MWRA risks jeopardizing the long-term integrity of the water and sewer systems. The Authority must embrace a capital project prioritization process that ranks projects based on need, cost and demonstrated benefit, regardless of court mandates.

Statements made in the November 2004 staff summary updating the Board of Directors on the master planning effort raise additional concerns. The update states:

“Rather than proceeding with individual contracts for design of storage and pipeline elements, two pressure zone studies (one for NIH (Northern Intermediate High), one for SEH (Southern Extra High)) are being initiated that will take the projects through a coordinated preliminary design phase. This approach will also allow the reevaluation and re-prioritization of other CIP projects within those pressure zones as necessary. The Proposed FY06 CIP includes the following adjustments to address these two studies: 1) reallocation of \$1.72 million currently allocated for concept validation and preliminary design; 2) addition of \$20 million in funding for the construction of Section 89 redundancy and for the rehabilitation of Section 89; and 3) increase of approximately \$8 million for the proposed future design and construction spending for the SEH redundancy loop, based on an updated potential pipeline route.”

The following month, at the December meeting of the Board of Directors, the Board voted to transmit the Proposed FY06 CIP to the Advisory Board for its 60-day review and comment. The Proposed FY06 CIP document excludes some of the critical commitments made by MWRA only one month earlier in the November 2004 update. Specifically, the addition of \$20 million for Section 89 redundancy and \$8 million for the design and construction of a pipeline for the SEH Redundancy Loop project have been cut from the Proposed FY06 CIP. The commitment to proceed with a study of the entire SEH system was also excluded from the Proposed FY06 CIP.

MWRA has expressed its intent to support master planning, yet many of the planning related projects the Advisory Board encouraged MWRA to consolidate under

the Planning Department in the *FY05-07 Comments and Recommendations* document have been eliminated. Specific examples include:

- Sudbury/Weston Aqueduct Repairs – Alternatives Analysis (eliminated from the Final FY05 CIP)
- Capital Maintenance Planning/Development – Facilities Asset Management Plan Phase 3 (Deleted from Proposed FY06 CIP)
- System Master Plan Interceptors – Planning (All stages deleted from Proposed FY06 CIP)
- Metropolitan Tunnel Loop – Feasibility Study and Field Investigation-Facility Plan (All stages deleted from Proposed FY06 CIP)
- Neponset Valley Relief Sewer – Planning (All stages deleted from Proposed FY06 CIP)
- Ashland Extension Sewer – Planning (All stages deleted from Proposed FY06 CIP)
- System Master Plan Interceptors – Planning (All stages deleted from Proposed FY06 CIP)
- Northern Intermediate High Covered Storage – Study (All stages deleted from Proposed FY06 CIP)
- Southern Extra High Additional Storage – Preliminary Plan/EIR (All stages deleted from Proposed FY06 CIP)
- Cathodic Protection of Distribution Mains – All Test Station Installation Phases and Technical Assistance (All stages, other than Test Station Installation 1 project, deleted from the Proposed FY06 CIP)
- Southern Extra High Redundancy Loop – Planning/Design (All stages deleted from Proposed FY06 CIP)

While the Advisory Board acknowledges the efforts MWRA has undertaken to meet the spirit of the original June 2000 capital spending cap, the Advisory Board has also consistently advocated for a robust master planning process to support a sustainable cap. Elimination of planning related projects listed above underscores the impact the CSO Program is having on all components of the CIP. One of the MWRA's stated objectives of the master planning effort is to evaluate current system conditions. The Advisory Board questions how the production of a substantive Master Plan can remain on schedule with the elimination of a series of studies from the Proposed FY06 CIP intended to help serve as the basis for this effort. MWRA must actively work to support the master planning process. The organization should recruit internal participants from throughout the organization to coordinate and sustain the master planning effort. The Advisory Board repeats the following recommendation made in our *FY05-07 Comments and Recommendations*: **Develop a Master Planning Committee with representation from all areas within the organization.**

•1•

In the report to the Board of Directors in November 2004, staff introduced the context for framing the Master Plan for the water and wastewater systems. Four distinct goals were presented for each system. The next step is to further define the objectives for meeting these goals. The staff summary noted that staff were developing specific

objectives for the water and wastewater systems. Individual projects would be evaluated in the context of how they would meet the stated objectives. Finally, a prioritization process would guide the selection of specific projects for inclusion in the capital budget.

•2• The Advisory Board believes the Planning Department should reallocate resources toward identifying and managing system risks. With the significant alterations to the Proposed FY06 CIP and the unchecked growth of the CSO program, MWRA needs to adopt a more directed approach to managing system risks. **The Advisory Board recommends MWRA adopt the following outline for the Master Plan based on national and international Comprehensive Asset Management strategies:**

- A. **Asset Assessment** - Gather information on the capacity, condition and performance of existing system assets. The condition assessment is complete for some MWRA assets, including Wastewater interceptors.
- B. **Remaining Asset Life Analysis** - Utilize the data from the Asset Assessment and evaluate the vulnerability of each asset to external influences, such as corrosion, to project the remaining asset life. This information is used to develop asset-specific maintenance protocols.
- C. **Risk Management** - Undertake a risk assessment to determine the likelihood and consequences of individual asset failures. The failure of each asset is evaluated relative to other identified risks to establish risk management priorities. Risk mitigation plans are then developed to establish emergency planning protocols and clarify the need for investment or maintenance for identified assets.
- D. **Cost-Benefit Analysis** - Projects are subsequently identified to replace/repair assets based on the findings from the Risk Management phase. Each proposed project is then reviewed via cost-benefit analysis, which evaluates alternative means of achieving program objectives. The benefit is measured by the subsequent reduction in risk.
- E. **Capital Program Development** - The information derived from Phases A through D will serve as the basis of the Capital Improvement Program, establish priorities for system maintenance and help to scope long-term operational budget needs.

While the MWRA's stated objective of developing specific objectives for the water and wastewater systems is reasonable, the emphasis of the MWRA Master Plan must shift to quantifying and managing risks.

The prioritization process should emphasize the use of criteria that weigh the need for proposed projects and the risks of not proceeding with them. Priority projects should demonstrate that benefits outweigh the costs. The analysis should treat all projects equally and ignore any distinction between mandated vs. non-mandated initiatives.

Currently, 80% of the Authority's capital program is for mandated projects. Yet because so much of the spending is for the CSO Control Program, considerably fewer resources are available for maintaining the water and sewer systems. Cost benefit analysis is the standard by which proposed projects should be considered. The EPA's approach to scoping the CSO Control Program creates a forced prioritization of the Authority's capital program, and has the effect of pushing aside virtually all other system maintenance and rehabilitation projects. MWRA is assuming significantly more risk in the Proposed FY06 CIP. The Master Plan outline must be altered accordingly to reflect the proactive management of these additional risks.

Based on the continued growth of the CSO program and the corresponding elimination of non-mandated capital projects, including the elimination of many system condition assessment studies, the entire master planning outline and schedule presented to the Board of Directors in June 2004 must be altered and expedited. **Reevaluate the schedule for the Master Plan and report back to the Board of Directors at the June CIP hearing on the restructured and accelerated outline for the master planning effort.** The Advisory Board maintains that master planning should be one of the highest priorities for the MWRA. Considering the significant changes to the CIP, the need to immediately revise the Master Plan outline and schedule is clear.

•3•

Reaching Consensus on the CSO Control Program

The CSO Control Program, at \$747 million, is the largest component of the Authority's capital budget and represents 40% of all spending from FY05 forward. In the mid 1990's the Authority revised its CSO plan significantly, recommending a series of basin specific projects to replace a large deep rock tunnel plan that had been advanced in the early 1990's at an estimated cost of \$1.37 billion. A proposed plan was presented in 1994 with a cost estimate of \$398 million. By the time the Facilities Plan/EIR had been approved in late 1997 and early 1998, cost estimates had risen to \$487 million. Since that time, cost increases related to scope changes, change orders and amendments, inflation adjustments and the introduction of new projects had brought the total budget for the CSO Control Program to the \$747 million level in the Proposed FY06 CIP. Costs have increased by \$100 million in just the last year alone. Ongoing discussion of several projects could add significant additional costs. The Authority also notes that these costs are presented in December 2005 dollars and that actual costs to complete the remaining projects will be considerably higher.

Throughout this process the Authority has been making substantial progress in implementing its CSO Control Program. The Authority has reported in previous documents that 14 of its CSO projects are complete; another seven projects are in construction and an eighth is nearing construction start. Of the 772 CSO municipalities nationwide, only 146 have had long-term plans approved and only 25 have begun to implement the plans. The MWRA is among these few. Through calendar year 2004, \$300 million has been spent on the CSO Control Program. In addition, the major

improvements to the Deer Island Wastewater Treatment Plant, including improved pumping and treatment capacity, have contributed significantly to cleaner receiving waters, especially in the Lower Charles River. Improvements to the wastewater transport and treatment systems over the last fifteen or more years have produced huge reductions in CSO discharges with dramatic improvement to water quality, especially in waters where CSO discharges were a major contributor of pollutants.

About a year ago, according to the most recent Annual Progress Report for the CSO Control Program, the Authority and the regulatory agencies agreed to hold discussions on the scope, costs and schedules for the entire CSO plan, with the goal of reaching updated regulatory approval of a final CSO plan. The key components of the discussions were four of the CSO projects: North Dorchester Bay/Reserved Channel, East Boston Branch Sewer Relief, Cambridge/Alewife Brook Sewer Separation and the potential for additional CSO controls for the Charles River at the Cottage Farm facility.

These discussions have been important both for working to reach agreement on completion of the final CSO Control Program and for the potential for significant additional costs for the Authority. The Annual Progress Report identifies cost risks that could add another \$250 million to the nearly \$750 million budgeted for the program today, potentially bringing total costs to the \$1 billion level. Project schedules have a significant impact as well, particularly for the North Dorchester Bay and East Boston projects, whose construction schedules coincide with the sharpest increases for rates due to debt service repayments on existing borrowings.

Referred to as the “holistic approach,” these discussions are still ongoing. While the Authority has agreed to a measurably expanded project for North Dorchester Bay with an accelerated construction schedule, the East Boston and Cambridge discussions remain unresolved. Both the scope (including level of CSO control) and design and construction schedules remain to be resolved. Scope, schedules and eventual water quality designations for the Alewife Brook and Lower Charles River are also under discussion. The extension of the variances for the Charles River and for Alewife Brook could mean that decisions about the water quality designation for the two receiving water areas may not be made for three more years.

Authority staff report that progress is being made on the holistic approach. But substantial agreement appears to have been reached on only one of the four projects, the North Dorchester Bay project. The Authority is moving forward with design, construction management services, construction, and land and easement acquisition *before* the schedules for the project have been formally revised and *before* the other three project scopes and schedules have been resolved.

Furthermore, responses to the Authority’s December 15, 2004 Quarterly Compliance and Progress Reports take issue with the level of CSO control proposed by the Authority for the Charles River and question the usefulness of the Affordability Analysis as a basis for informed decision making despite the fact the analysis follows the guidelines set by EPA itself. Comments from the United States Attorney include:

"The Charles River is now used for the primary contact sport of windsurfing. The Authority should therefore provide the highest degree of protection attainable for this vital resource." Yet, for Bcso waters, which will have to include the Lower Charles River due to the presence of the Cottage Farm CSO Facility, the Affordability Analysis is intended to be a means for determining the level of control to be reached.

The responses also notes "that rate projections today are much lower than what the MWRA previously estimated and therefore it is hard to accept the Authority's apparent new position that further increases are unaffordable." Yet, the affordability analysis concludes that the economic burden of the Authority's sewer rates are *already* far greater than that which typically would be associated with reaching EPA's 2% threshold and that the burden for the MWRA area as a whole exceeds that which would be associated with EPA's 2% threshold in nearly 95% of the 80 metropolitan service areas across the country that were analyzed. These burdens are more severe for lower income households than for similar households in most metropolitan areas nationwide because there is an unusually low ratio of the income of lower income households to that of the median household.

Furthermore, the report notes that "Economic burdens in Boston, Chelsea and the entire MWRA service area increased much more since 1997 than they would have if sewer charge burdens had increased to the extent that EPA projected in 1998, and other determinants of economic burdens had remained at levels observed in the mid-1990s. ... Also, the unusually high level of economic burden in the MWRA service area will persist well into the future. Considering shelter cost burdens, in particular, our analysis finds that it is highly unlikely that those burdens will return to their 1997 level within the next five years."

Yet, even with these findings, the regulatory agencies declare the use of the analysis as "premature" and continue to push for expanded project scopes, additional monitoring, modeling and system optimization studies, and faster implementation schedules. With the rapid increases in project costs to date, and the potential increases in project scopes and expense, the benefits of these additional expenses needs to be demonstrated at each step. As noted earlier, the cost of the CSO Control Program has increased by \$100 million in just the last year alone. These increases coincide with a period of rapid increases in debt service payments on previous borrowings and a significant decline in the last three years of state debt service assistance. Rates will have to cover 90% of current expenses, as compared to the 80% during the period prior to the FY03 elimination of state debt service assistance. Most of the reductions to future capital spending come after FY10 when outstanding debt is expected to peak at over \$6 billion (principal only).

The responses to the Court filings also noted that by the time the MWRA moved forward with its major capital program, "the bulk of the federal funding had dried up, leaving the MWRA ratepayers to make up for lost time." Yet, during the period of meaningful federal funding when Massachusetts received its full allotment of clean water funds; other communities benefited from support that might have gone

substantially to the MWRA service area. Federal funding for the Clean Water Act expired long before the need for the funds was met. Even now, SRF funding has been cut by one-third in the Administration's proposed budget for EPA in FY06 and it is reported that the Administration plans to phase out additional SRF funding in the following two fiscal years.

The Authority has demonstrated a good faith effort to making progress on the holistic discussion and has acceded to extensive demands for a larger tunnel, more stormwater control and a faster schedule for all aspects of the North Dorchester Bay project. Costs of the other projects that are part of the holistic discussion have risen substantially, or have the potential to rise substantially, even as baseline conditions change and benefits originally anticipated are more difficult or more expensive to achieve. Regulators must live up to the expectation that the Authority will be held harmless for cost increases for the other three projects where Bcso is or should be the eventual water quality designation.

- 4• Until full agreement is reached by all parties, the Advisory Board believes the Authority should suspend all work on the four projects involved in the discussion. **Freeze spending on the four CSO projects under discussion as part of the holistic approach. These projects are: the North Dorchester Bay/Reserved Channel projects, East Boston Branch Sewer Relief project and projects affecting CSO controls for the Charles River and the Alewife Brook.** A number of steps are anticipated in the coming months. Among the contracts and anticipated actions that should be suspended are:

North Dorchester Bay

- Submittal of the Section 61 Finding
- Tunnel Design beyond the 60% Submittal
- Procurement of Tunnel and Facility Construction Management Services
- Procurement of the Pleasure Bay Construction contract
- Start of design for the Morrissey Boulevard Drain
- Acquisition of land and easements
- Procurement of the Tunnel Construction contract

Cambridge/Alewife Brook Sewer Separation

- MWR003 Gates and Siphons Design Contract

Cambridge/Cottage Farm CSO Controls

- Charles River CSO Controls Study and Design contract

The Authority notes in its March 15, 2005 report to the Court that the Board of Directors delayed approval of the Section 61 Finding for the North Dorchester Bay and

Reserved Channel CSO projects until the Authority receives written confirmation of prior verbal commitments from EPA and DEP that its acceptance of stormwater as part of the North Dorchester Bay CSO control project will not serve as a precedent for solving future CSO compliance issues and an agreement on a final long-term CSO control plan is reached.

Also unresolved is the request to receive written assurances from the regulatory agencies that stormwater control is not the responsibility of the Authority. It is imperative that the inclusion of stormwater control in the South Boston project does not set a precedent for other CSO areas or for other wastewater projects. **Continue to pursue formal, written assurances from the state and federal regulatory agencies that as a policy, stormwater control is not the responsibility of the MWRA and that inclusion of some stormwater control in the North Dorchester Bay CSO project does not set a precedent for other CSO projects or other wastewater projects.** The Authority reports that as of mid-March a written response had been received from the federal EPA.

•5•

The agenda for the holistic approach also includes resolution of the water quality standards for the Alewife Brook and for the Lower Charles River. The Authority has proposed that both receiving waters be classified as Bcso. The extension last fall 2004 of the variances for both water bodies provided another three years for additional study and consideration of CSO control and optimization measures that might lead to additional water quality improvements. But flooding and stormwater contributions to the Alewife Brook and the very existence and operation of the Cottage Farm facility on the Charles River point to the expectation that a Bcso designation is the justifiable outcome. **Set water quality standards for the Alewife Brook and for the Lower Charles River at Bcso as part of the holistic discussion.**

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A part of the agenda for the holistic approach is the need to set updated schedules for the projects under discussion and to set water quality standards for the Alewife Brook and for the Lower Charles River. The Advisory Board notes that the CSO Program and particularly the increased costs and accelerated schedule for the North Dorchester Bay group of projects are the principal drivers for rate increases that are now \$33 million higher for the next five years (FY07-11) than projected in the Final FY05 CIP. These additional rate requirements are on top of the rapidly rising rate requirements due to scheduled debt service payments on existing debt. The Authority and regulators need to take into consideration the particular impacts of the accelerated schedule on rates over the next several years. **Revisit the design and construction schedules for the North Dorchester Bay projects as assumed in the Proposed FY06 CIP and adopt schedules that do not exacerbate rate increases over the next several years.**

•7•

Table 10

Total Advisory Board Recommended Cuts/Adjustments (\$000)	
Project	\$ Reduction
Reflect the award of the Braintree Weymouth Replacement Pump Station - Wastewater	\$4,025
Reflect the award of the Electrical Equipment Upgrade Construction 2 project - Wastewater	519
Update budgeted amount for Legal Services associated with the Residuals program - Wastewater	396
Remove the MWRA Facilities Management and Planning - Facilities Construction phase from the Proposed FY06 CIP and reintroduce the phase once the objectives of the of the space planning effort are clarified through the design stage - Business and Operations Support	3,168
Revise the Business Systems Plan budget to reflect the entire elimination of the Document Management System from the Proposed FY06 CIP - Business and Operations Support	231
TOTAL	\$8,339

Contingency Calculation (\$000)	
Total MWRA Contingency fund reduction based upon a 10% reduction of total recommended changes in the Total Advisory Board Recommended Cuts/Adjustments table above	\$834
Total Project and Contingency Allowance Cuts/Adjustments	\$9,173

II. PROJECT-SPECIFIC COMMENTS AND RECOMMENDATIONS

Figure 8

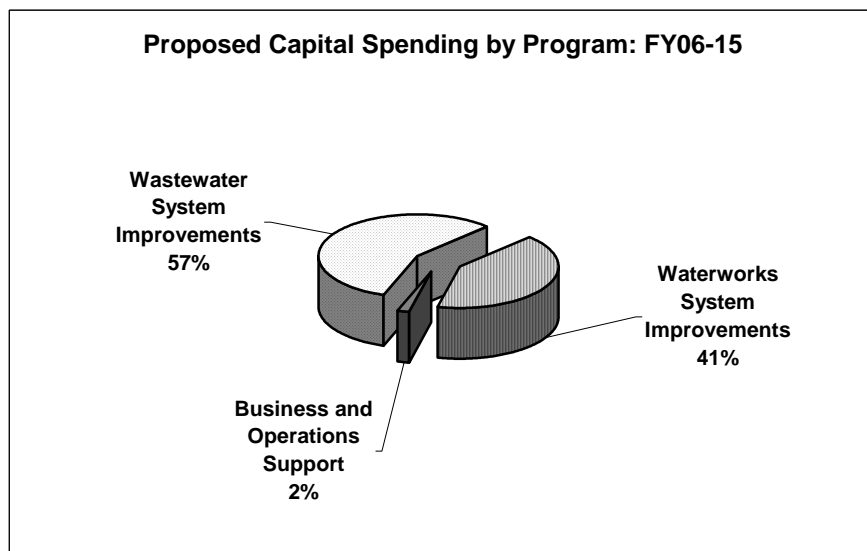


Table 11

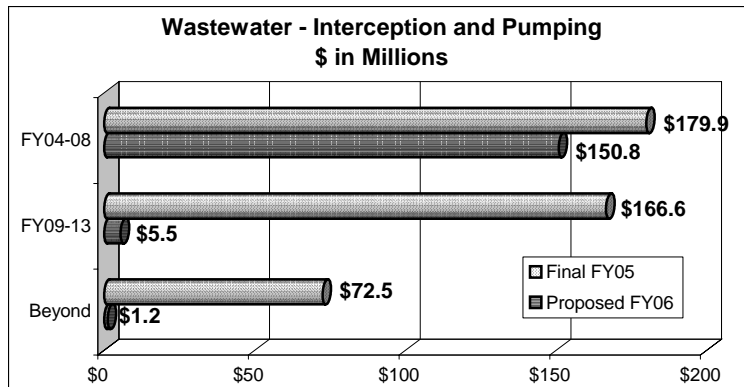
Proposed FY06 Capital Improvement Program - Projects With a Notice to Proceed Date in Fiscal Year 2006, \$1 Million and Over				
Project	Subphase [Project #]	Notice to Proceed	Substantial Completion	Total Contract Amount [\$ millions]
MetroWest Water Supply Tunnel	Hultman Rehabilitation Construction Project 9 [6856]	July-05	June-06	4,100
MetroWest Water Supply Tunnel	Design Construction Administration/Resident Inspection Construction Project 6 [6911]	July-05	July-11	12,900
Sudbury/Weston Aqueduct Repairs	Sudbury Aqueduct Short-Term Repairs [7016]	July-05	December-05	2,544
North Dorchester Bay CSO Project	Pleasure Bay Construction [7012]	August-05	February-06	3,579
Inflow/Infiltration Local Financial Assistance	Repayments - Phase V [6927]	August-05	May-18	(22,000)
Deer Island Treatment Plant Asset Protection	Miscellaneous Variable Frequency Drive Replacements [6877]	September-05	September-07	1,050
Quabbin Transmission System	Phase 1 Oakdale Valves Construction [6690]	October-05	November-06	2,000
Wastewater Central Monitoring	Construction 2 [6534]	November-05	November-06	3,176
Blue Hills Covered Storage	Design/Build Field Oversight [6214]	November-05	September-08	2,189
Blue Hills Covered Storage	Design/Build [6216]	November-05	June-08	31,305
Deer Island Treatment Plant Asset Protection	Centrifuge Backdrive Replacement [7057]	December-05	December-07	1,400
Valve Replacement (Water)	Construction 6 [6435]	December-05	May-07	1,965
Interception & Pumping Facility Asset Protection	Section 160 [6843]	January-06	January-08	4,683
Interception & Pumping Facility Asset Protection	Headworks Condition Assessment/Facilities Plan [6886]	January-06	June-07	2,000
Weston Aqueduct Supply Mains	Design/Construction Administration/Resident Inspection WASM 3 [6539]	January-06	January-17	9,250
Heath Hill Road Pipe Replacement	Construction Section 52 Rehabilitation [5194]	January-06	October-07	8,516
Deer Island Treatment Plant Asset Protection	Electric Equipment Upgrade Construction 3 [6855]	February-06	November-07	1,815
North Dorchester Bay CSO Project	Tunnel Construction (Chapter 30) [6244]	April-06	December-09	151,959
Wachusett Reservoir Spillway Improvements	Design [7019]	April-06	May-09	1,200
Upper Neponset Valley Sewer System	Replacement of Sewer Section 687 [6629]	May-06	September-07	5,889
Walnut Hill Water Treatment Plant	Walnut Hill Water Treatment Plant Construction Project 7 - Existing Facilities Modifications [6650]	June-06	June-08	5,000

WASTEWATER SYSTEM IMPROVEMENTS

The Authority is budgeting \$1,522.9 million for Wastewater projects in the Proposed FY06 CIP, a reduction of \$211.7 million from the amount budgeted in the Final FY05 CIP. Just over \$664 million was spent through FY03, leaving \$858.6 million for the period FY04 on. Spending during the FY04-08 period increases by \$82 million to \$623 million. Spending during the next five-year period falls by \$217 million to \$198.6 million, less than one-third of the spending of the previous five years. Budgeted spending for the years beyond FY13 falls by nearly \$77 million to \$36.9 million.

Interception and Pumping

Figure 9



The budget for this group of Wastewater projects is reduced by \$261.5 million, from \$761.5 million to \$500 million. Nearly \$30 million of the reduced spending falls in the FY04-08 cap period, with spending for the five-year period now budgeted at nearly \$151 million. Most of the reduction, just over \$160 million, occurs during the next five-year period when spending is reduced from the

previously-budgeted \$166.6 million to just \$5.5 million. Another \$71.3 million is reduced from spending for the years beyond FY13, leaving planned spending for this period at \$1.2 million.

Quincy Pump Facilities

Final FY05 CIP:	\$26.245 million
Proposed FY06 CIP:	\$26.152 million
Percentage Change:	-0.4%

This project is substantially complete, with only closeout items remaining. The total budget is \$26.15 million, a \$0.09 million decrease from the budgeted amount in the Final FY05 CIP. The Quincy Pump Station reached substantial completion in December 2002 and the Squantum Pump Station was substantially complete by September 2003.

Braintree-Weymouth Relief Facilities

Final FY05 CIP:	\$226.531 million
Proposed FY06 CIP:	\$219.288 million
Percentage Change:	3.2%

Costs for this multi-part project have decreased by \$7.2 million with the elimination of the \$10.6 million contract for the rehabilitation of Sections 624 and 652 (formerly Sections 123A and 124), offset by cost increases for other design and construction contracts. The deleted contract had been part of a Consent Order for the project. Five of the six remaining construction contracts are complete: the Mill Cove Siphons (\$2.75 million); North Weymouth Interceptor (\$4.7 million); the Tunnels that connect the pelletizing plant to the Intermediate Pump Station and from there to the Nut Island Headworks (\$84.6 million); the Intermediate Pump Station (\$47.1 million); and the Fore River Siphons (\$16.8 million). The revised budget for all elements of this project is \$219.3 million.

Spending on the remaining construction contract, the 28 MGD Braintree-Weymouth Replacement Pump Station, and related design services over the next three years make this the eighth largest project in the Authority's capital program during FY06-08.

The combined elements of this project will reduce surcharging in Braintree and Weymouth, reduce frequent overflows into the Weymouth Fore River during wet weather, and allow sludge to be piped (instead of barged) from Deer Island to the Fore River pelletizing plant.

The contract for the Replacement Pump Station was approved by the Board of Directors in January 2005, at \$15,850,508 as compared to the budgeted amount of \$19,876,000. **Update budgeted amounts for the Braintree-Weymouth Replacement Pump Station, for a reduction of \$4,025,492.** Substantial completion of the contract is anticipated for April 2007.

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New Neponset Valley Relief Sewer

Final FY05 CIP:	\$30.334 million
Proposed FY06 CIP:	\$30.334 million
Percentage Change:	0%

This project is essentially complete, at a total cost of \$30.3 million, unchanged from the Final FY05 CIP. The 46 MGD pump station began operation in March 1996, while the interceptor was placed into service in September 1997. Wetlands restoration work is expected to be complete by the end of FY05.

Upper Neponset Valley Sewer System

Final FY05 CIP:	\$35.835 million
Proposed FY06 CIP:	\$40.028 million
Percentage Change:	11.7%

This project involves the construction of 4.7 miles of new relief sewers in West Roxbury (Boston) and Newton. The system receives wastewater from West Roxbury, Brookline, Newton and a small portion of Dedham. The project will provide hydraulic improvements and reduce surcharging and overflows in the area. Construction will be complicated by issues involving trees, traffic, noise and vibration along the VFW Parkway. The interceptor has been aligned to minimize impacts to 550 one-hundred-year-old trees along the Parkway.

This is the third largest project (not including the contingency allowances) in the capital budget over the next three years. Cost estimates now total \$40.0 million, as compared to the \$28.3 million in the Proposed FY05 CIP a year ago, reflecting completion of the design work and increased inflation allowances. The largest of the two

construction contracts is out for bid, with a budgeted amount of \$26.9 million; award is scheduled for March 2005. The lowest bid was \$35.779 million, \$8.905 million more than the Proposed FY06 budget. Substantial completion is scheduled for November 2007. The second contract, estimated at \$5.9 million, is to be advertised next spring. Also out for bid is a separate contract for resident inspection services for both construction contracts.

Neponset Valley Relief Sewer

Final FY05 CIP:	\$12.333 million
Proposed FY06 CIP:	\$0
Percentage Change:	Project Deleted

This project has been removed from the capital budget. Previously budgeted at \$12.3 million, the project included funding for design and construction of approximately three miles of sewer in the Hyde Park and Dorchester neighborhoods of Boston. Construction had been planned for the two-year period from July 2016 through July 2018.

Wellesley Extension Replacement Sewer

Final FY05 CIP:	\$88.018 million
Proposed FY06 CIP:	\$64.769 million
Percentage Change:	26.4%

All future planned spending for this project has been deleted from the Proposed FY06 CIP. Nearly \$64.4 million of the \$88.0 million total budget had been spent on seven construction contracts, starting more than fifteen years ago. The \$23.66 million remaining had been budgeted for the construction and related design services for the repair and relining of the delaminating new Wellesley Extension Sewer. Work had already been delayed for years due to access problems, with a construction schedule planned for the two-year period December 2010 through December 2012.

Framingham Extension Relief Sewer

Final FY05 CIP:	\$47.996 million
Proposed FY06 CIP:	\$48.009 million
Percentage Change:	0%

This project is essentially complete, at a total cost of \$48.0 million, virtually unchanged from the Final FY05 CIP. Construction of the new pump station, force main and gravity sewer was completed in April 1998. Only Conservation Committee work is outstanding; completion is anticipated by the end of FY05.

Cummingsville Replacement Sewer

Final FY05 CIP: \$7.061 million
Proposed FY06 CIP: \$8.200 million
Percentage Change: 16.1%

This project is budgeted at \$8.2 million, a \$1.14 million increase over the \$7.06 million budgeted in the Final FY05 CIP. Budget increases are the result of the addition of siphon modifications of Section 113 to alleviate flooding (in an earlier budget cycle) and updated cost estimates for construction, as well as design amendments reflecting a longer construction schedule. Award of the \$4.3 million relief sewer construction contract is scheduled for March 2005; the lowest bid amount was \$4.2 million or \$69,554 below the amount in the Proposed FY06 CIP.

The Cummingsville Branch Sewer system is located in Winchester and receives wastewater from Burlington and sections of Winchester and Woburn. The project is to replace 5,000 linear feet of sewer and to clean and repair a second 5,000 feet of sewer pipe. A second contract to modify the Section 113 siphon chamber is budgeted for \$0.875 million, with a notice to proceed date of November 2005 and a substantial completion date of June 2006.

Siphon Structure Rehabilitation

Final FY05 CIP: \$6.969 million
Proposed FY06 CIP: \$0.875 million
Percentage Change: -87.4%

All future spending has been deleted for this project, leaving \$0.9 million in payments made to date. The \$6.96 million budget in the Final FY05 CIP was reduced by \$6.1 million. The project would have involved rehabilitation and improvements to 127 siphon chambers and connecting structures, nearly two-thirds of the 203 structures in the Authority's wastewater system. The project was intended to improve flow conditions, increase odor control capabilities, reduce surcharging and overflows, and improve maintenance access. The Final FY05 CIP had scheduled construction for the period August 2009 through December 2010.

Ashland Extension Sewer

Final FY05 CIP: \$1.020 million
Proposed FY06 CIP: \$0
Percentage Change: Project Deleted

This project has been eliminated from the capital budget. The previous budget had included \$1.02 million for planning and design phases of this project to study the feasibility of extending the Framingham Relief Sewer at the Arthur Street DPW yard to the Ashland town line.

System Master Plan Interceptors

Final FY05 CIP: \$10.915 million
Proposed FY06 CIP: \$0
Percentage Change: Project Deleted

This project, previously budgeted at \$10.9 million, has been eliminated from the budget. The project was to prepare a facilities plan and environmental impact report for four interceptor systems (Mystic Valley, Revere Beach, Cambridge Branch and Malden Branch) and to implement capital improvements for four conduits in these systems. The Final FY05 CIP had scheduled construction for the period April 2018 through April 2020.

Corrosion and Odor Control

Final FY05 CIP: \$17.215 million
Proposed FY06 CIP: \$3.515 million
Percentage Change: -79.6%

The budget for this project has been reduced to \$3.5 million, a \$13.7 million reduction from the \$17.2 million budgeted in the Final FY05 CIP. The remaining budget includes actual and anticipated payments through FY05 plus \$0.6 million of continuing design work. Eliminated are the Framingham Extension Sewer rehabilitation contract of \$8.4 million, the Arthur Street pump station and force main subphase at \$1.5 million, and the air treatment systems subphase at \$1.4 million, together with related land acquisition and design costs. Work had been scheduled to extend from March 2006 through May 2008.

In the most recent report to the Board of Directors in February, staff report that the consultant has been directed to stop design on the modifications to the Arthur Street Pump Station and Framingham Relief Sewer Force Main, which is currently at 50% design completion and the rehabilitation of the Framingham Extension Sewer Tunnel, which is currently completed through preliminary design. The consultant has been further directed to complete the final design for the odor control systems, which is currently under way, and to submit the 100% design documents in March 2005. At that time, all work on the project will stop.

West Roxbury Tunnel

Final FY05 CIP: \$82.968 million
Proposed FY06 CIP: \$8.880 million
Percentage Change: -89.3%

All remaining spending for the West Roxbury Tunnel project has been deleted from the budget. Earlier payments of \$8.88 million for the design and rehabilitation of Section 138 and the West Portal remain in the budget. The remaining balance of \$74.1 million for the design and rehabilitation of nearly 2.3 miles of sewer has been removed.

This had been the fourth largest wastewater project in the FY05 CIP. Design had been scheduled to proceed in September 2005, with construction to run from December 2007 through March 2011.

The West Roxbury Tunnel system is located in Boston and was constructed in 1963 as part of the expansion of the southern system. The tunnel conveys wastewater from the Wellesley Extension Relief Sewer and Upper Neponset Valley Sewer in West Roxbury to the High Level Sewer in Hyde Park. The service area includes all or parts of Ashland, Framingham, Natick, Wellesley, Needham, Brookline, Newton, Dedham and Boston. The project was designed to address severe and moderate corrosion (due to high levels of hydrogen sulfide and sewer turbulence) and to prevent structural failure, surcharging and potential overflows to the Charles River in the event of failure.

Wastewater Central Monitoring

Final FY05 CIP:	\$14.432 million
Proposed FY06 CIP:	\$15.475 million
Percentage Change:	7.2%

Cost estimates for this project have increased \$1 million to \$15.5 million. The project is to provide a centralized monitoring and control system for the wastewater transport system. Design and installation of a Supervisory Control and Data Acquisition (SCADA) system is expected to improve system operation and maintenance through automation and remote monitoring and to result in annual savings of more than \$2 million.

The design and integration services contract was awarded in June 2002. Work will be implemented through three construction contracts. The first (and largest) construction contract is out for bid at an estimated \$5.7 million. It involves more than a dozen facilities, including most pump stations and CSO facilities. Award is expected this spring; substantial completion is scheduled for June 2006. The second contract, budgeted at \$3.2 million, will address the older headworks facilities; 100% design report is expected for May 2005. Construction is scheduled to begin by November 2005 and take one year. The third construction contract addresses several remaining pump stations and power installation at approximately 36 interceptor monitoring locations. The \$0.35 million contract is to be designed in the latter half of calendar year 2005, with construction to run from July 2006 through January 2007.

Staff also report that while long-term improvements are developed and implemented, staff have conducted ongoing, in-house design and construction efforts to achieve additional short-term SCADA monitoring and control capabilities, allowing all facilities except the headworks to be de-staffed (during dry weather).

South System Relief Project

Final FY05 CIP:	\$4.546 million
Proposed FY06 CIP:	\$5.021 million
Percentage Change:	10.4%

Costs for this project have increased \$0.475 million to reflect an increased cost estimate for the *Outfall 023 Structural Improvements* (by \$1 million from \$0.5 million to \$1.5 million), offset by the deletion of the *Howard Street Pump Station Feasibility Study* (previously estimated at \$0.525 million).

The cost of this project now totals \$5.02 million and includes work on the *Archdale Road Diversion Structure* and the *High Level Sewer*, as well as earlier *cleaning of Outfall 023*, which was completed in 1999.

The contract for *Outfall 023 Improvements* is scheduled for the period July 2007 through December 2008, one year later than assumed in the Final FY05 CIP.

Wastewater Process Optimization

Final FY05 CIP:	\$24.985 million
Proposed FY06 CIP:	\$ 2.187 million
Percentage Change:	-91.2%

This project was developed to evaluate the collection system and facility modification alternatives to maximize wastewater treatment and minimize operating and maintenance costs. An initial planning phase, budgeted at \$0.954 million, is complete; it included the development of an updated hydrologic and hydraulic model (InfoWorks CS) and the evaluation of optimization alternatives under typical and extreme storm events. Budgeted is \$1.083 million for the design and construction of a connection between the upstream end of the Somerville Medford Branch Sewer and the North Metropolitan Relief Sewer to reduce surcharge and divert flow away from the Cambridge Branch Sewer and the DeLauri Pump Station. Construction is scheduled for March 2011 through August 2011, two years later than assumed in the Final FY05 CIP.

A second project to further evaluate the benefits of constructing a redundant siphon crossing the Mystic River from the Cambridge Branch Sewer to the DeLauri Pump Station is budgeted at \$0.150 million. Design and construction costs of \$22.8 million that had been included in the FY05 CIP have been eliminated from the Proposed FY06 CIP. Construction was to have run from August 2013 through July 2014.

Wastewater Meter System Equipment Replacement

Final FY05 CIP:	\$6.578 million
Proposed FY06 CIP:	\$6.578 million
Percentage Change:	0%

The FY06 Proposed budget remains unchanged from the \$6.578 million budgeted in the previous CIP. The project involves the installation of 196 replacement meters and 24 replacement remote terminal units. The initial system had been more than ten years old, limited availability of replacement parts made maintenance difficult, and technological advances made the current system obsolete. Installation is expected to be complete in the spring of 2005. Design and installation of permanent site improvements, budgeted at \$1.2 million, has been delayed five years to January 2016.

Regional I/I Management Planning

Final FY05 CIP:	\$0.397 million
Proposed FY06 CIP:	\$0.169 million
Percentage Change:	-57.4%

Just the \$0.169 million already spent on planning remains in this project. A phase to develop plans to reduce infiltration and inflow and sewer overflows, which had been budgeted at \$0.228 million, has been deleted. The purpose of the project had been to support regional I/I reduction goals and strategies outlined in the March 2001 report of the I/I Task Force. The *Planning* phase was to support tasks as part of the NPDES permit and the development of sanitary sewer overflow (SSO) reduction plans.

Interception and Pumping Facility Asset Protection

Final FY05 CIP:	\$117.166 million
Proposed FY06 CIP:	\$20.455 million
Percentage Change:	-82.5%

This project was introduced four years ago in the Proposed FY02 CIP with an initial budget estimate of \$3.4 million. At first, the project addressed “immediate critical facility and equipment issues,” and was viewed as an initial step in defining some of the headworks, pump station and interceptor projects that the Authority recognized would be needed in the future. Like the Deer Island Facility Asset Protection project, this project was expected to eventually include five areas: equipment replacement, architectural projects, utilities projects, support projects and specialty projects. Several additional projects have been included in the past several years.

Last year, the Authority introduced a major new subphase with a placeholder budget of \$102 million, not unlike the Deer Island FAMP budget. The interceptor renewal program was intended to rehabilitate pipelines that pose the highest risk and/or consequence of failure as identified by the Authority’s Interceptor Renewal Task Team. More specific pipeline projects were expected to be defined for each subsequent CIP. Work was scheduled over a thirteen-year period, from March 2006 through June 2019. This subphase has been deleted from the Proposed FY06 CIP as part of the strategy to contain rate increases. The budget document notes that the future need and funding for this project will be evaluated and considered as part of the MWRA’s master planning

process. The Authority reports that 33% of its 277 miles of interceptors are over 100 years old, and 62% are over 50 years old.

- 9• Also eliminated was condition monitoring for Field Operations Department facilities. This category of work had earlier been included in the scope of the Equipment Condition Monitoring contract under the Deer Island Treatment Plant Asset Protection project. **Report on next steps for condition and risk assessment for Field Operations facilities. Coordinate similar analyses for the Residuals pelletizing plant and for the Clinton Wastewater Treatment Plant.**

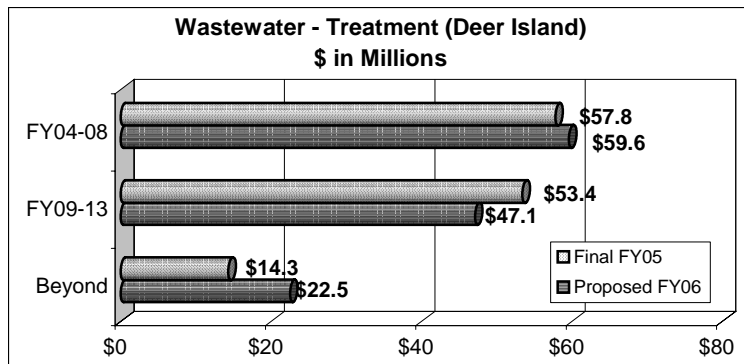
The project now includes \$8.16 million for five *Interceptor* projects and \$12.3 million for twelve *Facilities* improvement projects, for a total of \$20.455 million.

Interceptor Projects. The rehabilitation of 4,000 linear feet of pipeline in Lexington was completed in April 2004 at a cost of \$1.57 million. Rehabilitation of a portion of the Mill Brook Valley sewer is under way with a cost to the Authority of \$0.6 million. Repair of a section of the Mystic Valley Sewer during January 2006 through January 2008 is budgeted at \$4.68 million. Replacement of 1,200 feet of the 93A Force Main is budgeted for \$0.5 million from September 2005 through June 2006. Evaluation of the condition of Sections 80 and 83 is budgeted for March 2006 through May 2007 at \$0.715 million.

Facilities Improvement Projects. The Authority is budgeting funds for nine facilities improvement projects involving the Alewife Brook Pump Station, the Hingham Pump Station, the Caruso Pump Station, the Framingham Pump Station, Chelsea Sluiceway, and the washdown system at the Prison Point and Cottage Farm CSO facilities. Each project is budgeted at less than \$1 million. Also budgeted are \$1.577 million for upgrades to the heating systems at the Remote Headworks (an increase of \$0.471 million from the Final FY05 CIP); \$5.0 million for screen replacements at the Remote Headworks (a \$2.0 million increase from the Final FY05 CIP); and \$2.0 million (an increase from \$0.6 million in the Final FY05 CIP) for a Headworks Condition Assessment and Facilities Plan (to start in January 2006 and reach substantial completion by June 2007, four months later than previously assumed in the Final FY05 CIP).

Treatment: Deer Island Plant Optimization and Asset Protection

Figure 10



The Authority is budgeting \$139.3 million to upgrade and maintain the huge Deer Island Wastewater Treatment Plant, an increase of \$3.6 million from the amount shown in the Final FY05 CIP. Through FY03, the Authority had spent \$10.15 million, leaving \$129.2 million to

be spent from FY05 through FY15, including \$2.5 million for the period beyond FY15. Spending during FY05 is expected to be \$12.4 million. Authority staff anticipate equipment modifications and replacements will be ongoing expenses of the plant well beyond FY15. The budget assumes that spending will increase by \$2.1 million, to \$59.6 million, during the FY04-08 period and will decrease by \$6.3 million, to \$47.1 million, during the following five years. Expenses will continue to shift out, with the period beyond FY13 gaining \$8.2 million in spending, bringing budgeted spending to \$22.5 million.

Deer Island Plant Optimization

Final FY05 CIP:	\$33.020 million
Proposed FY06 CIP:	\$43.971 million
Percentage Change:	33.2%

This project is funded at \$43.97 million for 24 design and construction (and related services) contracts. The project is the thirteenth largest project (net of the contingency allowance category of the budget) over the next three years (FY06-08). Spending has increased \$10.95 million since the Final FY05 CIP. Cost increases include: \$3.8 million increase for *Ancillary Modifications Construction 1* due to actual contract award; increase of \$1.9 million to the scope of *Ancillary Modifications Construction 2-2* (to be awarded in the spring 2005); and \$0.4 million increase to *Ancillary Modifications Construction 3-1* based on the actual contract award of \$3.174 million. Two *Long-Term As-Needed Design* contracts added \$4.3 million to previous estimates of future as-needed design contracts.

Staff report that seven contracts are expected to proceed in calendar year 2005. Under way are *Ancillary Modifications-Construction Contract 1*, to include rehabilitation of the Winthrop Terminal and replace sump pumps at the North Main Pump Station for \$9.6 million; and *Ancillary Modifications-Construction Contract 3-1* to provide a number of improvements to the secondary clarifiers for \$3.6 million. To be awarded this spring is *Ancillary Modifications-Construction Contract 2-2* at a budgeted amount of \$5.3 million, to replace VFD units and modify HVAC equipment at the South System Pump Station. Later this spring design work for the next phase of improvements should get under way (*Ancillary Modifications Design 4*, for modifications to the cryogenics facility, odor control systems, digester gas systems and scrubber improvements). Work on the continuous emissions equipment, budgeted at \$0.3 million, is to start in December 2005.

Also awarded in March 2005 were two more *As-Needed Design* (Phases 4-1 and 4-2) contracts, for \$1 million each over the next two years. The contracts provide design services to supplement existing engineering resources for specialized and/or complex engineering issues.

The Proposed FY06 budget shows that just over 25% (\$11.66 million) of this project's total cost has been spent through FY04. Spending peaks at \$8.9 million in

FY05 and \$9.05 million in FY06. In the next several years, planned spending drops to less than half those amounts although, spending increases for the Deer Island Treatment Plant Asset Protection project.

Deer Island Treatment Plant Asset Protection

Final FY05 CIP:	\$102.697 million
Proposed FY06 CIP:	\$95.360 million
Percentage Change:	-7.1%

This project is now budgeted at \$95.36 million. Total cost estimates have been reduced by \$7.3 million, with the deletion of the eastern seawall project, personnel dock rehabilitation, harbor outfall modifications, PICS replacement, wind power and closed circuit cameras. Some costs have been shifted out beyond the current cap period to FY09 and \$10 million in other cost estimates have been shifted to FY15.

To date, the pace of spending has been much slower than assumed in previous budgets, with just \$2.47 million accrued through FY04 (for the first five years of the project). Another \$3.5 million is assumed to be spent during FY05. The Proposed FY06 budget assumes spending will pick up during FY06 to \$5.3 million and FY07 to \$9.4 million.

The Deer Island Asset Protection project includes five major functional areas: *equipment replacement projects, architectural projects, utilities projects, support projects* and *specialty projects*. Each year, as specific projects are identified, they are added to the specific functional area listing and costs are subtracted from the Equipment Replacement Projection estimate, which had originally been used to size the Asset Protection project.

Equipment Replacement includes the bulk of the projected funding of the overall project, now sized at \$55.7 million as compared to the \$69.6 million budgeted in the Final FY05 CIP. Eleven projects and project phases were identified, given their own separate funded subphases and then subtracted from the equipment replacement placeholder. Seven of these projects, totaling \$9.4 million, are in the *Equipment Replacement* category and four more, totaling \$5.9 million, are classified in the *Utilities* category.

During the remainder of calendar year 2005, the Authority anticipates moving forward with CEMS equipment replacement, digester chiller replacement, and centrifuge backdrive replacement.

- 10• In the past year, the Authority has been conducting an Equipment Condition Monitoring study. **Report on the results of the Deer Island Equipment Condition Monitoring study. Link results to plans for future Optimization and Asset Protection projects.**

The Architectural functional area includes concrete repair and expansion joint repair. Several of the eliminated projects were in this category of expense, including the seawall, pier construction and personnel dock rehabilitation. The total now budgeted for this group of projects is \$1.3 million.

Utilities projects include electrical wiring, heating systems, process control upgrades and VFD replacements. The total budgeted for this subgroup is \$34.6 million, as more specific projects have been identified and funding has shifted from the Equipment Replacement placeholder budget. The Electrical Equipment Upgrade Construction 2 project was awarded in March 2005 for \$1,896,500 as compared to the \$2.415 million in the Proposed FY06 CIP. **Update budgeted amounts for the Deer Island Electrical Equipment Upgrade Construction 2 project, for a reduction of \$518,500.**

•11•

Also awarded in March 2005 was the Heat Loop Replacement contract, at \$615,000. During the rest of calendar year 2005, the Authority also plans to move forward with VFD replacement in the North Main Pump Station, other miscellaneous VFD replacements, design of recommendations from the power consultant, design of switchgear replacement and fuel transfer pipe replacement.

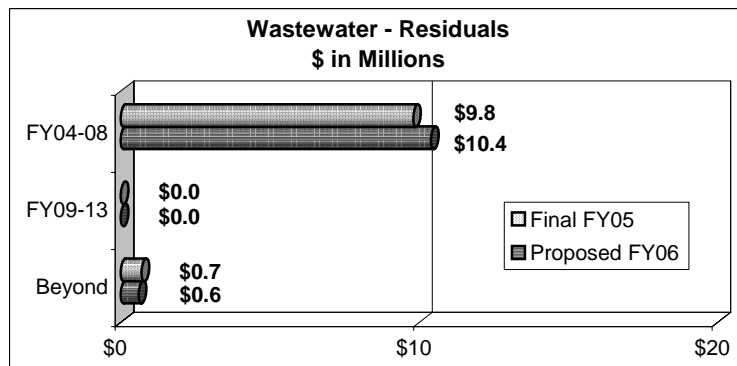
Support projects include document format conversion. Installation of closed circuit cameras has been deleted. Cost estimates for this subgroup total \$0.603 million.

Specialties projects include laboratory modifications, sodium hypochlorite tank repair and improvements to the gravity thickeners, at a total cost of \$3.1 million. Moving forward this spring are repairs to one sodium hypochlorite tank and modifications to the lab sample area.

Residuals

Final FY05 CIP: \$67.113 million
 Proposed FY06 CIP: \$67.654 million
 Percentage Change: 0.8%

Figure 11



Residuals Management Facilities

The Residuals Management Facilities project is budgeted at \$67.65 million, little changed from the previous budget with the exception of an additional \$0.5 million for increased legal services for ongoing cost recovery efforts.

Most of the budgeted amount has been expended, with an estimated \$66.95 million paid out through FY05, and \$0.7 million remaining for the potential payment of a licensing fee, which could come due at the end of the current processing contract in FY15.

The original construction of the pelletizing plant, totaling \$109.4 million, has been categorized as a completed project and is listed in *Appendix 6* of the Proposed FY06 CIP document.

Sludge has been barged from Deer Island to the pelletizing facilities at the Fore River Shipyard since December 1991. With the completion of the applicable components of the Braintree-Weymouth Relief Facilities project, barging across Boston Harbor will cease and the sludge will be transported by pipeline. Testing is already under way and sludge piping should begin full time in spring 2005.

Provisions for capital maintenance projects are part of the fifteen-year contract (signed in March 2001) with the New England Fertilizer Company (NEFCo). Some \$12.327 million has been budgeted to cover the costs of capital improvements over \$10,000, or about \$825,000 per year, on average. An annual budget for capital maintenance is established each year. The contractor prepares an annual report on maintenance and facility condition.

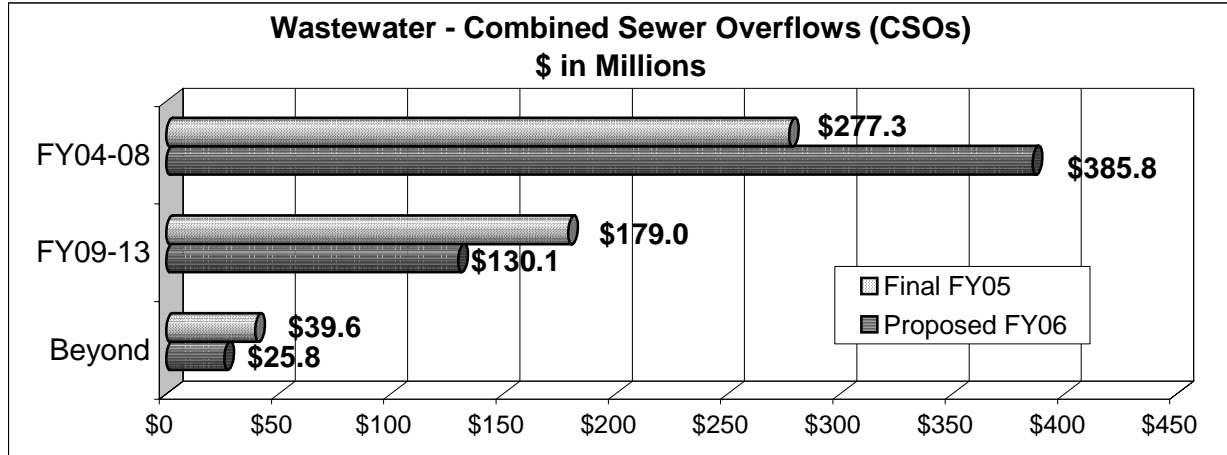
- 12• Staff note that future MWRA capital budgets may include a Facility Asset Management Program for the Residuals facilities. **Provide an update of maintenance activities at the Residuals pelletizing plant at Fore River, including the long term maintenance strategy for the facility. Link the maintenance plans for other Authority assets, including the Deer Island Wastewater Treatment Plant, water and wastewater asset management and long term plans for the Clinton Wastewater Treatment Facility.**

- 13• The Authority has recently concluded legal action to recover costs incurred due to design issues and construction delays. Spending through February on Legal Services came to \$2.871 million; the Proposed FY06 CIP includes \$3.268 million for Legal Services. **Update budgeted amounts for Legal Services for the Residuals program, and reduce the budget by \$0.396 million.** Costs that have been recovered
- 14• are being accrued to the Construction Fund. **Review guidance for assigning costs and credits to the Current Expense or Capital Budgets, with an eye toward maximizing the value of dollars for rates management.**

CSO Control Program

Final FY05 CIP: \$701.310 million
 Proposed FY06 CIP: \$747.035 million
 Percentage Change: 6.5%

Figure 12



Spending on the CSO Control Program increases by \$45.7 million, to \$747 million, in the Proposed FY06 CIP. Through FY03, \$205.3 million has been spent. During the FY04-08 period, spending increases by \$108.5 million, to \$385.8 million, reflecting the accelerated spending for the North Dorchester Bay project. Spending is \$49 million lower during the next five years, at \$130.1 million, and \$25.8 million is budgeted after FY13 to complete the Reserved Channel Sewer Separation project.

Table 12

Combined Sewer Overflow (CSO) Project Costs (\$ in Millions)					
Project	Conceptual Plan (Dec 1994)	Facilities Plan/ Environmental Impact Report (August 1997)	Final FY05 CIP Budget	Proposed FY06 CIP Budget	Status
North Dorchester Bay and Reserved Channel	\$122.7	\$164.4	\$204.0	\$220.0	Reassessment completed
Morrissey Boulevard and Pleasure Bay Drain	NA	NA	18.8	24.6	
Reserved Channel Sewer Separation	NA	NA	48.0	54.4	
Hydraulic Relief Projects at CAM005 and BOS017	6.1	1.3	2.3	2.3	Complete
East Boston Branch Sewer Relief	38.4	30.8	63.0	68.0	Phased design and construction underway
Fort Point Channel Sewer Separation and BOS019 Storage Conduits	7.8	17.6	15.0	16.0	In design
Chelsea Trunk Sewer and Chelsea Branch Sewer Relief	7.8	31.1	29.8	29.8	Complete
Union Park Detention Treatment Facility	16.9	36.3	43.4	45.0	In construction
Upgrades to Existing CSO Facilities and MWRA Floatables Control	13.3	14.6	22.4	22.4	Complete
South Dorchester Bay Sewer Separation	94.0	69.2	112.0	117.0	Phased design and construction underway
Stony Brook Sewer Separation	24.4	45.0	42.6	43.7	Phased design and construction underway
Neponset River Sewer Separation	10.9	9.0	2.7	2.7	Complete
Constitution Beach Sewer Separation	8.9	5.6	3.8	3.8	Complete
Somerville Baffle Manhole Separation	0.7	0.4	0.4	0.4	Complete
Cambridge/Alewife Brook Sewer Separation	12.1	13.8	37.8	39.5	Phased design and construction underway
MWR003 Gates and Siphon	NA	NA	1.4	2.0	
Charles River CSO Controls	NA	NA	NA	0.8	
Region-Wide Floatables Control	1.6	1.6	3.5	3.5	Phased design and construction underway
BOS032 Interceptor Connection Relief	1.1	NA	NA	NA	Project deleted
Dorchester Brook Conduit In-Line Storage	4.1	NA	NA	NA	Project deleted
Subtotal CSO Projects	\$370.8	\$440.7	\$650.8	\$695.9	
Planning and Land/Easements	\$27.0	\$46.3	\$50.0	\$51.0	
Total CSO Program	\$397.8	\$487.0	\$700.8	\$746.9	

In its most recent annual progress report, the Authority notes that MWRA continues to lead most CSO municipalities nationwide in meeting CSO control requirements. In a report to Congress in 2004, EPA noted that, of 828 NPDES permittees with CSOS, only 59% (490) had submitted long-term control plans, and only 35% (290) had received regulatory approval for their plans. In contrast, MWRA has implemented most of its approved long-term control plan and has verified significant benefits.

MWRA Managed CSO Projects

The Proposed FY06 budget includes \$404.45 million for CSO projects managed by the MWRA. The budget reflects the assumption that \$121.1 million will have been accrued by the end of June 2005; there will be a remaining balance of \$283.3 million.

North Dorchester Bay

Final FY05 CIP:	\$270.663 million
Proposed FY06 CIP:	\$223.692 million
Percentage Change:	-17.4%

The Authority is budgeting \$223.692 million for the tunnel, odor control and pump facilities, and the Pleasure Bay construction components of the larger North Dorchester Bay/Reserved Channel project. Set up as separate community-managed projects are the Reserved Channel Sewer Separation project and Morrissey Boulevard Drain projects. These along with land and easement acquisition cost estimates of \$11.9 million, bring the total cost for this project to \$310.859 million. These updates compare to the estimates of \$122.7 million in the conceptual plan in December 1994 and \$164.4 million in the Facilities Plan of 1997. The Authority's most recent Annual Progress Report notes that "total cost to complete the projects for North Dorchester Bay and the Reserved Channel will be significantly more, with inflation to the mid-point of construction and land and easement costs." Cost estimates for the phases that remain in this project have gone up \$20.6 million.

Figure 13: North Dorchester Bay Schematic



Following approval of an amendment to the existing design services contract for the tunnel, the Authority has been moving forward with the final design of the new, expanded storage tunnel and related design services (including final design of the Pleasure Bay stormwater diversion to Reserved Channel and initial design of the 15 MGD pump station and the odor control facility). The pace of spending has been accelerated to allow procurement of the tunnel construction contract to proceed in fall 2005, with the intent of awarding the tunnel contract in spring 2006. Through February, FY05 spending on the design contract reached \$1.82 million or \$1.13 million (163%) more than the \$0.692 million budgeted for the year to date. Submittals of the 60% design report and related cost estimates were scheduled for late February and early March 2005.

The project now includes a separate construction contract of \$19.127 million for the dewatering and odor control facilities and \$3.58 million for construction of the Pleasure Bay storm drain improvements project. The Authority expects to procure construction management services for the tunnel and facilities this spring, to advertise for the Pleasure Bay storm drain improvements (with a construction start in early fall),

and to ready documents to initiate the procurement of the tunnel construction contract in the fall. Award of the tunnel contract is anticipated for spring 2006. (See discussion of the holistic strategy on page 19.)

Hydraulic Relief Projects

Final FY05 CIP:	\$2.295 million
Proposed FY06 CIP:	\$2.295 million
Percentage Change:	0%

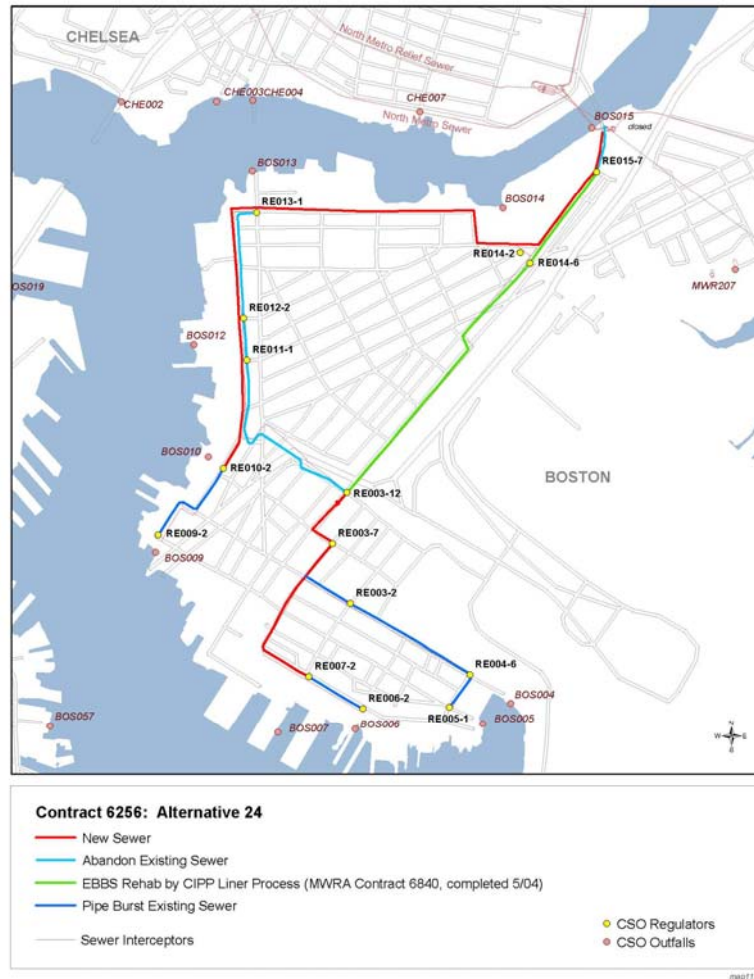
The Authority is budgeting \$2.295 million for two hydraulic relief projects, one in Cambridge and the other in Charlestown. The project was completed in August 2001.

East Boston Branch Sewer Relief

Final FY05 CIP:	\$63.115 million
Proposed FY06 CIP:	\$68.058 million
Percentage Change:	7.8%

The Authority is budgeting \$68.058 million for the design and construction of rehabilitation and replacement of sewers in East Boston. Costs have risen by \$4.94 million since the Final FY05 CIP and could rise again depending on the outcome of scope and schedule discussions ongoing with the regulatory agencies. One of the alternatives under consideration includes additional sewer separation work and could raise the cost estimates by another \$13 million to \$81 million; the 1997 plan estimates for this project were \$30.8 million, less than half the cost of the currently recommended plan. Work has been completed on the \$5.47 million East Boston Branch Sewer Rehabilitation project.

Figure 14: East Boston Branch Sewer Relief Project



This is the second largest project in the Authority’s capital budget over the next three years. It is one of the four projects under discussion as part of the so-called holistic approach to the resolution of remaining projects for the final CSO Control Plan. (See discussion of the holistic approach on page 19.)

BOS019 Storage Conduit

Final FY05 CIP: \$10.019 million
 Proposed FY06 CIP: \$10.626 million
 Percentage Change: 6.1%

Costs have shifted, as the Authority separated construction administration and resident inspection services from the existing design phase services contract and separately procured those services. The contract was approved by the Board of Directors in February 2005 for \$1.12 million. Staff reported that this amount is \$0.488 million over the funds budgeted in the FY05 CIP for construction services.

At their March 2005 meeting, the Board of Directors approved the construction contract for \$10.474 million, \$3.07 million more than the \$7.403 million in the Proposed FY06 CIP. Increased costs reflect higher costs of steel, diesel fuel, cost of labor, and higher costs for support of excavation required to construct large, below-grade structures.

Chelsea Trunk Sewer

Final FY05 CIP:	\$29.757 million
Proposed FY06 CIP:	\$29.765 million
Percentage Change:	0%

This project is budgeted at \$29.8 million and is complete. The project included replacement of the Chelsea Trunk Sewer, installation of 7,700 feet of sewer pipe to replace or relieve the Chelsea Branch Sewer and Revere Extension Sewer and installation of floatables control and repairs to the CHE008 outfall.

Union Park Detention/Treatment Facility

Final FY05 CIP:	\$43.368 million
Proposed FY06 CIP:	\$44.959 million
Percentage Change:	3.7%

The Authority is budgeting \$44.96 million for the design and construction of the Union Park Detention/Treatment Facility and a replacement playground and park. The project will reduce the frequency and impacts of CSO discharges to the Fort Point Channel. Construction began in March 2003 and is scheduled for completion by January 2006. Progress has been slower than scheduled and staff anticipate renegotiating the court schedule by several months. Costs have increased by \$1.59 million from the FY05 CIP, due to greater than expected quantities of contaminated soils and extended contract duration.

Upgrade Existing CSO Facilities

Final FY05 CIP:	\$22.301 million
Proposed FY06 CIP:	\$22.388 million
Percentage Change:	0.4%

The Authority has budgeted \$22.39 million for the upgrade of five of the six CSO facilities: Commercial Point, Cottage Farm, Fox Point, Prison Point and Somerville Marginal. Work was substantially complete by October 2002.

MWR003 Gate & Siphon

Final FY05 CIP:	\$1.371 million
Proposed FY06 CIP:	\$1.848 million
Percentage Change:	34.8%

This project was introduced in the Proposed FY05 CIP and is now budgeted at \$1.85 million, \$0.5 million more than the \$1.37 million budgeted in the Final FY05 CIP. The project had been recommended in the *Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook* in 2001 and is included in the variance extension issued September 1, 2004. It consists of construction of an automated gate and associated controls, 150 feet of new siphon and a floatables control structure. Because the project also includes improvements to the Alewife Reservation, its implementation depends on receipt of all permit and related conditions of contract 12 (under the Cambridge community-managed project for the Alewife Brook) to construct a wetland/storm detention basin. (See discussion of the holistic approach on page 19.)

Charles River CSO Controls

Final FY05 CIP:	\$0
Proposed FY06 CIP:	\$0.824 million
Percentage Change:	New Project

This is a new project and is budgeted at \$0.824 million. The project is to evaluate system performance and opportunities for reducing CSO discharges to the Charles River Basin and to design and construct system optimization measures. The project is a condition of the most recent three-year extension of the Charles River CSO variance; design is to begin in July 2005. (See discussion of the holistic approach on page 19.)

Figure 15: Aerial View of Cottage Farm Facility



Community-Managed Projects

The Authority is budgeting \$291.248 million for projects managed by the City of Boston and the City of Cambridge. The budget assumes that more than half this amount, \$150.95 million, will have been spent by the end of FY05, with a remaining balance of \$140.295 million. Eleven projects are included, including the Morrissey Boulevard Drain and the Reserved Channel Sewer Separation projects which are part of the larger North Dorchester Bay/Reserved Channel project.

South Dorchester Bay Sewer Separation (Fox Point)

Final FY05 CIP:	\$53.612 million
Proposed FY06 CIP:	\$54.521 million
Percentage Change:	1.7%

The Authority is budgeting \$54.5 million for the construction of 69,000 feet of new storm drains, relocation of stormwater runoff connections from the existing combined sewers to the new storm drains and rehabilitation of the existing combined sewers for use as sanitary sewers. Costs have increased by \$0.9 million since the Final FY05 CIP. Work commenced in April 1999, with substantial completion expected by November

2006. The area is tributary to the Fox Point Treatment Facility, which is expected to be decommissioned in the summer of 2009.

South Dorchester Bay Sewer Separation (Commercial Point)

Final FY05 CIP:	\$58.456 million
Proposed FY06 CIP:	\$62.993 million
Percentage Change:	7.8%

The Authority is budgeting \$62.99 million for the construction of 65,000 feet of new storm drains, relocation of stormwater runoff connections and rehabilitation of the existing combined sewers. Costs have increased by \$4.5 million since the Final FY05 CIP. Work commenced in April 1999, with substantial completion expected by November 2007. The area is tributary to the Commercial Point Treatment Facility, which is expected to be decommissioned in the summer of 2009. The Boston Water and Sewer Commission (BWSC) has budgeted \$59.7 million as the eligible costs of this project. Differences in budgeted amounts reflect differences in cost escalation and the inclusion of a placeholder for a possible additional contract.

Stony Brook Sewer Separation

Final FY05 CIP:	\$42.646 million
Proposed FY06 CIP:	\$43.711 million
Percentage Change:	2.5%

The Authority is budgeting \$43.7 million for the construction of 73,000 feet of new storm drains. Costs have increased by \$1.065 million since the Final FY05 CIP. Work commenced in July 2000 and substantial completion is expected by September 2006. The project will improve water quality in the lower Charles River by reducing the number of overflows from as many as 22 to zero in a typical year.

Neponset River Sewer Separation

Final FY05 CIP:	\$2.681 million
Proposed FY06 CIP:	\$2.681 million
Percentage Change:	0%

Work on this \$2.68 million project was substantially complete in November 2002.

Constitution Beach Sewer Separation

Final FY05 CIP:	\$3.769 million
Proposed FY06 CIP:	\$3.769 million
Percentage Change:	0%

Work on this \$3.77 million project was completed in April 2002.

Cambridge CAM002-004 Sewer Separation

Final FY05 CIP:	\$37.875 million
Proposed FY06 CIP:	\$39.467 million
Percentage Change:	4.2%

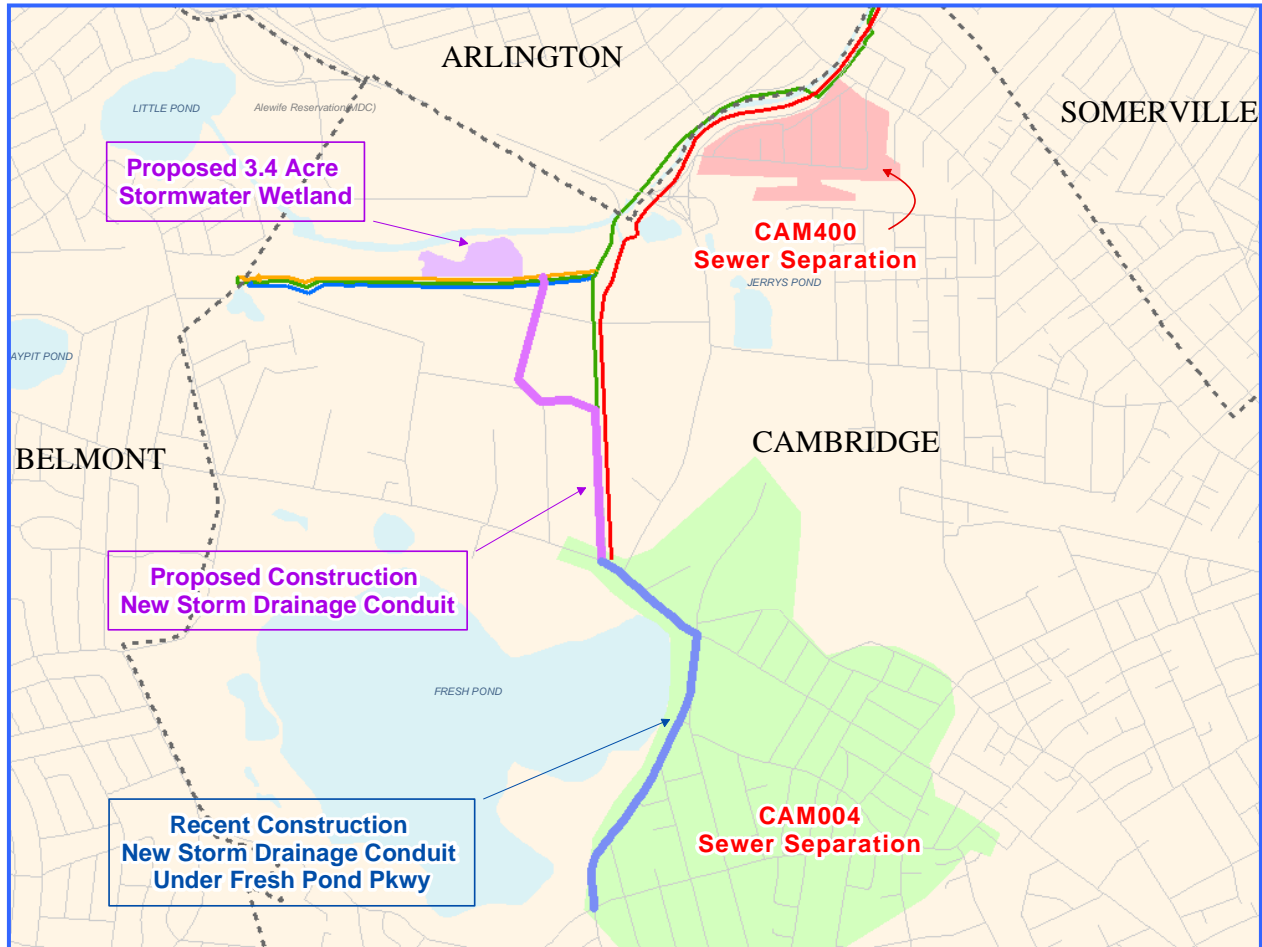
The Authority is budgeting \$39.467 million for sewer separation work in Cambridge, which would minimize CSO discharges to Alewife Brook. Four construction contracts have been completed and accruals through FY05 are projected to reach \$18.245 million. The Proposed FY06 budget shows a remaining balance of \$21.222 million.

The remaining scope of work is still under review. In 2000, MWRA and Cambridge suspended further design work and construction contract awards based on new information showing that conditions in the Cambridge combined sewer system were markedly different from conditions assumed in the 1997 plan. A number of changes have been made to the plan and design and construction schedules and cost estimates are being updated. More recently, a draft Second Supplemental Preliminary Design Report shows that costs could increase by another \$20 million, to \$94.055 million (in November 2004 dollars). Inflation adjustments could increase these estimates further. The 1997 plan estimate for total project costs had been \$13.8 million.

Contract 12, to construct a new wetland basin and outfall, has been delayed by appeals that could further extend the project schedule and increase costs. Some of the cost increases apply to this contract and MWRA is evaluating these and other revisions to the cost estimates and eligibility for funding by the MWRA. **Ensure that MWRA's costs are related to sewer separation and not for stormwater control or stormwater management.**

•15•

Figure 16: Alewife Brook/Mystic River CSO Project



Progress on the design of the MWR003 Gate and Siphon project is also dependent on the resolution of current legal action on the Cambridge sewer separation and wetland construction project. (See discussion of the holistic approach on page 19.)

BWSC Floatables Control

Final FY05 CIP:	\$0.933 million
Proposed FY06 CIP:	\$0.933 million
Percentage Change:	0%

The Authority budgeted \$0.933 million to design and install underflow baffles at ten BWSC combined sewer outfalls. Work was complete in March 2002.

Cambridge Floatables Control

Final FY05 CIP:	\$2.520 million
Proposed FY06 CIP:	\$2.660 million
Percentage Change:	5.6%

The Authority is budgeting \$2.66 million to design and install floatables control devices at eight combined sewer outfalls in Cambridge. Work began in October 2002 and is scheduled for substantial completion in June 2008. Costs increased by \$0.14 million, reflecting an adjustment for inflation.

Fort Point Channel Sewer Separation

Final FY05 CIP: \$5.095 million
Proposed FY06 CIP: \$5.258 million
Percentage Change: 3.2%

Project includes \$5.258 million for the design and construction of 4,600 linear feet of new storm drains, relocation of storm runoff connections from the existing combined sewers to the new storm drains and rehabilitation of the existing combined sewers to use as sanitary sewers. Design is under way and initial construction work began in March 2005, according to the court schedule. Substantial completion of construction is expected by March 2007.

Morrissey Boulevard Drain

Final FY05 CIP: Part of the North Dorchester Bay project, \$18.790 million
Proposed FY06 CIP: \$20.883 million
Percentage Change: New Project

This is considered a “new” project, in that the management of the project will be the responsibility of the BWSC. The Authority is budgeting \$20.88 million for the design and construction of a new storm drain along Morrissey Boulevard to Savin Hill Cove (in Boston). The budget represents a \$2.1 million increase to earlier estimates of \$18.8 million for this project, due to inflation adjustments and revised cost estimates. Design is to begin in June 2005, with substantial completion scheduled for June 2009, 18 months earlier than the previous schedule. (See discussion on the holistic approach on page 19.)

Reserved Channel Sewer Separation

Final FY05 CIP: Part of the North Dorchester Bay project, \$48.0 million
Proposed FY06 CIP: \$54.372 million
Percentage Change: New Project

Another “new” initiative, in that project management will be the responsibility of the BWSC. The Authority is budgeting \$54.37 million for the design and construction of new storm drains, relocation of storm runoff connections from the existing combined sewers to the new storm drains, and rehabilitation of the existing combined sewers for use as sanitary sewers for the area tributary to the Reserved Channel in South Boston. The plan will reduce the number of overflows to the Reserved Channel from as many as

37 to 3 in a typical year. Design is scheduled to begin in January 2007, construction in May 2009, with substantial completion scheduled for December 2017.

CSO Planning and Support

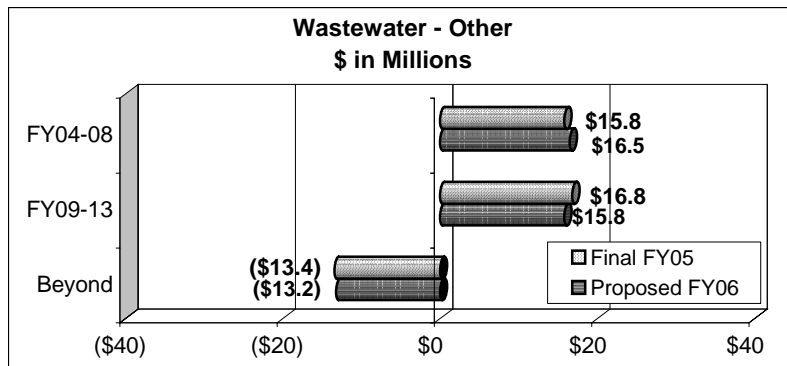
CSO Support

Final FY05 CIP: \$50.834 million
 Proposed FY06 CIP: \$51.334 million
 Percentage Change: 1%

The Authority is budgeting \$51.33 million for several contracts to provide technical assistance, master planning, modeling and land/easement acquisition. Most of the planning and modeling work is complete, including more than \$32 million for the earlier deep rock tunnel CSO control plan (from March 1988 to September 1990) and on master planning for the revised CSO Control Program (March 1992 through September 2004). The Authority projects that \$38.95 million will have been spent through FY05; of the \$12.39 million remaining, \$11.9 million will be for land and easement costs for the North Dorchester Bay project.

Other Wastewater Projects

Figure 17



Total costs for this group of projects remains unchanged at \$68.9 million. The Authority projects that spending will increase slightly during the FY04-08 period and decrease during FY09-13. Net distributions through FY03 were \$43.83 million, with \$25 million in net additional distributions less repayments of the loans.

Infiltration and Inflow Local Financial Assistance

Final FY05 CIP: \$68.593 million
 Proposed FY06 CIP: \$68.593 million
 Percentage Change: 0%

The I/I Financial Assistance Program includes five phases of funding for a total of \$180 million of grant and loan funding available for communities to rehabilitate their collection systems and reduce I/I flows. The FY05 CIP included a new Phase V to

provide funding for communities that have exhausted eligible funding from previous phases. The new phase was budgeted at \$40 million, but because \$22 million is to be repaid as loans, total program costs increase by \$18 million. Communities must utilize their funds under all earlier phases of the program before accessing Phase V funds.

Sewerage System Mapping Upgrade

Final FY05 CIP:	\$0.284 million
Proposed FY06 CIP:	\$0.284 million
Percentage Change:	0%

This project remains unchanged at \$0.284 million, with work having reached substantial completion by April 2004. The project was designed to update existing base maps for sewer system communities, including the creation of new maps where needed. Some final spending during FY05 has kept the project in the active category.

WATERWORKS SYSTEM IMPROVEMENTS

The MWRA's Proposed FY06 CIP includes \$468.1 million for Waterworks projects for the ten-year period FY06-15 constituting 41% of total planned MWRA spending. Anticipated Waterworks spending for the FY04-08 Cap period is \$421.1 million and \$259.3 million for the following five-year (FY09-13) span. (All figures are net of contingency fund allowances.)

Largest Water Projects

Over the next three fiscal years (FY06-08), the largest Waterworks projects, by rank, include the (5) MetroWest Water Supply Tunnel, (7) Blue Hills Covered Storage, (8) Local Water Pipeline Improvement Loan Program, (11) Spot Pond Supply Mains Rehabilitation, (12) Walnut Hill Water Treatment Plant, (13) Southern Spine Distribution Mains, (16) New Connecting Mains – Shaft 7 to WASM 3 Spot Pond Supply Mains Rehabilitation and (20) Rehabilitation of Other Water Pumping Stations (see table below). These eight projects represent 22.5% of total projected spending over the three year FY06-08 period.

Table 13

Largest MWRA Waterworks Capital Projects (\$ Thousands): Over Three Years FY06-08				
Project Spending Rank Among all MWRA Projects for FY06-08	Project Name	Total Contract Amount	3-Year Spending FY06-08	% of Total 3-Year Spending
5	MetroWest Water Supply Tunnel	703,384	32,309	4.4%
7	Blue Hills Covered Storage	35,956	25,421	3.4%
8	Local Water Infrastructure Rehabilitation Assistance Program	7,488	24,888	3.4%
11	Spot Pond Supply Mains - Rehabilitation	60,886	20,334	2.8%
12	Walnut Hill Water Treatment Plant	419,525	20,220	2.7%
13	Southern Spine Distribution Mains	60,805	17,805	2.4%
16	New Connecting Mains - Shaft 7 to WASM 3	49,267	13,760	1.9%
20	Rehabilitation of Other Water Pumping Stations	22,811	11,493	1.6%
Total CIP		\$3,450,522	\$737,265	
Top Twenty Water Projects Total		\$1,360,122	\$166,230	22.5%

Changes to the Waterworks Program from the Final FY05 CIP

MWRA has significantly reduced the size of the Waterworks capital program in the Proposed FY06 CIP. As the December 15, 2004 MWRA staff summary transmitting the Proposed FY06 CIP to the Advisory Board for review states, the cuts to the capital program are intended “to address a necessary reality that the debt service costs associated with the capital improvement program are a significant burden to MWRA’s ratepayers.” A number of Waterworks projects have been removed in the Proposed FY06 CIP. Total Waterworks spending over the period FY04-14 has decreased by \$105.9 million, from \$774.8 million in the Final FY05 CIP to \$668.8 million in the Proposed FY06 CIP, a decrease of nearly 14%. Notable eliminated Waterworks projects impacting the FY04-14 timeframe include Low Service Storage Near Spot Pond (\$27.5 million), Southern Extra High Covered Storage (\$5.9 million), Phase 2 Oakdale Valves Facility Construction (\$8.0 million), Sudbury Aqueduct Design and Construction (\$38.7 million), Northern High NW Transmission Sections 70-71 (\$15.5 million), Southern Extra High Redundancy Loop (\$8.4 million), Spot Pond Supply Mains – Riverside Avenue Sewer Repair and Section 57 (\$17.8 million) and Northern High Service – Pipeline Rehabilitation (\$16.3 million).

While some Waterworks projects were removed entirely from the Proposed FY06 CIP, smaller initiatives have been introduced and other ongoing efforts have grown in scope. The majority of new water initiatives support watershed protection objectives. With the establishment of the Water Supply Protection Trust and Memorandum of Understanding between MWRA and the Department of Conservation and Recreation, MWRA has formally taken responsibility for ensuring the stability of dams, dikes and spillways within the watersheds and providing funding for the purchase of watershed property. Accordingly, MWRA is budgeting \$1.2 million for upgrades and repairs at the Winsor Dam, \$8.2 million for rehabilitation of the Wachusett Reservoir Spillway and \$9 million to acquire land for watershed protection. The only other new project introduced in the Waterworks System Improvement Proposed FY06 CIP budget is the Cosgrove/Wachusett Redundancy initiative, a \$0.5 million study to assess the long-term

needs of the Cosgrove Tunnel and Wachusett Aqueduct to provide adequate supply to the Walnut Hill Water Treatment Plant.

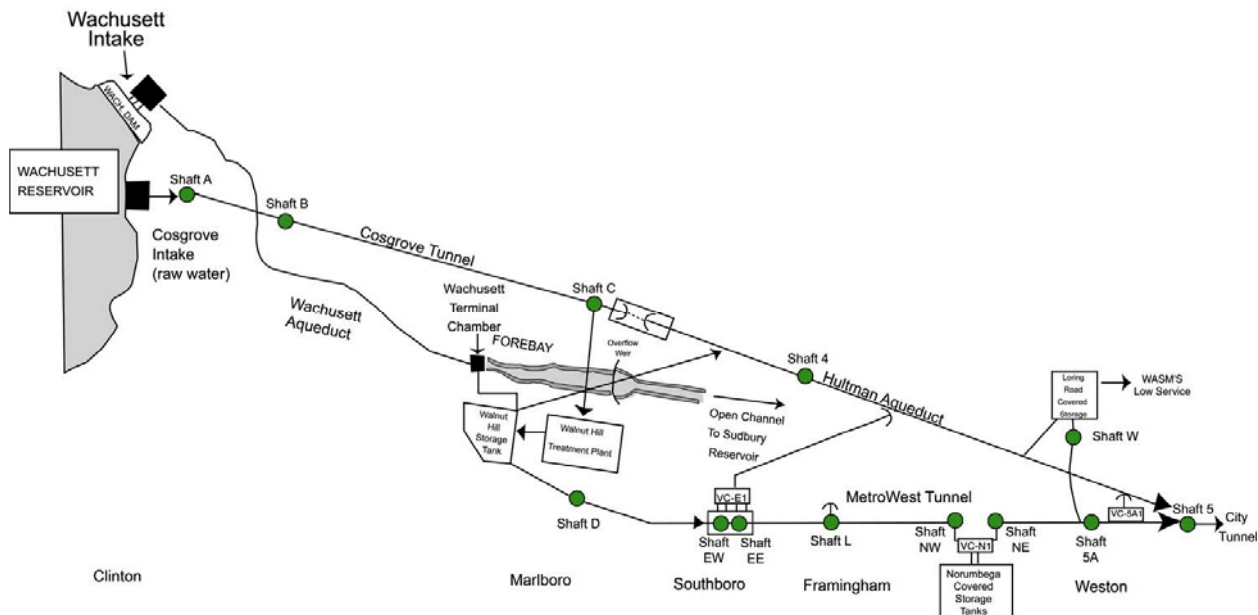
The addition of new phases to existing projects and updated design information has led to other spending increases. One of the most significant adjustments within the Proposed FY06 CIP reflects the revised plan to rehabilitate the Hultman Aqueduct. The preliminary design report and the inspection of the Upper Hultman Aqueduct were completed in late spring 2004. MWRA has reflected the revised cost estimate for the rehabilitation of the Hultman Aqueduct, constructing interconnections between the Hultman Aqueduct and the MetroWest Water Supply Tunnel and the rehabilitation/construction of affiliated air relief structures and valves. MWRA has also advanced the construction schedule for the rehabilitation of the Lower Hultman and Upper Hultman to the FY08-12 timeframe based primarily on issues identified during the October 2004 activation of the Shaft C interconnection to the Walnut Hill Water Treatment Plant.

Another initiative increasing in scope is the New Connecting Mains Shaft 7 to WASM 3 project. MWRA has updated the cost estimate for the North Segment (CP1) to reflect updated field data indicating the existing pipeline is in poor condition and will need to be replaced rather than rehabilitated as initially planned. Cleaning and lining of the Watertown section of the Northern Segment has also been consolidated into the CP1 project. These changes have increased the CP1 project by \$10.2 million, a nearly 71% increase. Remaining additions to the Waterworks budget are primarily attributable to the inflation adjustment for non-awarded contracts.

The Integrated Water Supply Improvement Program and Operation Start-Up

Operation Start-Up is the coordinated effort to bring the main components of the Integrated Water Supply Improvement Program, including the Walnut Hill Water Treatment Plant, MetroWest Water Supply Tunnel and Norumbega Covered Storage Facility, online in an orderly and timely manner. Representatives from the MWRA Capital Engineering and Construction Division, Field Operations, construction managers and system designers are meeting regularly to assess progress on the start-up plan.

Figure 18: Operation Start-Schematic



Operation Start-Up activities include:

1. **Completing a reliable transmission alternative from the Wachusett Reservoir to the City Tunnel in Weston.** This effort includes the rehabilitation of the Wachusett Intake and Wachusett Aqueduct; finishing (including pressure testing and disinfection) the entire 17.6 mile MetroWest Water Supply Tunnel; constructing two of the three water storage cells at the Norumbega Covered Storage Facility; and providing temporary chlorination at the Wachusett Intake and Shaft N (adjacent to the Norumbega Covered Storage Tank).
2. **Shutting down the Cosgrove Tunnel-Hultman System. Demolishing the top of Shaft C and providing for revised connections to the Walnut Hill Water Treatment Plant (WHWTP), MetroWest Water Supply Tunnel and the Hultman Aqueduct and the raising of Shaft B.** Provision of connection between Shaft C of the Cosgrove Aqueduct to the Walnut Hill Water Treatment Plant. The objective of this effort is to provide for a sufficient grade line required to push flow through the Walnut Hill Water Treatment for testing purposes.
3. **Start-Up of the Walnut Hill Water Treatment Plant.** After completion of the two aforementioned phases, MWRA will place the Cosgrove Tunnel back into service. Water from Cosgrove will then be available for testing and start-up of the treatment plant.

The relining and rehabilitation of the Wachusett Aqueduct was completed in October 2002. Construction of both the MetroWest Water Supply Tunnel and Norumbega Covered Storage A Project are essentially complete with only punchlist tasks remaining. The Shaft C inter-connection between the Cosgrove Tunnel and the Walnut Hill Water

Treatment Plant was completed in March 2004. A leak developed in early October 2004 as the contractor raised pressure within the new section of pipe to provide flow for the first time to the Walnut Hill Water Treatment Plant. MWRA was subsequently forced to shut down the Cosgrove Tunnel and revert to use of the Wachusett Aqueduct, which served as the primary transmission tunnel during the construction of the interconnection over the low-flow period in the winter of 2003-2004. The contractor successfully repaired the leak and returned the Cosgrove Tunnel back into service in December 2004.

A deliberate and thorough five-stage testing protocol has been developed to help bring the Walnut Hill Water Treatment Plant on-line. The five phases to activate the treatment plant are as follows:

1. **Factory Testing** – Testing of independent mechanical parts by the manufacturer to ensure that the apparatus meets design specifications prior to installation.
2. **Field Testing** – Evaluation of the same equipment as installed in the field.
3. **Functional System Testing** – The assessment of individual process systems that require the support of the multiple pieces of equipment examined during the Factory and Field Testing Phases. One example is the pH adjustment system.
4. **Demonstration Testing** – Running flow through the entire treatment process and disposing of the treated water into the forebay for eventual discharge to the Sudbury Reservoir.
5. **Reliability Testing** – The same comprehensive assessment process as with Demonstration Testing, however, finished water is introduced to the system. The contractor retains responsibility for managing the treatment facility and water quality during the Reliability phase.

Functional Testing of the ozone system is currently underway. Demonstration Testing is scheduled to begin in mid-April, with flow being isolated in separate halves of the facility, and continue through the end of May. Reliability Testing is currently on target for June 2nd. This timetable is subject to change dependent upon the findings from the remaining three stages of testing (Functional, Demonstration and Reliability). MWRA continues to closely monitor the progress of the contractor and work cooperatively to resolve issues and remain on schedule. MWRA anticipates taking control of the Walnut Hill Water Treatment Plant in July 2005.

Two components of the Integrated Water Supply Improvement Program, the MetroWest Water Supply Tunnel and the Norumbega Covered Storage Project, are currently in active service. The Walnut Hill Water Treatment Plant will be providing

treated water for system use in June 2005. Collectively, these three projects have cost over \$1.2 billion.

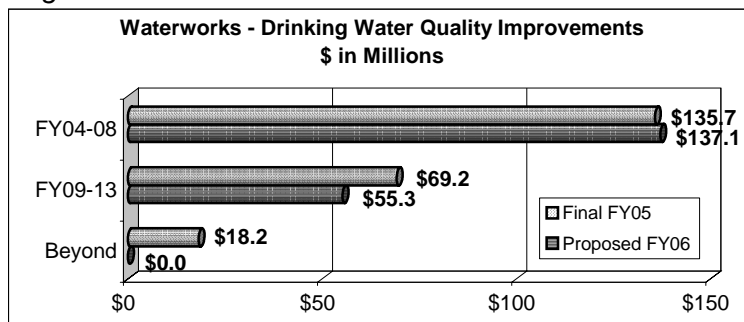
MWRA has requested to hold an Operations Committee meeting with Advisory Board representatives in the spring to provide an overview of the *Operation Start-Up* timeline and to discuss potential water quality impacts on communities as a result of the switch to ozone treatment. While MWRA anticipates overall system water quality will improve, there is concern that some community systems may experience some initial water quality issues as ozone-treated water is introduced into the distribution system.

Principal Changes and New Waterworks Projects in the Proposed FY06 CIP

Waterworks System Improvements include 41 separate projects under four program categories including Drinking Water Quality Improvements, Transmission, Distribution and Pumping and Waterworks - Other.

Drinking Water Quality Improvements

Figure 19



This program includes the \$419.5 million Walnut Hill Water Treatment Plant and the \$107.5 million Norumbega Covered Storage Tank. Other notable projects within this category include the Quabbin Water Treatment Plant, for the Chicopee Valley Aqueduct system, and the Blue Hills

Covered Storage project in Quincy. Three projects impacting the FY09-Beyond time frame have been eliminated from the Proposed FY06 CIP including Northern Intermediate High Covered Storage, Southern Extra High Covered Storage and Low Service Storage Near Spot Pond.

Walnut Hill Water Treatment Plant

Final FY05 CIP:	\$414.426 million
Proposed FY06 CIP:	\$419.525 million
Percentage Change:	1.2%

MWRA is building a 405 million gallon per day capacity ozone/chloramination water treatment facility in Marlborough. The *Walnut Hill Water Treatment Plant* (WHWTP) will treat water from the Wachusett Reservoir to meet the standards set forth in the federal Safe Drinking Water Act. As part of the Proposed FY05-07 CIP process, MWRA introduced the design and construction of an ultra violet (UV) disinfection facility at Walnut Hill to meet the Long Term 2 Surface Water Treatment Rule (LT2). The Proposed FY06 CIP includes a budget of \$9.5 million for design and resident inspection

and \$34 million for construction of the UV facility. Design is scheduled to begin in January 2007, while construction is slated to commence in January 2010. EPA's current goal for promulgation of LT2 is summer 2005. MWRA anticipates the revised rule will require unfiltered supplies to utilize two primary disinfectants by 2012. Primary disinfection is intended to inactivate pathogens. Residual disinfection maintains the safety of the water as it passes through the distribution system to consumers. MWRA currently uses chlorine for primary disinfection and chloramines as a residual disinfectant. The *WHWTP* is designed to use ozone as the primary and chloramines as the residual disinfectant. While MWRA could meet the requirement of a second primary disinfectant by retaining the use of the existing chlorine disinfection system, staff believe that this would diminish water quality and increase operating risks.

Through January 2005, the combined physical progress on the *WHWTP* is nearing 98%. CP1 (Wachusett and Cosgrove Intakes), CP2 (Wachusett Aqueduct Rehabilitation and CP3 (Early Site Preparation/Storage Tanks) are substantially complete. All structural, plumbing, HVAC, mechanical, electrical and instrumentation work is complete for all plant facilities contracts, including CP4 (Treatment Facility). Punchlist work continues on the CP4 contract with a focus on testing, programming and debugging various systems.

In an effort to identify potential treatment facility start-up and operational issues, MWRA staff have visited a number of ozone water treatment plants throughout the country. MWRA was informed through these site visits that the ozone is prone to periodically shutting down for various reasons and the ozone treatment will be offline for several hours. This is a relatively insignificant issue for the plants who can provide shift supply through other facilities or utilize other treatment processes such as filtration, to mitigate the loss of ozone. MWRA lacks such flexibility since the *WHWTP* is the sole treatment facility for the system and, unlike the other water treatment plants that were visited, ozone will be serving as the primary disinfectant at the treatment facility. Subsequently, staff has added into the treatment process the ability to use sodium hypochlorite as the primary disinfectant and use the storage tank at Walnut Hill to provide sufficient contact time to inactivate microorganisms to current target levels. This interim measure would, however, require the suspension of alkalinity and pH control.

MWRA has also learned from system failures in the wastewater system. In April 2004, the Deer Island Wastewater Treatment Plant lost power and some back-up power sources failed to activate. Staff subsequently requested in October 2004 a change order to the CP4 in the amount of \$184,000 for an additional 220 tests to be conducted during the Demonstration Testing Phase to identify issues with equipment and instruments resulting from a power failure. Additional lessons learned from the start up of the Deer Island Wastewater Treatment Plant are being applied to the *WHWTP* to ensure that when specific pieces of equipment fail, the redundant apparatus will function as planned. Procedures to conduct these tests are being developed and will likely be incorporated into either the Demonstration or Reliability Testing phases. MWRA is

currently projecting to add an additional \$250,000 in expected change orders for CP4 (Treatment Facility) and \$100,000 for CP3 (Early Site Preparation/Storage Tanks).

Issues with the treatment plant that have been recently addressed include the installation of additional ambient air oxygen and ozone analyzers; modifications to the fire alarm system; revised venting for potential over-pressurization and vacuum relief from ozone contact tanks/channels; repair of a defective transformer; and modifications to the water cooling system of the ozone generators. These change orders have been incorporated in the Proposed FY06 CIP and have had a relatively minimal impact on the project schedule. MWRA currently projects the Demonstration Testing Phase to be complete by May 31, 2005. As treated water from the plant enters the system for the first time, the contractor will retain responsibility for maintenance and repair of the plant for the duration of the 30-day Reliability Testing Phase.

The *WHWTP* budget has increased from the Final FY05 to the Proposed FY06 CIP by \$5.1 million. Significant adjustments to the budget include:

- A \$3.6 million increase to the CP4 (Treatment Facility) contract reflecting the previously cited issues related to the ambient air analyzers, conduit and duct banks at Shaft C, fire alarm modifications and water main reconnections. Some of these change orders have already been approved by the Board of Directors.
- An additional \$1.2 million for Construction Management for the extension of the contract to reflect delays to the start of the Reliability Testing Phase.
- Increases of \$0.373 million and \$0.502 million reflecting the respective award of contracts for the design of modifications to various existing facilities to support treatment plant operation and the final grading, landscaping and paving of the treatment facility site.
- A reduction of \$0.758 million, reflecting the elimination of the design of corrosion control at Norumbega Covered Storage and Booster Disinfection. Staff indicates that both the corrosion control and booster disinfection initiatives are no longer required.

An additional project under the *WHWTP* will treat algae in the Wachusett Reservoir. Responding to a stubborn algae outbreak during the summer of 2004, MWRA is advancing the schedule for the design and construction of a chemical dispensing system by five years. The notice to proceed for design of the algae treatment facility in the Proposed FY06 CIP is now November 2005. The construction phase has been adjusted to May 2007. The substantive need to expedite the algae control program is questionable considering MWRA has been able to sufficiently manage algae treatment through in-reservoir application of copper sulfate from boats in anticipation of and during algae outbreaks. The Advisory Board agrees construction of a permanent copper sulfate infusion mechanism should provide a safer and more precise vehicle to treat algae in the Wachusett Reservoir. This initiative, however, does nothing to promote

public health and at a total projected cost of \$2.3 million, there are a number of unfunded capital projects that should be a higher priority.

Norumbega Covered Storage

Final FY05 CIP:	\$106.446 million
Proposed FY06 CIP:	\$107.472 million
Percentage Change:	1.0%

Construction of a 115 million-gallon capacity reinforced concrete storage tank located between the Norumbega Reservoir and the Massachusetts Turnpike is nearing completion. All three cells are currently in service. The remaining task of final landscaping is scheduled to be completed in spring 2005. Punchlist work is ongoing.

There are two primary changes to the Norumbega budget within the Proposed FY06 CIP. MWRA is adding \$1.5 million to the Design/Build contract account for additional time and labor costs associated with severe weather experienced during construction. The construction phase for the Booster Disinfection Facility at Norumbega has been eliminated for a reduction of \$0.536 million. The temporary chlorination facility, located just prior to the covered storage facility, however, remains in place. MWRA intends to reassess strategies to maintain chlorine residual within the distribution system after the *WHWTP* has been on-line for approximately one-year. The one-year period should provide sufficient time for operations at the *WHWTP* to stabilize and provide baseline data on the interaction of ozonated water with the distribution piping system. The net increase to the Norumbega Covered Storage budget is \$1.0 million.

Blue Hills Covered Storage

Final FY05 CIP:	\$32.830 million
Proposed FY06 CIP:	\$35.956 million
Percentage Change:	9.5%

MWRA is proposing to construct a 20 million-gallon covered drinking water storage facility at the Blue Hills Reservoir, in the Department of Conservation and Recreation (DCR) Blue Hills Reservation in Quincy. The existing reservoir was constructed for water supply purposes by the Metropolitan District Commission (MDC) in the 1950s. MDC removed the Blue Hills Reservoir from active service in 1981 in response to high bacteria levels created by birds and animals. The Reservoir is currently maintained by MWRA as an emergency, non-potable water source that can provide water to Quincy and portions of Milton and the South Dorchester and Mattapan neighborhoods of Boston. The planned covered storage facility will provide drinking water to these same communities, serving an estimated population of over 100,000.

The proposed project has many important public health and safety objectives, including the ability to protect drinking water from contamination, stabilization of water pressures in the distribution system and the ability to feed off of the storage facility in

the event of a break in the distribution system or some other interruption of water supply. The project is also part of a mandate from the state's safe drinking water regulations.

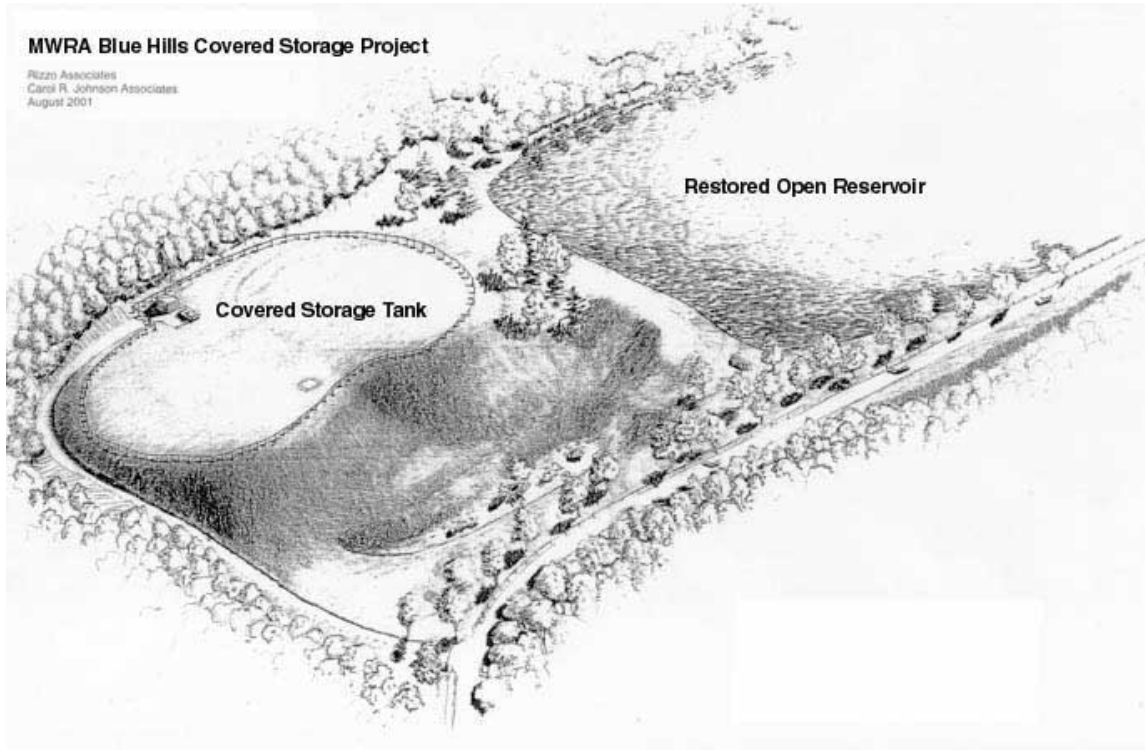
MWRA has consistently recognized that the proposed project is within an important recreational and habitat resource area, thus, the Blue Hills Covered Storage Reservoir must be compatible with the area surrounding the tank. To achieve this objective, MWRA has included significant design elements that will actually enhance environmental diversity and improve aesthetics of the existing site. Of the current \$31.3 million budget for construction of the Blue Hills Covered Storage Reservoir, MWRA estimates that \$8.0 million, or 25%, of the cost is dedicated to mitigation-related expenses. This estimate includes such measures as the construction of a new dam to allow the establishment of the new water feature, ecological enhancements to fish and wildlife habitat, burial of the tanks, development of walking trails to improve public access to the restored reservoir and measures to protect endangered species habitat surrounding the site.

The Blue Hills Covered Storage Reservoir initiative has met significant resistance from an advocacy group, Friends of the Blue Hills (FBH). This organization continues to insist MWRA replicate the wetland area that will be lost as a result of the project. MWRA maintains there is no feasible opportunity to proportionally replace land under water displaced by the project. As a consequence, MWRA's approach is to restore the remaining half of the existing reservoir that will host an enhanced wetland habitat that will improve conditions for fishery and wildlife well beyond current conditions. MWRA recognizes that the Blue Hills Covered Storage Reservoir project cannot meet the specific requirements of the Wetlands Protection Act and in response has put forth a reasonable plan that is consistent with the spirit of the law.

The Massachusetts Department of Environmental Protection (DEP) granted MWRA's request for a variance from the Wetlands Protection Act in November 2003. The FBH has subsequently appealed DEP's ruling and the case is currently before the state Division of Administrative Law Appeals. MWRA estimates that the FBH appeal of the Variance issued by the DEP Commissioner has delayed the BHCSP by at least eighteen months. The implications of this delay are reflected within the Proposed FY06 CIP where MWRA has included the impacts of inflation, increasing the total project cost by \$3.1 million. The Notice to Proceed date for the Design/Build phase of the project has been delayed within the Proposed FY06 CIP by seven months to November 2005, reflecting the ongoing appeals process. **If required by the appeals judge to pursue additional mitigation to meet the wetlands replication objective, MWRA should proportionally reduce other mitigation measures on the site with the goal of remaining within the current budgeted cost estimate.**

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Figure 20: Proposed Rendering of the Blue Hills Covered Storage Project



Northern Intermediate High Covered Storage

Final FY05 CIP:	\$6.550 million
Proposed FY06 CIP:	\$0 million
Percentage Change:	-100.0%

The objective of the Northern Intermediate High Covered Storage Project is to provide for additional water covered storage for the Northern Intermediate High System to allow for adequate water pressure and to provide redundancy for the Bear Hill Tank in Stoneham. This project has been shifted to the Northern Intermediate High Redundancy and Covered Storage Project (formerly titled in the Final FY05 CIP as Bear Hill Improvements). All funding to site, design and construct the covered storage facility, however, has been eliminated from the Proposed FY06 CIP.

Southern Extra High Additional Storage

Final FY05 CIP:	\$5.892 million
Proposed FY06 CIP:	\$0 million
Percentage Change:	-100.0%

The Southern Extra High Additional Storage project is intended to increase capacity and provide for current and projected water demand in the Southern Extra High system with construction of a 3.6 million-gallon tank. The existing tanks serving this area have capacity issues and are often unavailable due to their low elevation. This

initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA’s effort to reduce the scope of the capital program in response to concerns about projected rate increases.

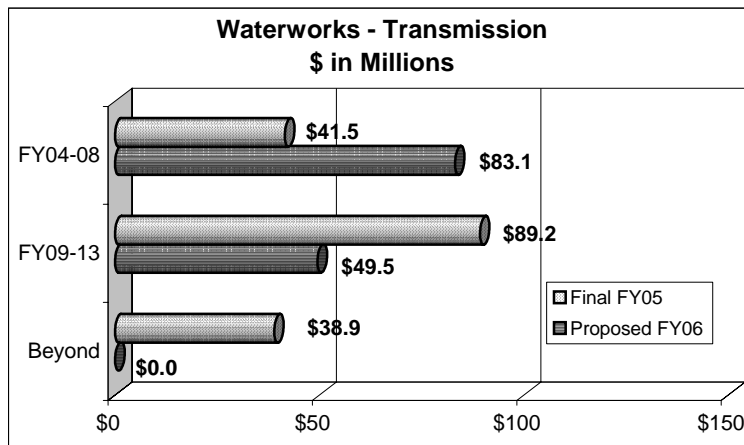
Low Service Storage Near Spot Pond

Final FY05 CIP: \$28.174 million
 Proposed FY06 CIP: \$ 0.233 million
 Percentage Change: -99.2%

The intent of this project is to construct a 20 million-gallon covered storage tank in the vicinity of Spot Pond in Stoneham. The tank will provide storage capacity for the low service system with the in-service Loring Road Tanks (constructed as part of the MetroWest Water Supply Tunnel Project) serving as the other terminal point of the Low Service System. MWRA has already spent \$0.233 million for preliminary engineering to identify a suitable tank site and conceptual design. This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA’s effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Transmission

Figure 21



The major project under this category is the MetroWest Water Supply Tunnel. MWRA is increasing spending on the MetroWest project in the Proposed FY06 CIP by \$27.2 million, the largest increase of any Waterworks project. The supplemental funds are being requested to cover the updated costs associated with the rehabilitation of the Hultman Aqueduct. The Authority is eliminating a number of

Transmission projects including Quabbin Transmission System – Phase 2 Oakdale Valves Design and Construction (\$8.6 million), Sudbury/Weston Aqueduct Repairs-Design and Construction (\$38.735 million) and Northern High NW Transmission Sections 70-71 All Phases (\$35.8 million). There are also a few additions to the Transmission category, primarily for a group of watershed protection projects related to the Memorandum of Agreement signed by MWRA and the Department of Conservation and Recreation. MWRA is now responsible for the structural and operational integrity of the dams, dikes and spillways within the watersheds.

MetroWest Water Supply Tunnel

Final FY05 CIP:	\$676.149 million
Proposed FY06 CIP:	\$703.384 million
Percentage Change:	4.0%

The MetroWest Water Supply Tunnel includes construction of a 17.5 mile, 14-foot wide, deep rock tunnel from Shaft D in Marlborough to Shaft 5 of the City Tunnel in Weston. All of the main tunneling contracts for the MetroWest Water Supply Tunnel are complete, with the exception of the Middle Tunnel Segment where minor punchlist items remain.

One of the most significant adjustments within the Proposed FY06 CIP reflects the revised plan to rehabilitate the Hultman Aqueduct. The preliminary design report and the inspection of the Upper Hultman Aqueduct were completed in late spring 2004. MWRA has reflected the revised cost estimate for the rehabilitation of the Hultman Aqueduct, constructing interconnections between the Hultman Aqueduct and the MetroWest Water Supply Tunnel and the rehabilitation/construction of affiliated air relief structures and valves. MWRA has also advanced the construction schedule for the rehabilitation of the Lower Hultman and Upper Hultman to the FY08-12 timeframe based primarily on issues identified during the October 2004 leak at the Shaft C interconnection to the Walnut Hill Water Treatment Plant. The net increase associated with the updated design information for the Hultman rehabilitation is \$23.1 million. MWRA is also adding \$5.1 million to the budget to merge design work for the interconnection between the MetroWest Water Supply Tunnel and the Hultman Aqueduct and subsequent rehabilitation of the Hultman Aqueduct (CP6) with the construction of Valve Chamber E-3 (CP9).

Metropolitan Tunnel Loop

Final FY05 CIP:	\$2.897 million
Proposed FY06 CIP:	\$0 million
Percentage Change:	-100.0%

The purpose of this effort was to evaluate the need for and means of providing redundancy for the City Tunnel, the Dorchester Tunnel and the City Tunnel Extension, to ensure reliable transmission capability and to allow for inspection, maintenance and repair of the tunnels. To meet this objective, MWRA is considering building a 16.5 mile deep rock tunnel from Norumbega Reservoir to the Fells Reservoir. In the Final FY05 CIP, MWRA budgeted \$0.245 million for a tunnel feasibility study slated to begin in January 2005. The budget also included \$2.7 million for the design and construction of shaft piping rehabilitation for Shafts 6, 9, 9A, 7C and 7D. This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Chicopee Valley Aqueduct

Final FY05 CIP: \$ 9.609 million
Proposed FY06 CIP: \$10.556 million
Percentage Change: 9.9%

The Chicopee Valley Aqueduct (CVA) was built in 1949 and is the sole transmission main supplying Quabbin Reservoir water to Chicopee, Wilbraham and South Hadley Fire District #1. Without a dedicated redundant line, the CVA communities are vulnerable to supply disruptions. The scope of the Redundancy initiative includes construction of connections from the Nash Hill Covered Storage Tank to Chicopee, Wilbraham and South Hadley Fire District #1; rehabilitation of various operating appurtenances, including the Bondsville Throttling Station, blow-off valves, meters, air valves, etc.; and refinement of the emergency response plan.

The Construction phase of the CVA redundancy initiative is anticipated to begin in summer/fall 2005 at a projected cost of \$8.3 million. The Proposed FY06 CIP reflects an increase to the construction phase of \$0.769 million reflecting an inflation adjustment. MWRA is also adding \$0.178 million to the Redundancy Design/Construction Administration/Resident Inspection line item for an anticipated amendment for training of staff and development of supervisory control and data acquisition (SCADA) technical and facility manuals.

Winsor Dam Hydroelectric

Final FY05 CIP: \$1.570 million
Proposed FY06 CIP: \$0.083 million
Percentage Change: -94.7%

The objective of the Winsor Dam Hydroelectric project is to license and restore the turbine generator at the Winsor Dam in Belchertown that was rendered inoperable as a result of a fire in 1991. MWRA added funds in the Proposed FY05-07 CIP for the project based primarily on the decision to replace, rather than rehabilitate, the existing turbine generator at Winsor Dam. MWRA also added funding to supplement the Preliminary Permit Study and Licensing phase. This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Quabbin Transmission System

Final FY05 CIP: \$13.350 million
Proposed FY06 CIP: \$5.731 million
Percentage Change: -57.1%

The Quabbin Transmission System initiative was initially intended to assess conditions of the Quabbin Tunnel connecting the Quabbin Reservoir to the Wachusett Reservoir and identify necessary improvements. In the Proposed FY06 CIP, MWRA is

eliminating the plan for long-term repairs (Phase Two) to the Quabbin Tunnel. The strategy to address pressing hydraulic issues with the valves at the Oakdale Power Station (Phase One) is slated to commence in October 2005. An initial condition assessment of the pressure-reducing valves at the Oakdale facility indicated that the valves are in poor condition. MWRA has made the replacement of these valves a high priority. Phase Two of the Quabbin Transmission System project has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Sudbury/Weston Aqueduct Repairs

Final FY05 CIP:	\$40.086 million
Proposed FY06 CIP:	\$3.648 million
Percentage Change:	-90.9%

The scope of this project is to inspect and provide short-term repairs for the Sudbury and Weston Aqueducts. These tunnels serve as important back-ups to the City Tunnel and the Sudbury Reservoir emergency supply. Inspection of the Sudbury Aqueduct is scheduled to begin in the next few months. This summer, MWRA plans to spend \$2.5 million on a new phase for short term repairs of the Sudbury Aqueduct. While the pending inspection will provide additional guidance, MWRA has already identified three issues in need of repair, including the removal of contaminated sediment, repair of heaved inverts and clean out the siphon. Eliminated from the Proposed FY06 CIP is a \$39.2 million placeholder for the design and construction of the long-term rehabilitation of the Sudbury Aqueduct. The full rehabilitation of the Sudbury Aqueduct has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Northern High NW Transmission Section 70-71

Final FY05 CIP:	\$35.784 million
Proposed FY06 CIP:	\$0 million
Percentage Change:	-100%

This capital project will rehabilitate 46,000 linear feet of pipeline serving the Northern High Service Area. Sections of this pipe are between 60-80 years old and are showing signs of deterioration. This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Winsor Dam Repair

Final FY05 CIP:	\$0
Proposed FY06 CIP:	\$1.200 million
Percentage Change:	New Project

Wachusett Reservoir Spillway Improvement

Final FY05 CIP: \$0
Proposed FY06 CIP: \$8.200 million
Percentage Change: New Project

Watershed Land

Final FY05 CIP: \$0
Proposed FY06 CIP: \$9.000 million
Percentage Change: New Project

Winsor Dam Repair, Wachusett Reservoir Spillway Improvement and Watershed Land are three new projects introduced in the Proposed FY06 CIP in support the newly established Department of Conservation and Recreation's (DCR) Office of Watershed Management. With the establishment of the Water Supply Protection Trust and Memorandum of Understanding between MWRA and DCR, MWRA has formally taken responsibility for ensuring the stability of dams, dikes and spillways within the watersheds and is now responsible for providing funds for the purchase of watershed property. Descriptions of the projects are as follows:

Winsor Dam Repair - \$1.2 million for the design and construction of upgrades to the existing flashboards regulating the Quabbin Reservoir water level and improving water storage capacity.

Wachusett Reservoir Spillway Improvement - \$8.2 million for the design and construction to rehabilitate the upper and lower sections of the Wachusett Spillway and upgrade the flashboards, which regulate Wachusett Reservoir water levels.

Watershed Land - \$9.0 million to acquire parcels of real estate or interest in real estate that contributes to watershed protection and protects source water quality.

Cosgrove/Wachusett Redundancy

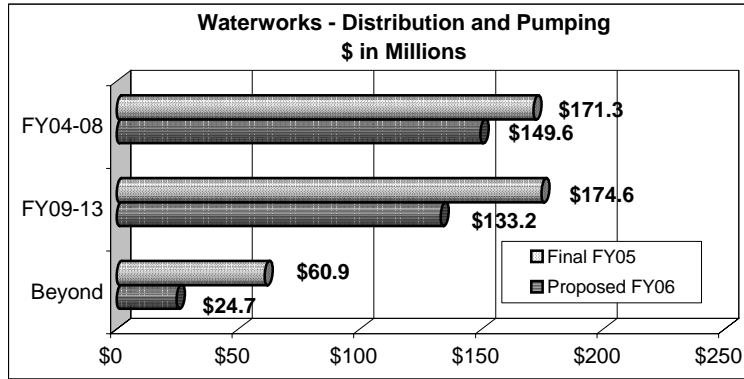
Final FY05 CIP: \$0
Proposed FY06 CIP: \$0.500 million
Percentage Change: New Project

One of the few non-watershed related projects introduced in the Proposed FY06 CIP, the Cosgrove/Wachusett Redundancy initiative will provide a detailed risk assessment of the Cosgrove Tunnel and evaluation of the long-term plans for the Wachusett Aqueduct. MWRA shut down the Cosgrove Tunnel, which connects the Wachusett Reservoir to the new water treatment plant in Marlborough, over the low-flow period in the winter of 2003-2004 to build the Shaft C connection from the Cosgrove Tunnel to the *WHWTP*. During construction, MWRA transferred flow to the recently rehabilitated Wachusett Aqueduct. The Cosgrove Tunnel was inspected while out of service via a remotely operated vehicle. Review of the video reflected longitudinal and circumferential cracks in the liner. The subsequent inspection report indicated that the

crevices should be fixed and a risk assessment should be undertaken to assess the potential for failure and the costs for repair. The Wachusett Aqueduct, as currently configured, would provide insufficient pressure to provide flow through the *WHWTP* during high demand periods. This project will also assess the potential transmission alternatives if the Cosgrove is taken off-line for rehabilitation. The study phase is scheduled to begin in June 2006.

Distribution and Pumping

Figure 22



This program category consists mainly of projects to construct or rehabilitate existing water pipelines and pumping facilities. With the average age of MWRA water pipes over 80 years old, continuous rehabilitation is necessary to protect system assets and reduce risk. Large capital projects under this category include the Weston Aqueduct

Supply Mains (WASMs) (\$113.6 million), Southern Spine Distribution Mains (\$60.8 million), Spot Pond Supply Mains (\$60.9 million) and New Connecting Mains – Shaft 7 to WASM 3 (\$49.3 million). Substantial project eliminations, reflected primarily in the FY09-Beyond period, include the entire Southern Extra High Redundancy Loop project (\$19.5 million), Spot Pond Supply Mains – Rehabilitation Riverside Avenue Sewer Repair and Section 57 Construction (\$17.8 million) and various phases under the Northern High Service – Pipeline Rehabilitation 13-18 & 48 (\$26.4 million).

Valve Replacement

Final FY05 CIP: \$ 14.048 million
 Proposed FY06 CIP: \$ 14.502 million
 Percentage Change: 3.2%

MWRA regularly schedules the replacement of ten blow-off valves and 20 main-line valves per year via in-house staff. This work is supplemented by the work of contractors who are assigned the task of replacing an estimated ten blow-off valves and ten main-line valves every other year. The Phase 6 contract for the Valve Replacement initiative is scheduled to be awarded in February 2006. The recently completed preliminary design estimate is \$2.04 million, slightly higher than the \$1.88 million figure cited in the Proposed FY06 CIP. Total project cost is increasing by \$0.454 million reflecting \$0.191 million to account for the inflation adjustment on Construction Phase 7; \$0.178 million for expected change orders for Construction Phase 5 for additional work to replace a 36” valve, extra corrosion control testing and removal of asbestos; and

\$0.086 million to partially account for the aforementioned increase for Construction Phase 6 derived from the Preliminary Design report. MWRA currently has no plans to pursue a Construction Phase 8. The need to continue with a systematic plan to replace valves in the MWRA distribution system should be incorporated into the ongoing master planning process.

Cathodic Protection of Distribution Mains

Final FY05 CIP:	\$1.668 million
Proposed FY06 CIP:	\$1.796 million
Percentage Change:	7.7%

Cathodic protection guards steel pipelines against corrosion, extending the life of transmission lines. MWRA has approximately 60 miles of steel pipeline within the Waterworks Distribution System. Test stations will be placed along the length of appropriate steel mains as a countermeasure to problems such as stray electrical currents.

After numerous delays, MWRA intends to bid the Test Station Installation 1 contract in spring 2005 at a projected amount of \$0.399 million. The Test Station Installation 1 project includes the installation of approximately 63 test stations along WASM 3. The Advisory Board has been a consistent advocate for the Cathodic Protection initiative, which seeks to prolong the life of the water distribution system. MWRA intends to utilize lessons learned from the first Test Station contract for the remaining three phases, which, due to the relatively low prioritization of these projects, have each been postponed in the Proposed FY06 CIP by over five years. The \$0.129 million increase in total project costs is due to assessment of the inflation adjustment for the unawarded construction phases.

Weston Aqueduct Supply Mains (WASMs)

Final FY05 CIP:	\$ 108.845 million
Proposed FY06 CIP:	\$ 113.627 million
Percentage Change:	4.4%

These large distribution mains transport water from Weston to approximately one-third of the MWRA's distribution area. WASMs 1 and 2 begin in Weston, adjacent to the Loring Road Covered Storage Tank, and run parallel along Commonwealth Avenue to provide service to the Boston Low Pressure Zone. WASM 1 was built in 1904, while WASM 2 was constructed in 1916. WASM 3, built in 1926-1927, carries supply from the Hultman Aqueduct north to the Intermediate High, Northern High and Northern Extra High service systems. WASM 4 emanates from the same point as WASMs 1 and 2 and extends through Newton, Watertown, Boston and Cambridge. Construction of WASM 4 was completed in 1932.

The \$4.783 million increase is almost exclusively attributable to the inflation adjustment for the following unawarded contracts: Waltham WASM 3-CP2 (\$1.4 million), Belmont WASM 3-CP2 (\$1.1 million), Arlington WASM 3-CP4 (\$0.841 million), Section 28 Arlington – CP 1 (\$0.355 million) and Design/Construction Administration/Resident Inspection WASM 3 (\$0.853 million). The next major WASM phase to be awarded is the Design/Construction Administration/Resident Inspection WASM 3 project in winter 2006, at a projected \$9.25 million.

In September 2004, the Board of Directors approved the award of a \$2.1 million contract to replace Section 12 of WASM 3. The Proposed FY06 CIP includes an additional \$0.104 million for this project, reflecting the final contract amount. The design and construction phases for this project were expedited due to concerns regarding risks associated with the Prestressed Concrete Cylinder Pipe (PCCP). PCCP is a composite pipe consisting of steel and concrete. Prestressing wire is installed, under very high tension, on the pipe exterior. As the wire is wound around the pipe, concrete is sprayed over the wire. When the pipe is placed into service and subject to the bursting force of internal water pressure, the compressed layer of wire and concrete counteracts the internal bursting force. The water industry has been aware since the 1970s that PCCP is prone to catastrophic breaks. The wires used to maintain compression sometimes snap. Subsequent investigations revealed there was a chemical process called “hydrogen embrittlement” that caused the wires to fail prematurely. As a result of many lawsuits, one of the largest manufacturers of PCCP was forced into bankruptcy.

MWRA concerns regarding PCCP pipe were heightened with the recent laboratory testing of two separate segments of PCCP as part of the WASM 4 rehabilitation contract. This review uncovered a particularly vulnerable form of PCCP that utilized an ultra-high strength prestressing wire. MWRA subsequently began an investigation to identify other segments of PCCP within the water distribution system utilizing the ultra-strength prestressing wire. This review identified four pipeline segments (one sewer and three water) of concern. The identified wastewater line is a 400 foot segment of the Squantum Force Main. Staff indicate that the chances for significant failure are minimal considering the relatively low pressure within the force main. As for the water pipelines, a portion of WASM 4, Section 15 was addressed in April 2004 via a change order to an ongoing project and, as previously cited, replacement of Section 12 of WASM 3 was approved by the Board of Directors in September 2004. The remaining section of concern is Section 89 of the Northern Intermediate High Service Area. Section 89 is a three-mile long, 4-foot diameter PCCP transmission main with no redundancy other than the low capacity, 100-year old Section 29 that parallels a portion of Section 89. MWRA will have to construct a redundant pipeline for Section 89 to be replaced. Accordingly, the Proposed FY06 CIP includes a new project that encompasses the former Northern Intermediate High Covered Storage Project and Bear Hill Improvement Projects. The repackaged Northern Intermediate High Redundancy and Covered Storage project includes a study of the options to reduce the risk of failure in Sections 29 and 89. Further detail regarding the revised initiative is provided under the project specific write up on page 74.

Walnut Street and Fisher Hill Pipeline Rehabilitation

Final FY05 CIP:	\$ 6.685 million
Proposed FY06 CIP:	\$ 3.141 million
Percentage Change:	-53.0%

Phase One of this project will rehabilitate approximately 7,900 linear feet of 48-inch cast iron mains located in Walnut Street in Brookline, construct a pressure reducing valve station and rehabilitate and relocate Meter 5 serving Boston. The Preliminary Design Report for Phase One was completed in October 2004. MWRA is increasing the Construction phase budget by \$0.832 million, reflecting the findings of the report. Construction is scheduled to commence in the summer of 2006.

Phase Two of this project, budgeted at \$2.7 million in the Final FY05 CIP, would have rehabilitated approximately 3,230 linear feet of 36-inch, 3,570 linear feet of 30-inch and 1,190 linear feet of 42-inch cast iron mains in Chestnut Hill. MWRA is eliminating Phase Two from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Southern Spine Distribution Mains

Final FY05 CIP:	\$ 62.817 million
Proposed FY06 CIP:	\$ 60.806 million
Percentage Change:	-3.2%

The Southern Spine's double barrel mains run parallel to the Dorchester Tunnel for most of its length and delivers water from the tunnel to the Southern High and Southern Extra High communities of Boston, Brookline, Milton, Quincy, Norwood and Canton. The intent of this initiative is to increase transmission capacities, remediate inoperable valves and serve as a backup for the Dorchester Tunnel. The lines in their current condition would be unable to provide adequate service if the Dorchester Tunnel were taken offline.

Primary cost increases include \$2.9 million for revised cost estimates based on information from the Preliminary Design Report (Section 21 and 43 Construction and Section 22 North Construction) and \$2.4 million for expected change orders and amendments for ongoing projects.

MWRA is eliminating the design and construction phases associated with the Rehabilitation of Section 19 from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases. Total savings associated with the elimination of the project is \$8.1 million.

Southern Extra High Redundancy and Storage

Final FY05 CIP:	\$ 19.463 million
Proposed FY06 CIP:	\$ 0
Percentage Change:	-100.0%

The Southern Extra High Service Area is served by an older pipeline with no source of redundancy. This project is intended to provide Canton, Stoughton and Norwood with a second water supply route, help enhance water pressure and allow for the rehabilitation of Sections 30 and 40 in Milton and Boston. This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Chestnut Hill Connecting Mains

Final FY05 CIP:	\$ 29.692 million
Proposed FY06 CIP:	\$ 17.981 million
Percentage Change:	-39.4%

The Chestnut Hill Connecting Mains project includes a series of design and construction initiatives intended to upgrade valves and transmission lines near the Chestnut Hill Pumping Stations and establish a connection between Shaft 7 of the City Tunnel and the Southern Distribution surface mains. The objective of this effort is to provide redundancy and enhance and streamline piping in this critical section of the water transmission system.

MWRA has eliminated the two subphases of the Final Pipe Connection initiative from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases. The Chestnut Hill Connecting Mains Project subsequently reflects an \$11.7 million reduction from the Final FY05 CIP. MWRA now plans to utilize the preliminary design and dam safety inspection services contract, approved by the Board of Directors in August 2004, to reevaluate MWRA's strategy supporting the Final Pipe Connection contract.

Rehabilitation of Other Pumping Stations

Final FY05 CIP:	\$22.136 million
Proposed FY06 CIP:	\$22.811 million
Percentage Change:	3.0%

MWRA has ten active water pumping stations in the waterworks distribution system. The James Gillis, Newton Street and Lexington Street Pumping Stations have been rehabilitated under separate contracts and the Dudley Road Pump Station will be removed from the system. The Brattle Court, Reservoir Road, Hyde Park, Belmont and Spring Street stations are between 40 and 80 years old and upgrades are required to replace inoperable equipment, reflect changes in community demand patterns and ensure the buildings meet current safety codes. The first contract to provide interim automation for the stations via SCADA systems was completed in 2001. The second contract will rehabilitate the remaining five pumping stations at an estimated cost of \$14.9 million.

The Design and Engineering contract for the rehabilitation of five pumping stations was awarded in October 2004 for \$3.898 million, over \$0.6 million less than budgeted in the Final FY05 CIP. The initial Design Report is scheduled to be submitted to MWRA for review and comment in March 2005.

The Construction contract is slated to begin in August 2006. The budget for the rehabilitation of the five pumping stations has increased by \$1.4 million, reflecting an adjustment for inflation.

Northern Intermediate High Redundancy and Covered Storage

Final FY05 CIP:	\$8.799 million
Proposed FY06 CIP:	\$12.146 million
Percentage Change:	38.0%

This new project encompasses components of the former Northern Intermediate High Covered Storage Project and Bear Hill Improvement Projects. The repackaging is the result of MWRA's desire to address the PCCP issue for Section 89 raised under the WASMs project and to evaluate the long-term needs of the Northern Intermediate High System. This effort will begin with the award of the Concept Plan/Preliminary Design and Environmental Review contract in spring 2005. The Concept Plan will identify short-term measures to reduce the risk of pipeline failures. Building on the findings within the Concept Plan, MWRA intends to proceed with a second design contract, currently scheduled to begin in winter 2008, to evaluate and address redundancy issues within the Northern Intermediate High Redundancy Section. Potential steps could include valve improvements, pipeline redundancy, development of emergency response plans and additional storage. The second design contract will also need to assess the potential impact on the Northern Intermediate High System if Reading and Wilmington receive water from the MWRA. The \$3.3 million increase from the former Bear Hill Improvements project is primarily attributable to the inclusion of the Conceptual Plan and the design and replacement of Section 89.

Spot Pond Supply Mains - Rehabilitation

Final FY05 CIP:	\$89.529 million
Proposed FY06 CIP:	\$60.886 million
Percentage Change:	-32.0%

The Spot Pond Supply Mains are two long pipelines that extend north from Chestnut Hill to Spot Pond. Rehabilitation of these cast iron mains will include a combination of replacement, cleaning and lining and valve replacement. The carrying capacities of the 100-year old mains have been significantly reduced in areas due to rust deposits and exterior pipe corrosion.

MWRA has eliminated the following phases from the Spot Pond Supply Mains – Rehabilitation project from the Proposed FY06 CIP:

- Planning/Design/Construction Administration/Resident Inspection Section 66 and Old Mystic Main 30 - \$1.6 million
- Sewer Design Construction Administration/Resident Inspection and Section 57 Design – \$4.0 million
- Construction Project 5 Section 66 and Old Mystic Main 30 - \$6.6 million
- Riverside Avenue Sewer Repair and Section 57 - \$19.6 million

These projects have been eliminated as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Two major Spot Pond Supply Mains – Rehabilitation contracts were awarded in September 2004:

- Contract 3, the fourth major contract under the Spot Pond Supply Mains – Rehabilitation project, will rehabilitate approximately 29,000 linear feet of mostly 48-inch cast iron pipe in Cambridge and Brighton. This project was approved by the Board of Directors in the amount of \$16.8 million. The winning bid was nearly \$2.8 million more than the engineers estimate, but was within 5% of the lowest three bidders. The Proposed FY06 CIP reflects the awarded contract.
- MWRA created a separate support phase for construction administration and resident inspection services for Contract 3. While the initial plan was to amend the existing construction support contract, MWRA staff believed savings could be achieved through seeking a separate procurement. The \$1.3 million contract award equates close to \$0.6 million in avoided costs.

MWRA is adding \$0.5 million to the in-construction Middle (Medford/Somerville) project to cover unexpected site conditions and additional police details.

Northern Low Service Rehabilitation Section 8

Final FY05 CIP:	\$11.677 million
Proposed FY06 CIP:	\$14.581 million
Percentage Change:	24.9%

Section 8 is functioning at reduced capacity due to the build-up of deposits along the pipeline walls. A preliminary examination has indicated the line is in poor condition and in need of rehabilitation.

Section 97A project, at a budgeted cost of \$2.0 million, is a new project within the Proposed FY06 CIP. This effort will entail construction of a new 20-inch pipeline to provide redundancy to East Boston via the Northern High System. The pipeline will

connect to Meter 99 in East Boston and to the Boston low pressure system through a new pressure reducing valve. The introduction of Section 97A is part of a systematic plan to strengthen the distribution system in East Boston in support of the eventual rehabilitation of Section 8. MWRA is utilizing in-house design services to support this initiative. Each main construction phase is scheduled one-year apart. Thus, Section 97A Construction is scheduled to begin in August 2007, Rehabilitation of Sections 37, 38 and 46 in Chelsea and East Boston in August 2008 and finally, Section 8 Construction in August 2009.

New Connecting Mains Shaft 7 to WASM 3

Final FY05 CIP:	\$37.842 million
Proposed FY06 CIP:	\$49.267 million
Percentage Change:	30.2%

The intent of this initiative is to provide redundancy for Weston Aqueduct Supply Main #3 (WASM 3). Sufficient backup is necessary to proceed with the rehabilitation of WASM 3, scheduled to take place in three separate phases, with the first segment beginning in January 2010 under the WASM Rehabilitation project. WASM 3 is a 56 to 60-inch diameter steel main, installed in 1926, connecting the Hultman Aqueduct to the City Tunnel. There have been over 40 leaks in the line over the past ten years. Most of these were due to corrosion pits that penetrated through the pipe wall. There are no connecting mains along the 11-mile length of the pipeline and no other means available to adequately supply the nine communities the line serves.

MWRA has updated the cost estimate for the North Segment (CP1) to reflect updated field data indicating the existing pipeline is in poor condition and will need to be replaced rather than rehabilitated as initially planned. Cleaning and lining of the Watertown section of the Northern Segment has also been consolidated into the CP1 project. These changes have increased the CP1 project by \$10.2 million, a nearly 71% increase. Inflation adjustments on three large unawarded phases equate to an additional \$1.3 million in supplemental costs. The Notice to Proceed dates for South Segment (CP3) (20 months), Northeast Segment (CP5) (16 months) and North Segment (CP1B) Cleaning and Lining of Watertown Section Phase (7 months), have all been deferred reflecting design progress to date.

Northern High Service - Pipeline Rehabilitation

Final FY05 CIP:	\$16.287 million
Proposed FY06 CIP:	\$ 0
Percentage Change:	-100.0%

Northern High Service - Pipeline Rehabilitation is slated to rehabilitate Sections 33, 49, 54, 55, 56 and 69 located in Malden, Everett and Revere. The carrying capacity of these lines has been reduced to 50% to 60% of the original design due to the build up along the walls of the pipelines.

This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Northern High Service - Pipeline Rehabilitation 13-18 & 48

Final FY05 CIP:	\$26.364 million
Proposed FY06 CIP:	\$ 0
Percentage Change:	-100.0%

Sections 13 through 18 and 48 were primarily constructed prior to 1900 and are among the oldest in the entire MWRA distribution system. MWRA has identified deficiencies at meters in Malden and Medford reflecting pressure issues during peak hour and/or maximum day demand periods.

This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Southern Extra High Pipelines – Sections 30, 40, 44, 39

Final FY05 CIP:	\$7.000 million
Proposed FY06 CIP:	\$ 0
Percentage Change:	-100.0%

Sections 30, 40, 44 and 39 are located in Boston and Milton. In the Final FY05 CIP, rehabilitation design was slated to begin in June 2012, with the construction phase scheduled for January 2014.

This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Section 80 Rehabilitation

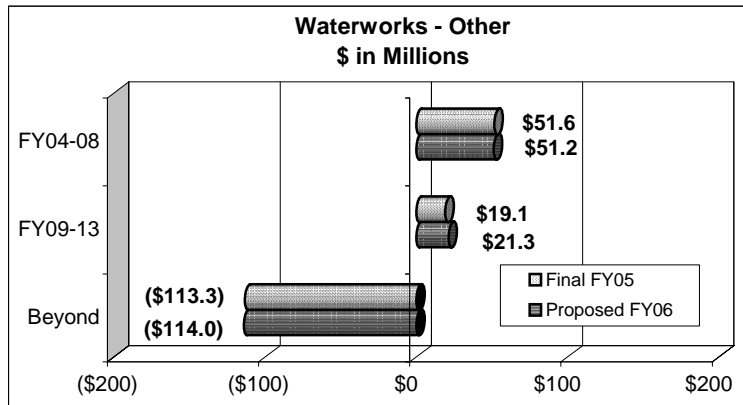
Final FY05 CIP:	\$9.693 million
Proposed FY06 CIP:	\$ 0
Percentage Change:	-100.0%

MWRA introduced the Section 80 Rehabilitation project in the Proposed FY04-06 CIP. Section 80 is a steel main extending from Shaft 5 of the City Tunnel in Newton through Wellesley to the Needham Pump Station. Testing has indicated that phenol levels are above desired targets. Due to the location of Section 80 along portions of Interstate 128/95, staff anticipates there will be significant traffic coordination issues associated with the project.

This initiative has been eliminated from the Proposed FY06 CIP as part of the MWRA's effort to reduce the scope of the capital program in response to concerns about projected rate increases.

Other - Waterworks

Figure 23



Projects under this category include Central Monitoring System, Distribution System Facilities Mapping, Local Water Infrastructure Rehabilitation Assistance Program and Waterworks Facility Asset Protection initiatives. The negative figures reflected in the Beyond section of the comparative bar chart represent communities repaying their non-interest loans to the

revolving fund. There are few meaningful changes to the Waterworks-Other budget in the Proposed FY06 CIP.

Central Monitoring System

Final FY05 CIP: \$16.246 million
 Proposed FY06 CIP: \$16.139 million
 Percentage Change: -0.7%

The Central Monitoring System project is essentially complete. The purpose of this effort is to allow for system-wide remote monitoring and control of essentially all hydraulic and hydro-electric operations. The only remaining phase is SCADA implementation which continues through June 2009. MWRA has eliminated the Permits Monitoring and Control Communications Network Phase, budgeted at \$0.100 million, since the project is no longer needed.

Local Water Infrastructure Rehabilitation Assistance Program

Final FY05 CIP: \$7.488 million
 Proposed FY06 CIP: \$7.488 million
 Percentage Change: 0.0%

This project provides MWRA Waterworks communities with \$25 million annually through FY2013 for interest-free loans for pipeline relining and rehabilitation. Eligibility for the program is based on each community's share of total unlined pipe miles. Participating communities are required to pay back the principal for each year's loan

during a ten-year time period beginning one-year after the project funding is approved. This program is a critical element of MWRA's Integrated Water Supply Improvement Program and was a component of the Board of Director's October 1998 treatment technology decision in support of the Ozone/chloramination approach for the *WHWTP*.

In December 2004, the Board of Directors voted to approve the following revisions to the Local Water Infrastructure Rehabilitation Assistance Program:

- To extend the distribution of interest-free loans three years through Fiscal Year 2013
- Allowing communities to take up to the total remaining balance within their funding allocation for lead service connection identification, inspection and replacement
- The allocation of interest-free loan funds to new MWRA water communities as part of the admission approval process. The provision of interest-free loans through the program for new MWRA Waterworks communities will be in addition to the \$250 million base program.

As a result of these changes, MWRA has added \$4.4 million to the Water Infrastructure Rehabilitation Assistance Program budget, providing for the inclusion of the Town of Stoughton, which was formally accepted as a member of the MWRA Waterworks System in June 2002.

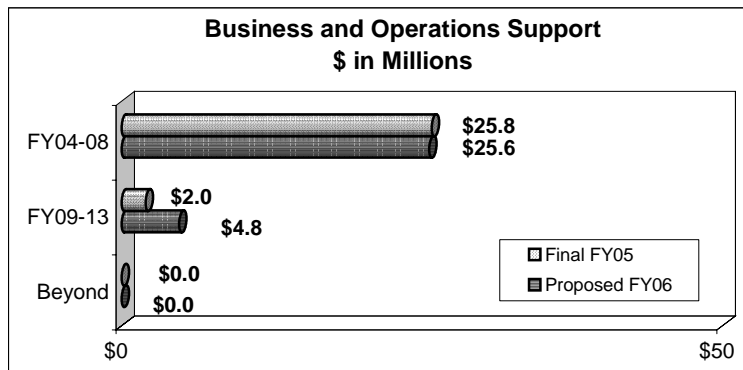
Waterworks Facility Asset Protection

Final FY05 CIP:	\$2.780 million
Proposed FY06 CIP:	\$4.004 million
Percentage Change:	44.0%

This initiative, introduced in the Proposed FY05-07 CIP, encompasses the remaining phases of the former Rehabilitation of Existing Facilities project. Subphases include Meter Vault Manhole Retrofits, Design/Construction for the rehabilitation of the Walnut Hill Tank in Lexington and repair of the Waltham Pipe/Bridge. Two new phases are being introduced to the Waterworks Facility Asset Protection project. MWRA is budgeting \$0.480 million to modify the current means of isolating the Cosgrove turbines to allow for preventative and corrective maintenance. The isolation sluice gates at the Cosgrove Intake need to be replaced to improve reliability for the emergency shut down of the Cosgrove facility. The projected cost for the design and construction of the sluice gates is \$0.600 million. Design of the Cosgrove Valve Seat Replacement is scheduled to commence in July 2007, while Design of the Cosgrove Turbine Isolation will begin much later, in July 2015. MWRA plans to add additional phases to this project over time as the Waterworks Facilities Asset Management Program identifies future maintenance needs.

BUSINESS AND OPERATIONS SUPPORT

Figure 24



Projected FY06-15 ten-year spending within Business and Operations Support is \$23.379 million, or 2.1%, of all MWRA expenditures over the FY06-15 period. Projects under this category include: Capital Maintenance, Planning/Development, Equipment Purchase, Chelsea Facility; Technical Assistance, Business Systems Plan (information technology), Environmental Remediation and Facilities Management and Planning.

Capital Maintenance Planning/Development

Final FY05 CIP:	\$4.866 million
Proposed FY06 CIP:	\$8.928 million
Percentage Change:	83.5%

The objective of the Capital Maintenance Planning/Development initiative is to support the strategic maintenance plan for MWRA facilities and equipment. Included in this project are two inventory and evaluation phases for MWRA facilities. MWRA has selected Reliability Centered Maintenance (RCM) as the Authority-wide maintenance strategy. RCM is a process by which an evaluation is made of a physical asset in an operational context to ensure the asset will continue to function as the operators deem appropriate. MWRA anticipates RCM will provide long-term reductions in maintenance expenditures. The consultant will provide services, via funding from the CIP, for training of MWRA staff and as-needed technical support. Once trained, selected MWRA employees would then train other staff. The MWRA continues to expand the concept of maintenance planning and asset management.

The other primary component of this project is for as-needed design and technical assistance services. In February 2005, MWRA Board of Directors awarded two separate technical assistance contracts for \$0.750 million (collectively \$1.5 million) to make available for a two-year period the services of professional engineering firms to assist MWRA staff on engineering and/or design projects with an upset limit under \$75,000. MWRA utilized similar as-needed contracts to support the Deer Island Wastewater Treatment Plant. This approach has been expanded to provide smaller scale design and technical assistance services for all water and sewer projects. Projects that have design cost estimated to exceed \$75,000 will be procured individually in accordance with MWRA Procurement Procedures. MWRA staff pursued this strategy in recognition of the impact of ongoing reductions in engineering staff and the frequent need for assistance in such technically unique areas as HVAC and Environmental Assessment.

MWRA has added a new as-needed design/technical assistance phase to the Proposed FY06 CIP in the amount of \$4.8 million. This new initiative will provide the same services approved by the Board of Directors in February upon the expiration of the two active contracts scheduled for winter 2007.

Equipment Purchase

Final FY05 CIP:	\$10.045 million
Proposed FY06 CIP:	\$8.996 million
Percentage Change:	-10.4%

The Equipment Purchase program is for the provision of items to support MWRA maintenance and operations activities. MWRA has added new items to the Proposed FY06 CIP, including two dump trucks, two front-end loaders and a closed-circuit television inspection truck. Prior acquisitions include such items as laboratory testing equipment, a backhoe and vactor truck. Primary spending under this project is dedicated to the design and installation of security systems at various MWRA facilities. MWRA has reduced planned spending under Security Equipment and Installation in the Proposed FY06 CIP by \$1.9 million. Spending under this line item will continue through FY07 at a revised estimated total cost of \$6.1 million.

Technical Assistance

Final FY05 CIP:	\$1.650 million
Proposed FY06 CIP:	\$1.650 million
Percentage Change:	0%

The Technical Assistance budget provides funding for specialized skills that are unavailable through in-house staff. A sampling of these items include: Sanitary Engineering, HVAC/Electrical, Geotechnical, Surveying, Instrument Control, Land Appraisal and Soil Boring. The budget for this project remains unchanged from the Final FY05 CIP.

MWRA has adopted a new approach for the procurement of technical assistance contracts. The eligibility of firms is first established in the qualification phase. Once a listing of qualified firms is established, the contract is subsequently awarded to the lowest responsive bidder among the pre-qualified bidders. The procurement process for these contracts consists of the development of a minimum threshold of qualifications, qualification of proposers that meet the threshold and award of the contract to the qualified proposer providing the lowest costs. Technical assistance contracts were chosen for this method because the tasks are for small amounts and the work is generally less complicated. This procurement method is unique to the MWRA; thus, the Advisory Board intends to continue the dialogue with representatives from the Procurement Department regarding the progress on the awarded contracts and the relative worth of this approach for future procurements.

Business Systems Plan

Final FY05 CIP:	\$25.873 million
Proposed FY06 CIP:	\$25.340 million
Percentage Change:	-2.1%

The Management Information Systems Department (MIS) is responsible for managing and procuring hardware and software in support of MWRA operations. The Business Systems Plan includes a series of hardware and software initiatives intended to upgrade or replace existing systems.

MWRA categorizes projects under distinct phases. The only remaining project under Phase 2 is the Toxic Reduction and Control Information System (TRAC/IS) replacement project, originally placed into service in 1991. The TRAC/IS project is estimated at \$2.1 million. TRAC/IS provides permit and regulatory information on industrial users. The program manages critical connection, inspection, sampling and enforcement data. The TRAC/IS operating system and minicomputers are no longer supported by their original vendors. The TRAC/IS system is subsequently vulnerable to downtime and data corruption issues. MWRA agreed to the Advisory Board's recommendation to remove \$0.250 million from the TRAC/IS program to reflect the elimination of the interim solution phase from the Final FY05-07 CIP. The \$0.250 million, however, was eventually eliminated from the Proposed FY06 CIP. Staff indicate that the TRAC/IS project will likely be bid in April. **Update the Final FY06 CIP to reflect the award of the TRAC/IS project.**

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Remaining spending for Phase 5 of the Business Systems Plan is primarily dedicated to the replacement of the Laboratory Information Management System (LIMS) at Deer Island and upgrade of the Operations Management System (OMS). MWRA plans to advertise for consultant services in the spring to support the development of request for proposals (RFP) for the purchase of a new LIMS. The consultant contract is budgeted at \$0.250 million, while the procurement of a new LIMS system is projected at \$1.75 million. MWRA is also budgeting for improvements at Deer Island, including OMS upgrades (\$0.300 million) and the replacement of Open-VMS minicomputers (\$0.300 million).

Other projects under Phase 6 include the extension of licenses for Microsoft Office products and the purchase of new minicomputer resources for the required conversion of Lawson (Financial, Procurement and Human Resources/Payroll system) to a current supported operating system environment. The Phase 6 budget is \$1.025 million in FY06 and \$0.807 million in FY07.

The Proposed FY06 CIP eliminated the Document Management System once budgeted under Phase 6. The purpose of this initiative is to replace the organization's records management system, which is outdated. Instead of purchasing a customized record system, MWRA is now planning to utilize in-house resources or an off-the-shelf document management solution. The reduction reflected in the Proposed FY06 CIP neglects to capture the entire cut recommended by MIS. **Eliminate an additional**

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\$0.231 million from the Business Systems Plan reflecting the full elimination of the Document Management System from the Proposed FY06 CIP.

MWRA Facilities Management and Planning

Final FY05 CIP:	\$3.931 million
Proposed FY06 CIP:	\$3.931 million
Percentage Change:	0.0%

This initiative, introduced in the Proposed FY05-07 CIP, consolidates existing MWRA projects, such as the Deer Island Construction Support Building (CSB) demolition and Deer Island Maintenance Facilities, to provide a centralized point of review for space planning requirements. The total budget for this project is \$3.9 million with two phases: Design/Engineering Services to support the space plan (\$0.763 million) and Facilities Construction (\$3.168 million) for the modification of space needs.

The Advisory Board's *FY05-07 CIP Comments and Recommendations* requested the Planning Division organize a Space Planning Committee to coordinate organizational facility needs and for the Committee to provide a preliminary report to the Board of Directors in October 2004 regarding the findings. MWRA responded:

“The CNY headquarters lease expires in September 2006 and planning has been initiated to assess options for long-term space needs. Planning estimates are already being developed for several of the locations mentioned by the Advisory Board. The effort is being coordinated by Support Services staff with support and assistance from Operations. The Division Directors and the Executive Director provide oversight. A preliminary report will be presented to the Board.”

As of March, the Board of Directors has yet to be updated on MWRA’s long-term space needs. While MWRA has been gathering information regarding the current office inventory, these preliminary findings have yet to be shared with any external parties. With the pending expiration of the CNY lease in September 2006, MWRA must develop a cohesive plan to address all short and long-term space needs. **Provide a full report to the MWRA Board of Directors at their May meeting regarding MWRA’s plans to meet short and long-term space requirements.** Based on MWRA’s desire to utilize planning studies to guide the scope and schedule of capital projects, the Facilities Construction phase should be removed from the Proposed FY06 CIP with the intent of reintroducing the project once the objectives of the space planning effort are clarified through the Design/Engineering Services stage. **Reduce the Proposed FY06 budget by \$3.168 million, reflecting the removal of the MWRA Facilities Management and Planning – Facilities Construction phase. Provide regular updates regarding space planning to the Advisory Board and Board of Directors.**

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CONTINGENCY

Final FY05 CIP:	\$154.993 million
Proposed FY06 CIP:	\$121.184 million
Percentage Change:	-21.8%

The Contingency Fund is established within the capital budget to provide authorization for unforeseeable capital obligations that arise during the fiscal year. Allocations can include legal fees, claims settlements, land acquisition, and various study, design and construction change orders/amendments. The Authority calculates contingency at 10% for the majority of MWRA projects. Exceptions include a 15% contingency for tunnel projects. The only initiative in the Proposed FY06 CIP assigned the 15% contingency is the North Dorchester Bay project. The Contingency Fund excludes the following project categories:

- CSO community-managed contracts;
- Technical Assistance contracts;
- Land acquisition;
- Community Memorandum of Understandings (MOU)/Memorandum of Agreements (MOA) and;
- Local assistance programs (Inflow/Infiltration Local Financial Assistance, Local Water Infrastructure Rehabilitation Assistance Program and Local Water Pipeline Assistance Program).

The CIP cap includes the Contingency Fund. The Contingency budget is part of the cap against which all total spending is compared. A contingency allowance for each fiscal year is incorporated into the CIP to provide for unanticipated or unpredictable expenditures under the CIP spending cap.

- 21• Contingency is adjusted in each proposed and final CIP document to correspond to cashflows. **Reduce the total Authority Contingency Fund by \$0.834 million, consistent with the reductions recommended by the Advisory Board.**

APPENDIX A

**ELIMINATED SPENDING FROM
THE FINAL FY05 CIP
TO THE PROPOSED FY06 CIP**

Eliminated Spending From the Final FY05 CIP to the Proposed FY06 CIP (\$000)				
Project/Subphase	Final FY05 Notice to Proceed	Final FY05 Substantial Completion	Final FY05-14 Ten-Year Budget Reduction	Final FY05 Budget Total Budget Reduction
Wastewater Projects				
Braintree-Weymouth Relief Facilities				
Rehabilitation of Sections 123A & 124	April 2005	March 2006	\$10,597	\$10,597
Neponset Valley Relief Sewer				
All Phases (Construction Dates)	July 2016	July 2018	1,532	12,333
Wellesley Extension Replacement Sewer				
Design Construction Services/Resident Inspection - Phase 8	February 2007	July 2013	3,877	3,877
Construction Phase 8	July 2010	July 2012	19,371	19,371
Siphon Structure Rehabilitation				
All Remaining Phases (Construction Dates)	August 2009	December 2010	6,017	6,017
Ashland Extension Sewer				
All Phases (Design Dates)	February 2014	February 2016	150	1,020
System Master Plan Interceptors				
All Phases (Construction Dates)	April 2018	April 2020	117	10,915
Corrosion and Odor Control				
Design/Construction Services/Resident Inspection (Excludes spending for FY06 at \$600 million, all other spending eliminated)	August 2002	May 2009	2,037	2,037
Arthur St. Pump Station and Framingham Extension Relief Sewer - Construction	April 2006	April 2007	1,500	1,500
Framingham Extension Sewer Tunnel Rehabilitation	May 2007	May 2008	8,432	8,432
Air Treatment System	May 2006	May 2007	1,405	1,405
Miscellaneous Remaining Phases (i.e. Public Participation, Land Acquisition and Legal)			275	275
West Roxbury Tunnel				
All Phases (Construction Dates)	December 2007	March 2011	74,088	74,088
South System Relief Project				
Quincy/Braintree Howard Street Design	July 2004	June 2007	375	375
Quincy/Braintree Howard Street Construction	July 2005	June 2007	150	150
Wastewater Process Optimization				
Cambridge Branch Sewer Siphon - Design	January 2011	July 2014	2,793	2,850
Cambridge Branch Sewer Siphon - Construction	August 2013	July 2014	18,027	20,030
Regional Inflow/Infiltration Management Planning				
Inflow/Infiltration and Sanitary Sewer Overflow	April 2002	June 2005	178	178
Interception and Pumping Facility Asset Protection				
Interceptor Renewal	March 2006	June 2019	88,000	102,000
Facilities - Headworks Shaft Design	July 2008	August 2010	500	500
Facilities - Headworks Shaft Outfall Construction	March 2011	August 2011	NA	NA

Eliminated Spending From the Final FY05 CIP to the Proposed FY06 CIP (\$000)				
Project/Subphase	Final FY05 Notice to Proceed	Final FY05 Substantial Completion	Final FY05-14 Ten-Year Budget Reduction	Final FY05 Budget Total Budget Reduction
Deer Island Treatment Plant Asset Protection				
Architectural				
Eastern Seawall Design	May 2006	March 2009	344	344
Eastern Seawall Construction	December 2007	March 2009	1,374	1,374
Personnel Dock Rehabilitation	March 2006	October 2006	200	200
Utilities				
Outfall Modification Construction - Phase 1	January 2006	September 2007	824	824
Outfall Modification Construction - Phase 1 REI	January 2006	September 2007	275	275
PICS Replacement Design	July 2006	June 2008	224	224
Thermal Power Plant PICS Replacement	January 2005	June 2005	184	184
Deer Island Wind Power Construction	March 2005	November 2006	2,956	2,956
Support				
Closed Circuit Cameras Design	October 2005	September 2007	170	170
Closed Circuit Cameras Construction	December 2006	September 2007	545	545
Wastewater Total			\$246,517	\$285,046
Waterworks Projects				
Walnut Hill Water Treatment Plant				
Corrosion Control Norumbega Construction	July 2007	December 2008	271	271
Booster Disinfection Design	July 2006	December 2010	487	487
Norumbega Covered Storage				
Emergency Disinfection Construction	January 2009	January 2010	536	536
Northern Intermediate High Covered Storage				
All Phases (Construction Dates)	January 2017	December 2019	\$1,509	\$6,550
Southern Extra High Additional Storage				
All Phases (Construction Dates)	July 2011	December 2012	5,892	5,892
Low Service Storage Near Spot Pond				
All Phases (Construction Dates)	April 2012	April 2014	27,510	27,941
Metropolitan Tunnel Loop				
All Phases (Design/CA/RI Dates)	June 2007	June 2010	2,897	2,897
Winsor Dam Hydroelectric				
Detail Design	July 2011	March 2013	46	46
Construction	May 2013	November 2013	1,404	1,404
Quabbin Transmission System				
Phase 2 Oakdale Valves Facility Design	July 2007	June 2010	625	625
Phase 2 Oakdale Valves Facility Construction	January 2009	June 2010	8000	8000
Sudbury/Weston Aqueduct Repairs				
Sudbury Aqueduct - Design	July 2008	November 2014	5,935	6,400
Sudbury Aqueduct - Construction	April 2011	November 2013	32,800	32,800
Northern High NW Transmission Sections 70-71				
All Phases (Construction Dates)	March 2012	November 2018	15,494	35,784

Eliminated Spending From the Final FY05 CIP to the Proposed FY06 CIP (\$000)				
Project/Subphase	Final FY05 Notice to Proceed	Final FY05 Substantial Completion	Final FY05-14 Ten-Year Budget Reduction	Final FY05 Budget Total Budget Reduction
Walnut Street & Fisher Hill Pipeline Rehabilitation				
Construction Phase 2	July 2009	May 2011	2,711	2,711
Southern Spine Distribution Mains				
Section 19 Design	July 2009	November 2014	843	1,415
Section 19 Easements	March 2011	February 2012	25	25
Section 19 Construction	NA	NA	0	6,673
Southern Extra High Redundancy Loop				
All Phases (Construction Dates)	December 2012	March 2016	8,417	19,462
Chestnut Hill Connecting Mains				
Construction - Chapter 149	June 2007	June 2009	5,033	5,033
Construction - Chapter 30	June 2007	June 2009	5,033	5,033
Final Design Construction Administration/Resident Inspection	January 2006	June 2009	1,500	1,500
Spot Pond Supply Mains - Rehabilitation				
Planning/Design Construction Administration/Resident Inspection				
Section 66 and OMM30	July 2005	July 2011	1,610	1,610
Construction CP5 Section 66 and OMM30	April 2007	May 2010	6,616	6,616
Sewer Design/Construction Administration/Resident Inspection and				
Section 57 Design	July 2005	July 2011	3,620	3,620
Riverside Avenue Sewer Repair and Section 57	April 2008	April 2011	17,825	17,825
New Connecting Mains - Shaft 7 to WASM 3				
North Segment (CP1B) Clean and Line Watertown Section	January 2007	October 2008	1,607	1,607
Northern High Service - Pipeline Rehabilitation				
All Phases (Construction Dates)	February 2010	November 2011	16,287	16,287
Northern High Service - Pipeline Rehabilitation 13-18 & 48				
Planning/Environmental Impact Report	November 2009	April 2011	2,055	2,055
Design/Construction Administration/Resident Inspection	April 2012	November 2016	1,788	2,854
Construction	January 2015	November 2016	0	13,454
Rehabilitation of Section 33,49,49A - Design	April 2009	November 2016	1,262	1,400
Rehabilitation of Section 33,49,49A - Construction	January 2012	November 2015	5,274	6,600
Southern Extra High Pipelines - Sections 30, 40, 44, 39				
All Phases (Construction Dates)	January 2014	January 2017	1,750	7,000
Section 80 Rehabilitation				
All Phases (Construction Dates)	November 2007	September 2009	9,693	9,693
Central Monitoring System				
Permits Monitoring & Control Communication Net (Subphase scheduled to proceed in FY05 cancelled, \$100K eliminated from FY05.)	NA	NA	0	0
Waterworks Total			\$196,355	\$262,106
Business and Operations Support Projects				
Capital Maintenance Planning/Development				
Facilities Asset Management Phase 3	July 2005	July 2007	750	750
Equipment Purchase				
Security Equipment and Installation	January 2001	June 2007	1,888	1,888
Business and Operations Support Total			\$2,638	\$2,638
TOTAL			\$445,510	\$549,790

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