

Capital Improvement Program

**PROPOSED
FISCAL YEAR 2006**



MASSACHUSETTS WATER RESOURCES AUTHORITY

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January 23, 2005

Katherine Haynes Dunphy, Chairwoman
MWRA Advisory Board
11 Beacon Street
Boston, MA 02108

Dear Chairwoman Dunphy:

This letter transmits to the Advisory Board MWRA's Proposed Capital Improvement Program (CIP) for fiscal year 2006. The MWRA Board of Directors approved the transmittal on December 15, 2004.

The proposed capital budget attempts to address a necessary reality that the debt service costs associated with the more than \$6.3 billion of capital improvements completed by MWRA are a significant burden to MWRA's ratepayers. In FY05, debt service payments to support capital improvements already completed comprise nearly 58% of total expenses. This is further compounded by the significant reduction in the amount of debt service assistance received from the Commonwealth, as well as the continued uncertainty regarding the amount of future debt service assistance.

As compared to the FY05 approved CIP, the budget proposal marks a significant change toward lowering MWRA's total indebtedness. So that the MWRA can make progress towards reducing its total outstanding debt, limits on the pace of future capital spending must be established. Planned spending for the fiscal years 2009-2013, the next five-year cap period (which has not yet been set), in this proposed budget has been reduced by \$420 million as compared to last year. Inclusive of planned spending beyond FY2013, more than \$500 million has been eliminated from the CIP. However, by fiscal year 2010, MWRA's total indebtedness will begin to decline as the amount of principal being paid on outstanding debt will exceed new capital spending.

With continued pressures to fulfill regulatory mandates, the reductions proposed in the capital budget target some of the basic water and wastewater projects. Going forward, MWRA will continue to evaluate system needs and regulatory requirements against limited capital resources. Building on the master planning process now underway (and replacement asset value analysis just completed), a prioritization process to balance capital needs with limited capital resources will need to be further developed.



The proposed CIP document provides an overview of MWRA's capital program, including projected expenditures by program area, and highlights changes within the cap period. The document also includes detailed descriptions by project, including phases within each project.

Questions or comments on this document or information available on the Internet should be directed to the MWRA Budget Department.

We look forward to working with the Advisory Board members and staff during your review of the proposed capital budget.

Sincerely,

A handwritten signature in black ink, appearing to read 'Fred - Laskey', with a long, sweeping horizontal line extending to the right.

Frederick A. Laskey
Executive Director

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2. Fiscal Year 2004 – 2015 Expenditure Forecast Report with Planned NTP and SC dates
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Proposed FY06 Capital Improvement Program

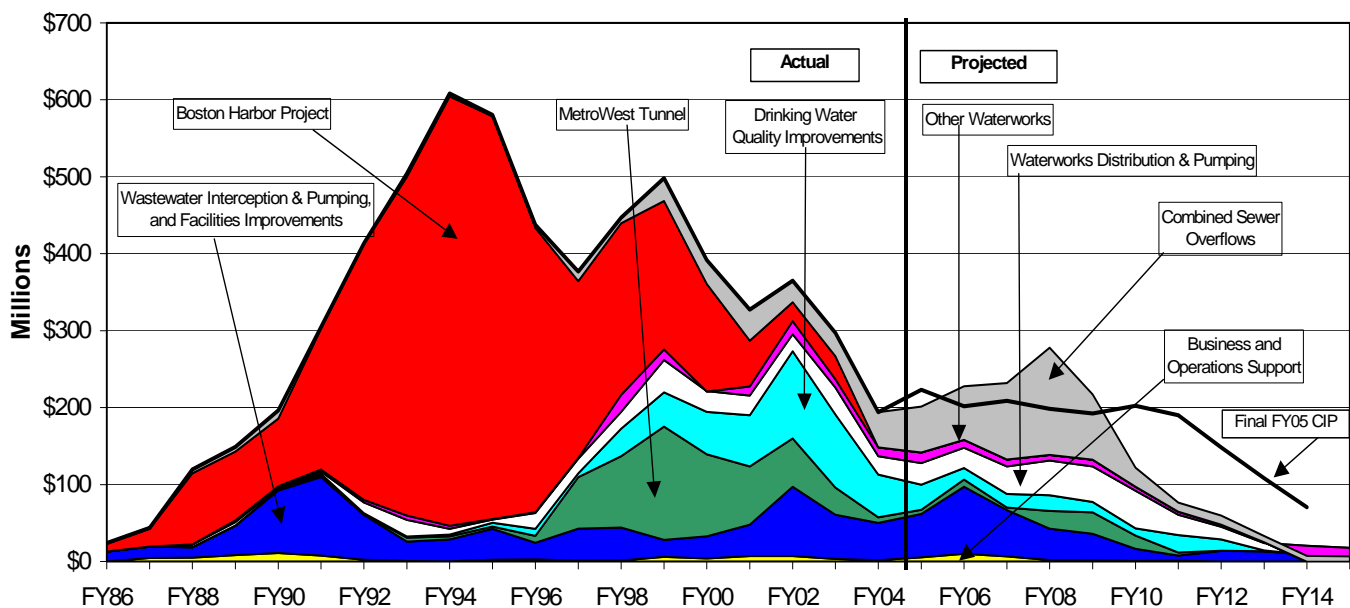
Background

MWRA was created by the Massachusetts legislature in 1985 and since that time has invested over \$6.3 billion to modernize and improve the wastewater and waterworks systems serving its member communities. Of the total expenditures to-date, nearly three fourths has supported improvements to the wastewater treatment, interceptor, pumping, and combined sewer overflow systems. The remaining fourth has supported waterworks treatment, transmission, distribution, and water protection improvements.

MWRA's sewage treatment system has undergone a nearly complete transformation under the federally mandated 11-year, \$3.8 billion Boston Harbor Project. The project, which is now complete, included: a new sludge-to-fertilizer facility; a new Deer Island Treatment Plant with primary and secondary treatment capabilities; a new 5-mile Inter-Island Tunnel that tied together two separate sewer systems (North and South) into one; and a new 9.5-mile Effluent Outfall Tunnel to discharge treated wastewater away from shallow Boston Harbor waters and into the deeper waters and stronger currents of Massachusetts Bay. MWRA's Integrated Water Supply Improvement program is a 10-year, \$1.7 billion series of projects that consists of aggressive watershed protection, modernized treatment facilities, and distribution system improvements including construction of covered storage facilities and pipeline rehabilitation.

The graph below highlights major capital improvement spending, both completed (actual) and remaining (projected). See Figure 1 below.

MWRA CAPITAL PROGRAM FY86-15



Proposed FY06 CAPITAL IMPROVEMENT PROGRAM
Actual and Projected Expenditures

Overview

In June 2003, the Board of Directors adopted the Final FY04 CIP, set a cap of \$1.1 billion for fiscal years 2004-2008 and identified planned spending, at the time, of \$530 million for fiscal years 2009-2013. The proposed CIP projects total spending of \$1.1 billion for fiscal years 2004-2008, spending of \$530 million for fiscal years 2009-2013 and net spending of \$16 million for fiscal years 2014-2015. Proposed spending within the FY04-08 cap period complies with the total (“hard cap”) limit set by MWRA’s Board of Directors in June 2003.

Table 1

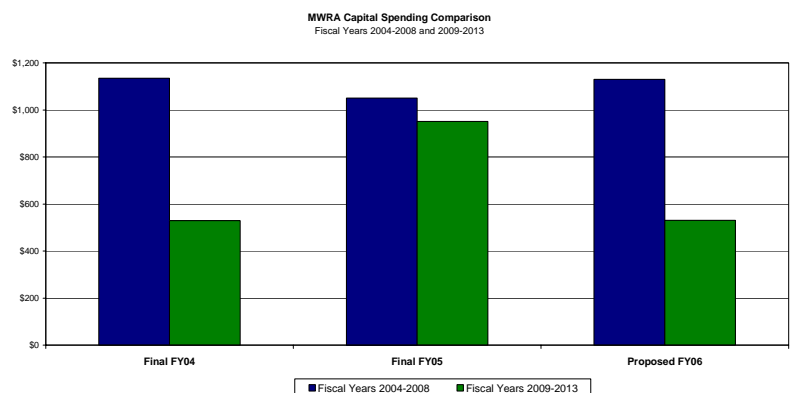
Comparison of Capital Spending by CAP Calculation

Final FY04 to Proposed FY06 CIP

Projected CAP Spending	FY04	FY05	FY06	FY07	FY08	Total FY04-08
Final FY04 - "Hard Cap"	\$ 250.9	\$ 203.5	\$ 215.2	\$ 250.1	\$ 214.8	\$ 1,134.5
Proposed FY06 CIP	\$ 193.3	\$ 200.4	\$ 220.3	\$ 229.8	\$ 286.1	\$ 1,129.8
\$ Change	\$ (57.6)	\$ (3.2)	\$ 5.1	\$ (20.2)	\$ 71.2	\$ (4.7)
% Change	-23.0%	-1.6%	2.4%	-8.1%	33.2%	-0.4%

The adjustments to capital projects presented in the proposed capital budget comply with the total capital spending limit set by the Board for fiscal years 2004-2008. However, projected spending in fiscal year 2008 exceeds the 20% change limit. Annual spending within the five-year period may vary within plus or minus 20% of the initial budget amounts as long as the five-year total is not exceeded. In the event an annual cap limit is exceeded, the MWRA may request approval to exceed the limit for an individual fiscal year.

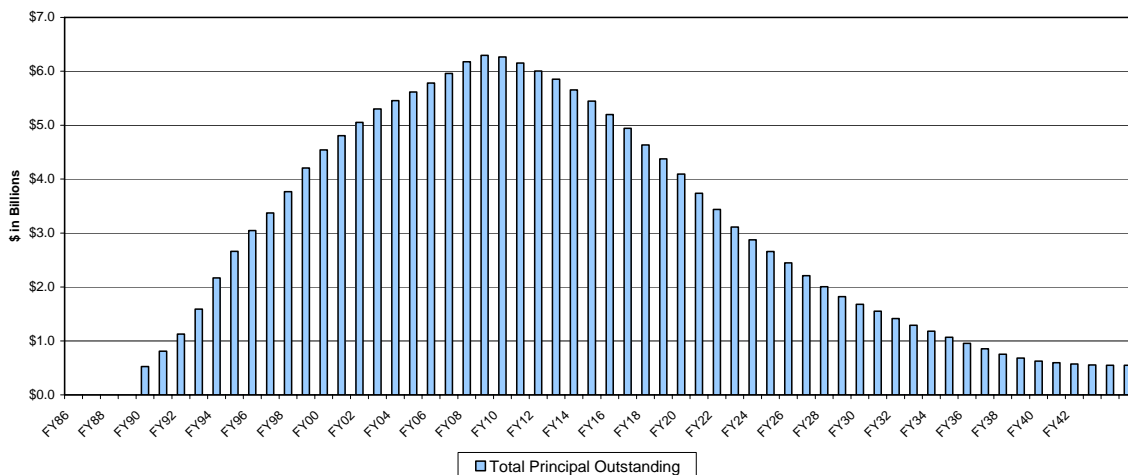
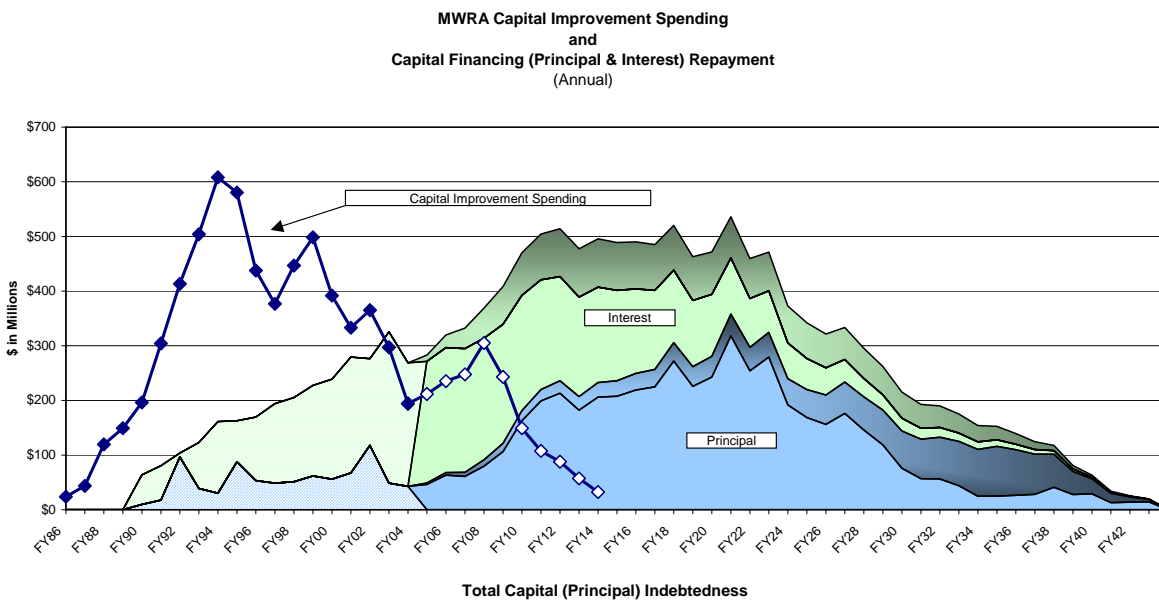
The Proposed FY06 CIP eliminates \$420 million, of planned spending between fiscal years 2009-2013 and an additional \$84 million for fiscal years 2014-2015 compared to last year’s CIP, resulting in the elimination or down-scaling of a number of projects presented in previous capital improvement programs. Proposed spending for fiscal years 2009-2013, through further project eliminations, matches total capital spending levels identified in the FY04 CIP, the same time the cap for FY04-08 was set. As compared to the FY05 CIP, it is a significant reduction. See adjacent bar chart.



The proposed capital budget attempts to address a necessary reality that the debt service costs associated with the capital improvement program are a significant burden to MWRA's ratepayers. Budgeted debt service for fiscal year 2005 to support capital improvements already completed since MWRA's inception, comprise 57% of total expenses (see insert). This is further compounded by the significant reduction in the amount of debt service assistance received from the Commonwealth, as well as the continued uncertainty regarding the amount and actual receipt of debt service assistance.

FY2005 Expenses		
Total Expenses		
before Debt Service Offsets	\$ 501.4	
Less:		
Prior Year Variable Savings	(1.5)	
Current Year Variable Savings	(7.3)	
Sub-Total Net Expenses	\$ 492.6	
Capital Financing	282.0	57%
Direct Expenses	176.0	36%
Indirect Expenses	34.6	7%
TOTAL EXPENSES	\$ 492.6	100%

The change in capital spending presented in the proposed CIP moves the MWRA toward reducing its overall debt burden. By fiscal year 2010, MWRA's total indebtedness will begin to decline as the amount of principal being paid on outstanding debt exceeds new capital spending.



The full impacts, risks, and potential consequences as a result of the change in capital plans presented in the proposed CIP must continue to be evaluated and weighed against system needs. The importance of master planning efforts already underway and opportunities to restructure existing debt and balance new capital borrowing to limit increases to the ratepayers are only reinforced by the changes presented in the proposed capital budget.

Proposed FY06 Capital Highlights

The proposed total spending of \$1.1 billion for fiscal years 2004-2008, and spending of \$530 million for fiscal years 2009-2013, supports the initiatives identified below. Of the proposed spending between fiscal years 2004-2008, almost 40% is for the CSO program. Planned spending removed from the capital budget, as compared to the Final FY05, is discussed later. Table 2 below provides a summary, by program, of planned spending in the proposed CIP and a comparison of the change to the Final FY05 CIP.

Table 2

MWRA Capital Programs <i>\$ in Millions</i>	Proposed FY06 CIP				Change from Final FY05			
	Total FY04-08	Total FY09-13	Total FY14-15	Beyond	Total FY04-08	Total FY09-13	Total FY14-15	Beyond
S.10 Interception & Pumping	\$ 151.0	\$ 5.4	\$ 0.5	\$ 0.9	\$ (28.9)	\$ (161.2)	\$ (33.5)	\$ (37.7)
S.25 Treatment (Deer Island)	61.4	46.1	20.0	1.5	3.6	(7.3)	8.0	(0.9)
S.12 Residuals	10.4	-	0.3	0.3	0.5	-	0.3	(0.3)
S.13 CSO	385.8	130.1	11.7	14.1	108.5	(48.9)	5.1	(19.0)
S.14 Other - Wastewater	16.5	15.8	(8.0)	(5.2)	0.7	(0.9)	(3.4)	3.6
S.16 Drinking Water Quality Improvements	137.1	55.3	-	-	1.4	(13.9)	(12.7)	(5.5)
S.17 Transmission	83.1	49.5	-	-	41.5	(39.7)	(18.1)	(20.8)
S.18 Distribution And Pumping	149.6	133.2	15.6	9.0	(21.7)	(41.3)	3.8	(40.1)
S.19 Other - Water	50.4	18.9	(37.8)	(72.9)	(1.2)	(0.2)	(17.8)	20.4
S.23 Business & Operations Support	25.6	4.8	-	-	(0.2)	2.8	-	-
Total Capital Improvement Program (CIP)	\$ 1,070.8	\$ 459.3	\$ 2.3	\$ (52.3)	\$ 104.2	\$ (310.6)	\$ (68.1)	\$ (100.2)
<i>Adjustments for CAP Calculation</i>								
Contingency	63.2	45.4	12.6		(2.4)	(34.7)	3.1	
Inflation	7.3	31.5	0.6		(22.0)	(74.6)	(20.8)	
Less: CVA	(11.5)	(5.0)	-		(0.9)	(0.1)	1.8	
Total CIP with CAP Adjustments	\$ 1,129.8	\$ 531.2	\$ 15.5	\$ (52.3)	\$ 78.9	\$ (420.0)	\$ (84.0)	\$ (100.2)

Interception & Pumping –

The Authority is undertaking, and in some cases has completed, several major projects to extend, enlarge and rehabilitate large sewer interceptors. These projects are necessitated by the age of the systems and their inadequate capacity to serve existing or projected populations. As they are completed, the new facilities alleviate sewer surcharging and overflow problems. The Interception & Pumping projects include major projects to rehabilitate, extend and increase the capacity of the interceptor system and its supporting facilities. The interceptor sewer and pumping projects total approximately \$500.0 million, of which approximately \$342.5 million was expended through Fiscal Year 2003 and approximately \$151.0 million is expected to be expended during Fiscal Years 2004

through 2008. Major planned spending is noted below:

- o *Braintree-Weymouth Relief Facilities:* Remaining spending of \$64.2 million is projected within the cap period. This supports completion of the project except for rehabilitation of sections 624 & 652 (Contract 5310), which was removed from the capital program to meet the cap. This reduced planned spending by (\$11 million).
- o *Upper Neponset Valley Sewer System:* Remaining spending of \$38.2 million is projected within the cap period. Projected spending has increased by \$4 million based on revised cost estimates for replacement of sewer sections 685-686 and 687.
- o *Cummingsville Replacement Sewer:* Planned spending of \$7 million to complete the replacement of this sewer.
- o *Wastewater Central Monitoring:* Planned spending of \$14.6 million to implement centralized monitoring and control system for MWRA's wastewater transport system.
- o *Wastewater Meter Equipment Replacement:* Planned spending of \$5.4 million to complete the replacement of all wastewater meters.
- o *Interception & Pumping Facility Asset Protection:* Planned spending of \$20.5 million, mostly within the cap period, to support replacement of sewer Section 160, begin a headworks condition assessment/facilities plan, and replacement of screens at critical headworks facilities is included in the proposed budget.

Deer Island Plant Optimization and Asset Protection –

As the new Deer Island treatment facilities have become operational, plant staff have assumed responsibility for maintenance and ongoing capital improvements. Total Deer Island support costs in the Proposed FY06 CIP are approximately \$139.3 million.

- o The proposed FY06 CIP includes \$60 million within the cap period, \$40 million for fiscal years 2009-2013, and \$20 million for the next two fiscal years to maintain the Deer Island Treatment Plant.

Combined Sewer Overflow (CSO) Program –

Discharges of combined wastewater and stormwater runoff from 63 CSO outfalls in MWRA's system and four of the service area community systems (Boston, Cambridge, Chelsea and Somerville) impact water quality in the Charles, Mystic and Neponset Rivers and in Boston Harbor. Pursuant to a 1987 stipulation entered in the Clean Water Act Case, the Authority has responsibility for developing and implementing a long-term plan for CSO control at all locations. MWRA first proposed the current long-term plan in its CSO Conceptual Plan and Sewer System Master Plan in 1994. The CSO Conceptual Plan incorporated then current information about the volume of CSO flows and water quality impacts, and was developed in accordance with EPA's National CSO Policy. The Schedule Six in the Federal Court Order ("Schedule Six") includes more than 50

milestones directing the design and construction of the projects. The Proposed FY06 CIP includes \$747.0 million for planning, design and construction costs of these projects. Major planned spending is noted below:

- o Total spending planned within the cap period is projected at \$386 million. This is an increase in the pace of spending within the cap period of \$100 million compared to the FY05 CIP. The increased rate of spending is largely due to changes in the project schedule for the North Dorchester Bay Reserve Channel CSO project and due to inflation. In response to comments by the court parties and by the federal court, as well as, review of the Supplement Facilities Plan and Environmental Impact Report, commencement (and spending) on this project has been accelerated by one year. MWRA is currently in non-compliance with the federal court schedule for this project. The current court schedule requires completion of North Dorchester Bay Reserve Channel CSO project by March 2005. The proposed "accelerated" schedule will result in completion by December 2017.

The proposed CIP does not include additional cost increases for the Alewife Brook project. Cambridge has verbally indicated that significant project cost increases (up to \$30 million) are likely to occur. MWRA is awaiting receipt of the Supplemental Preliminary Design Report from Cambridge's consultant, expected later this month. Upon receipt of the report, MWRA will meet with Cambridge to review the changes and costs.

Other Wastewater –

- o Total net spending of \$32.3 million between FY04 and FY13 to support the local financial assistance inflow/infiltration program.

Drinking Water Quality Improvements –

MWRA is implementing an Integrated Water Supply Improvement Program for drinking water improvement. This program consists of aggressive watershed protection, modernized treatment facilities, and distribution system improvements including construction of covered storage facilities and pipeline rehabilitation. Pursuant to an administrative consent order entered into with DEP and DCR with respect to the enforcement of the SDWA and the rules promulgated thereunder, the Authority is constructing the new Walnut Hill Water Treatment Plant. The plant will treat water delivered from the Wachusett Reservoir (including water transferred to the Wachusett Reservoir from the Quabbin Reservoir) through ozonation and chloramination. Construction of the treatment plant began in November 2000. When construction and testing are completed in 2005, the Walnut Hill Water Treatment Plant will be able to treat 405 mgd of drinking water.

Because existing uncovered distribution reservoirs are vulnerable to airborne contaminants and allow the growth of bacteria plants and algae, the Authority is eliminating the use of open distribution reservoirs by constructing covered storage facilities. These projects, which have been completed, replace active distribution storage of approximately 2.4 billion gallons of open reservoirs with more than 200 million gallons of covered storage downstream of the Walnut Hill Water Treatment Plant.

Total estimated costs of the projects in the Proposed FY06 CIP related to water treatment improvements, provision of covered storage facilities, and aggressive protection of source water quality are approximately \$578.6 million, of which \$435.0 million is for water treatment, and \$143.6 million is for covered storage facilities and watershed protection. Approximately \$386.3 million was expended through Fiscal Year 2003 for these projects, and approximately \$137.1 million is expected to be expended during Fiscal Years 2004 through 2008. Major planned spending is noted below:

- o Planned spending of \$137 million within the cap period to complete the Walnut Hill Water Treatment Plant and Norumbega Covered Storage projects, and begin the Blue Hills Covered Storage project. Spending beyond FY09 is mostly for the Walnut Hill Ultra Violet (UV) Treatment. The Long-Term 2 Surface Water Treatment Rule (LT2WTR) is expected to require that two primary disinfectants be used on unfiltered water by the year 2012.

Transmission –

Critical needs of MWRA's aqueduct system include correction of structural conditions to reduce leakage and provision of redundancy for critical sections of the transmission system, such as the Hultman Aqueduct and the Southborough Tunnel, where transmission has depended on a single conduit. The estimated costs for transmission projects included in the Proposed FY06 CIP total \$752.1 million, of which approximately \$619.4 million was expended through Fiscal Year 2003, and approximately \$83.1 million is expected to be expended during Fiscal Years 2004 through 2008. Major planned spending is noted below:

- o Planned spending of \$150 million within the cap period and \$133 million between FY09-13. These funds support completion of the rehabilitation of the Weston Aqueduct Supply Mains (WASMs), Heath Hill pipe replacement, the majority of work on the Southern Spine Distribution Mains, completion of the valve replacement program, the majority of work on the Spot Pond Supply Mains, and the New Connecting Mains – Shaft 7 to WASM 3 connection, rehabilitation of water pumping stations, and short term improvements at Oakdale and to the Sudbury Aqueduct.

Business & Operations Support –

Business and operations support projects are generally directed to improvement of the Authority's centralized services. Total Business & Operations support costs in the Proposed FY06 CIP are approximately \$60.9 million.

- o Planned spending of \$25 million within the cap period and \$5 million to complete security improvements, replacement and upgrade of management information systems that support laboratory and TRAC services, and continuation of as-needed water/wastewater design services for \$3.0 million to support delivery of smaller capital project needs.

Contingency –

There are costs associated with the Capital Improvement Program that are not possible to predict with any degree of certainty. These costs include legal fees, claims settlements, acquisition of land, and a variety of study, design, and construction change orders and contract amendments. MWRA uses a contingency budget to cover these costs if they exceed the approved budget. The contingency budget is calculated as a percentage of expected capital expenditure cash outlays (15% for tunnel construction and approximately 10% for all other projects).

The total contingency budget for the ten-year CIP is \$121.2 million. The contingency budget remaining within the CAP period is \$63.2 million and \$58 million beyond FY08.

Projects and Phases removed from the Proposed FY06 CIP

The net impact of increases to ongoing projects, new capital requirements in the proposed budget (e.g.: watershed dam improvements and land acquisition), updated project cost estimates, including the annual adjustment for inflation on unawarded construction estimates¹, and changes to project schedules to fulfill regulatory requirements necessitated a greater adjustment to planned capital spending. This has been accomplished through the elimination of a significant number of projects identified in previous capital budgets.

See Attachment A to the overview section for a detailed listing of projects and phases removed from the CIP. The totals presented in Attachment A do not include contingency or inflation used in the CAP calculation methodology. Table 2 on page 4 presents net changes by program compared to the Final FY05 CIP. Attachment A shows only removed projects and phases. Therefore, program totals will differ between Table 2 and Attachment A. Planned spending removed from the capital budget, as compared to the Final FY05, is discussed below.

Interception & Pumping –

- o *Neponset Valley Sewer Relief*: Future planned spending of \$12 million, largely beyond fiscal year 2013, has been removed from the capital budget.
- o *Wellesley Extension Replacement Sewer*: Planned relining of 29,000 linear feet, the last of 8 contracts to rehabilitate this sewer, has been removed from the capital budget. This has reduced planned spending by (\$22 million) between FY09-13.
- o *Siphon Structure Rehabilitation*: Planned siphon rehabilitations at more than 100 sites have been removed from the capital budget. This has reduced planned spending by (\$6 million) between FY09-13.

¹ MWRA uses ENR's Boston Construction Cost Index (Boston CCI) projected to the mid-point of the fiscal year to adjust and state all unawarded construction estimates in constant dollars. For the Proposed FY06 CIP, the index has been forecasted, by WEFA, to a projected index for December 2005. This adjustment is embedded in individual project budgets and is separate from the inflation component of the CAP calculation.

- o *System Master Plan Interceptors:* Funding for this project, planned to have started in Dec-2014 and be completed by Apr-2020 has been removed from the capital budget. This has reduced planned spending beyond FY13 by (\$11 million).
- o *Corrosion & Odor Control:* Planned construction improvements for Arthur Street Pump Station, Framingham Extension Relief Sewer force main, odor control, and tunnel rehabilitation have been removed from the capital budget. This has reduced planned spending by (\$13 million) within the cap period.
- o *West Roxbury Tunnel:* Design and construction to rehabilitate the tunnel, scheduled to have begun in Sep-2005 and Dec-2007 respectively, have been removed from the capital budget. This has reduced planned spending by (\$15 million) within the cap period and by (\$60 million) between FY09-13.
- o *Wastewater Process Optimization:* Design and construction of an additional siphon along the Cambridge Branch Sewer, planned to have started in Jan-2011 and Aug-2013, have been removed from the capital budget. This has reduced planned spending beyond FY13 by (\$21 million).
- o *Interception & Pumping Facility Asset Protection:* Funding to support a systematic replacement of MWRA's interceptors has been removed from the capital budget. The planning phase of this program was scheduled to have begun in FY06 with a construction replacement program underway by FY08. Planned spending in this project has been reduced by (\$69 million) between FY09-13 and by (\$29 million) beyond FY13.

In addition to the adjustment above to the interceptor renewal program, funding for a headworks renewal program, estimated at \$40 million, has been excluded from the proposed capital budget request. As previously noted, funding to begin a condition assessment/facilities plan and replacement of critical headworks screens is included in the proposed budget.

Drinking Water Quality Improvements –

- o *Northern Intermediate High Covered Storage:* Funding for this project, planned to have started in Jan-2012 and be completed by Dec-2019 has been removed from the capital budget. This has reduced planned spending by (\$0.5 million) between FY04-08, by (\$0.7 million) between FY09-13 and by (\$5.0 million) beyond FY13.
- o *Low Service Storage Near Spot Pond:* Remaining funding for this project, planned to have started in Apr-2010 and be completed by Sep-2014 has been removed from the capital budget. This has reduced planned spending by (\$16 million) between FY09-13 and by (\$12 million) beyond FY13.

Transmission –

- o *Sudbury / Weston Aqueduct Repairs:* While funding for the inspection and short-term repairs remain in the budget, funding for the design and construction of the long-term repairs planned

to have started in Jul-2008 and be completed by Nov-2014 has been eliminated. This has reduced planned spending by (\$32 million) between FY09-13 and by (\$7 million) beyond FY13.

- o *Northern High NW Trans Sections 70-71:* Planned rehabilitation of 46,000 linear feet of pipeline, planned to have started in Mar-2009 and be completed by Nov-2018 has been removed from the capital budget. This has reduced planned spending by (\$7 million) between FY09-13 and by (\$29 million) beyond FY13.
- o *Southern Extra High Redundancy and Storage:* Funding for this project, planned to have started in Jul-2006 and be completed by Mar-2016 has been removed from the capital budget. This has reduced planned spending by (\$1 million) between FY04-08, by (\$10 million) between FY09-13 and by (\$14 million) beyond FY13.

Distribution & Pumping –

- o *Chestnut Hill Connecting Mains:* Design and Construction for remaining connections, planned to have started in Jan-2006 and be completed by Jun-2009 has been removed from the capital budget. This has reduced planned spending by (\$7 million) between FY04-08, by (\$5 million) between FY09-13.
- o *Spot Pond Supply Mains - Rehab:* Design and construction to rehabilitate Sections 57 and 66, as well as the Riverside Avenue Sewer and Mystic Main 30, scheduled to begin in Jul-2005 and be completed by Jul-2011, has been removed from the capital budget. This has reduced planned spending by (\$5 million) within the cap period and by (\$24 million) between FY09-13.
- o *Northern High Service – Pipeline Rehab:* Funding to rehabilitate numerous small diameter distribution pipelines, planned to have started in May-2007 and be completed by Nov-2011 has been removed from the capital budget. This has reduced planned spending by (\$1 million) between FY04-08 and by (\$15 million) between FY09-13.
- o *Northern High Service – Pipeline Rehab 13-18 & 48:* Funding for this project, planned to have started in Apr-2009 and be completed by Nov-2016 has been removed from the capital budget. This has reduced planned spending by (\$7 million) between FY09-13 and by (\$19 million) beyond FY13.
- o *Southern Extra High Pipelines – Sections 30,40,44,39:* Funding for this project, planned to have started in Jan-2011 and be completed by Jan-2017 has been removed from the capital budget. This has reduced planned spending by (\$1 million) between FY09-13 and by (\$6 million) beyond FY13.
- o *Section 80 Rehabilitation:* Funding for this project, planned to have started in Jan-2006 and be completed by Dec-2009 has been removed from the capital budget. This has reduced planned spending by (\$4 million) between FY04-08 and by (\$6 million) between FY09-13.

Project Budget Summaries and Detail of Changes

Information on individual project budgets and detail of changes is provided in the supplemental appendix budget document.

ATTACHMENT A

Project and Phase	NTP	SC	Total \$ 000	FY04-08	FY09-13	Beyond FY13
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Interception & Pumping

S.104 Braintree-Weymouth Relief Facilities Total			10,597	10,597	-	-
S.104 S.10060.5310 Rehab Sections 624 & 652	Apr-05	Mar-06	10,597	10,597	-	-
S.140 Neponset Valley Relief Sewer Total			12,322	-	1,220	11,102
S.140 S.10255.6030 Planning	Jan-10	Jan-12	1,095	-	1,095	-
S.140 S.10341.6578 Design/CS/RI	Dec-12	Jul-18	1,872	-	125	1,747
S.140 S.10342.6579 Construction	Jul-16	Jul-18	9,355	-	-	9,355
S.106 Wellesley Ext Replacement Sewer Total			23,248	823	22,425	-
S.106 S.10283.6184 Construction 8	Jul-10	Jul-12	19,371	-	19,371	-
S.106 S.10353.6630 Design CS/RI 8	Feb-07	Jul-13	3,877	823	3,054	-
S.130 Siphon Structure Rehabilitation Total			5,657	468	5,189	-
S.130 S.10293.6224 Design/CS/RI	Apr-06	Dec-11	1,292	468	824	-
S.130 S.10294.6225 Construction	Aug-09	Dec-10	4,365	-	4,365	-
S.134 Ashland Extension Sewer Total			1,000	-	150	850
S.134 S.10286.6187 Planning	Aug-11	Aug-13	500	-	150	350
S.134 S.10376.6788 Design	Feb-14	Feb-16	500	-	-	500
S.135 System Master Plan Interceptors Total			10,900	-	117	10,783
S.135 S.10287.6188 Planning	Jan-12	Jan-14	1,173	-	117	1,056
S.135 S.10303.6413 Design/CS/RI	Dec-14	Apr-20	1,622	-	-	1,622
S.135 S.10288.6189 Con-Mystic Valley Sewer Sec 153	Apr-18	Apr-20	1,151	-	-	1,151
S.135 S.10289.6190 Con-Revere Branch Sect 62	Apr-18	Apr-20	1,831	-	-	1,831
S.135 S.10291.6192 Con-Cambridge Branch 23-25	Apr-18	Apr-20	4,200	-	-	4,200
S.135 S.10292.6193 Con-Malden Branch Sec 65 & 66	Apr-18	Apr-20	923	-	-	923
S.132 Corrosion & Odor Control Total			11,337	10,690	648	-
S.132 S.10326.6552 Arthur St P.S. & FERS Force Main	Apr-06	Apr-07	1,500	1,500	-	-
S.132 S.10405.6918 FES Tunnel Rehab	May-07	May-08	8,432	7,784	648	-
S.132 S.10406.6919 Air Treatment Systems	May-06	May-07	1,405	1,405	-	-
S.136 West Roxbury Tunnel Total			73,500	14,430	59,070	-
S.136 S.10400.6897 Tunnel Design	Sep-05	Mar-11	10,500	5,180	5,320	-
S.136 S.10401.6898 Tunnel Construction	Dec-07	Mar-11	63,000	9,250	53,750	-
S.139 South System Relief Project Total			525	525	-	-
S.139 S.10402.6915 Quincy/Braintree Howard St. ...	Jul-05	Jun-07	375	375	-	-
S.139 S.10422.6949 Quincy/Braintree Howard St Des	Jul-04	Jun-07	150	150	-	-
S.141 Wastewater Process Optimization Total			22,880	-	2,109	20,771
S.141 S.10416.6934 Siphon-Design	Jan-11	Jul-14	2,850	-	2,109	741
S.141 S.10417.6935 Siphon- Construction	Aug-13	Jul-14	20,030	-	-	20,030
S.143 Regional I/I Management Planning Total			228	228	-	-
S.143 S.10390.6819 I/I and SSO Reduction	Apr-02	Jun-05	228	228	-	-
S.145 I&P Facility Asset Protection Total			102,000	3,000	70,000	29,000
S.145 S.10418.6936 Interceptor Renewal	Mar-06	Jun-19	102,000	3,000	70,000	29,000

Treatment

S.206 DI Treatment Plant Asset Protection Total			7,096	5,935	1,160	-
S.206 S.19222.6723 Eastern Seawall Design - 1	May-06	Mar-09	344	212	132	-
S.206 S.19223.6724 Eastern Seawall Construction - 1	Dec-07	Mar-09	1,374	366	1,008	-
S.206 S.19246.6821 Personnel Dock Rehab	Mar-06	Oct-06	200	200	-	-
S.206 S.19247.6822 Outfall Modif Const 1	Jan-06	Sep-07	824	824	-	-
S.206 S.19248.6823 Outfall Modif Const 1 REI	Jan-06	Sep-07	275	275	-	-
S.206 S.19266.6883 PICS Replacement Des	Jul-06	Jun-08	224	203	21	-
S.206 S.19194.6598 Thermal Plant PICS Repl	Jan-05	Jun-05	184	184	-	-
S.206 S.19285.6974 DI Wind Power Constr	Mar-05	Nov-06	2,956	2,956	-	-
S.206 S.19227.6728 Closed Circuit Cameras Design	Oct-05	Sep-07	170	170	-	-
S.206 S.19228.6729 Closed Circuit Cameras Const	Dec-06	Sep-07	545	545	-	-

ATTACHMENT A

Project and Phase	NTP	SC	Total \$ 000	FY04-08	FY09-13	Beyond FY13
Drinking Water Quality Improvements						
S.546 Northern Intermed. High Covered Storage			6,050	-	659	5,391
S.546 S.53388.6218 Preliminary Design/EIR	Jan-12	Dec-13	659	-	659	-
S.546 S.53389.6219 Final Design/CA/RI	Jan-14	Dec-19	599	-	-	599
S.546 S.53387.6217 Construction	Jan-17	Dec-19	4,792	-	-	4,792
S.550 Low Service Storage Near Spot Pond			27,544	-	15,535	11,776
S.550 S.53400.6455 Env Rev	Apr-02	Feb-03	233	-	-	-
S.550 S.53401.6456 Env Rev Con Des Owners Rep			2,500	-	1,713	787
S.550 S.53402.6457 Design/Build	Apr-12	Apr-14	24,811	-	13,822	10,989
Transmission						
S.614 Metropolitan Tunnel Loop Total			2,897	995	1,902	-
S.614 S.60035.6273 Feasibility Study	Jan-05	Dec-06	245	245	-	-
S.614 S.60050.6693 Tunnel Shaft Rehabilitation Project	Apr-09	Dec-10	2,165	400	1,765	-
S.614 S.60052.6710 Design/CA/RI Shaft Rehab	Jun-07	Jun-10	487	350	137	-
S.597 Winsor Dam Hydroelectric Total			1,450	-	46	1,404
S.597 S.60033.6277 Detail Design	Jul-11	Mar-13	46	-	46	-
S.597 S.60044.6526 Construction	May-13	Nov-13	1,404	-	-	1,404
S.616 Quabbin Transmission System Total			8,625	300	8,325	-
S.616 S.60068.6940 Ph2 Oakdale Valves Fac Des	Jul-07	Jun-10	625	300	325	-
S.616 S.60069.6941 Ph2 Oakdale Valves Fac Constr	Jan-09	Jun-10	8,000	-	8,000	-
S.617 Sudbury /Weston Aqueduct Repairs Total			39,200	-	32,011	7,189
S.617 S.60070.6947 Sudbury Aqueduct Design	Jul-08	Nov-14	6,400	-	5,137	1,263
S.617 S.60071.6948 Sudbury Aqueduct Constr	Apr-11	Nov-13	32,800	-	26,875	5,925
Distribution & Pumping						
S.618 Northern High NW Trans Sect 70-71 Total			35,759	-	7,219	28,540
S.618 S.60061.6893 Construction	Mar-12	Nov-18	28,519	-	2,775	25,744
S.618 S.60062.6894 Design CA/RI	Mar-10	Nov-18	5,046	-	2,250	2,796
S.618 S.60063.6895 Planning	Mar-09	Mar-10	2,194	-	2,194	-
S.732 Walnut St. & Fisher Hill Pipeline Rehab. Total			2,711	-	2,711	-
S.732 S.68191.6588 Construction Phs. 2	Jul-09	May-11	2,711	-	2,711	-
S.721 Southern Spine Distribution Mains Total			8,224	136	843	7,246
S.721 S.68086.6293 Sec 19 Design	Jul-09	Nov-14	1,415	-	843	572
S.721 S.68088.6295 Sec 19 Construction	Mar-12	Nov-13	6,673	-	-	6,673
S.721 S.68246.6871 MHD Neponset River Bridge	Sep-02	Sep-04	136	136	-	-
S.727 SEH Redundancy & Storage Total			25,354	631	10,678	14,045
S.727 S.53397.6452 Concept Plan/Prelim Des/Env Rev	Jul-06	Dec-07	561	561	-	-
S.727 S.68135.6444 SEH Red Loop Final Des/CA/RI	Jul-08	Jul-12	3,417	-	3,417	-
S.727 S.68136.6445 SEH Redund Loop Construction	Dec-12	Mar-16	16,045	-	2,000	14,045
S.727 S.53398.6453 SEH Storage Final Des/CS/RI	Jan-08	Dec-12	842	70	772	-
S.727 S.53399.6454 SEH Storage Construction	Jul-11	Dec-12	4,489	-	4,489	-
S.719 Chestnut Hill Connecting Mains Total			11,566	6,500	5,066	-
S.719 S.68052.6302 Construction- Chp 149	Jun-07	Jun-09	5,033	2,750	2,283	-
S.719 S.68267.6982 Construction-Chp 30	Jun-07	Jun-09	5,033	2,500	2,533	-
S.719 S.68268.6995 Final Design CA/RI	Jan-06	Jun-09	1,500	1,250	250	-
S.713 Spot Pond Supply Mains - Rehab Total			29,671	5,800	23,871	-
S.713 S.68223.6782 Construction CP-5 Sec 66 & OMM30	Apr-07	May-10	6,616	2,300	4,316	-
S.713 S.68224.6783 Plan/Des CA/RI Sec 66 OMM30	Jul-05	Jul-11	1,610	1,000	610	-
S.713 S.68226.6785 Sewer Design/CA/RI & Sect 57 Des	Jul-05	Jul-11	3,620	2,000	1,620	-
S.713 S.68227.6786 Riverside Ave Sewer Repair & Sect 57	Apr-08	Apr-11	17,825	500	17,325	-
S.702 New Connecting Mains - Shaft 7 to ... Total			1,607	1,300	307	-
S.702 S.68243.6864 N. Seg (CP1B) C&L Watertown Sect	Jan-07	Oct-08	1,607	1,300	307	-

ATTACHMENT A

Project and Phase	NTP	SC	Total \$ 000	FY04-08	FY09-13	Beyond FY13
S.724 Nor High Service - Pipeline Rehab Total			16,288	736	15,551	-
S.724 S.68098.6336 Design/CA/RI	May-07	Nov-11	2,828	736	2,092	-
S.724 S.68099.6337 Appraisal/Easement	Jul-08	Jul-09	151	-	151	-
S.724 S.68100.6338 Construction	Feb-10	Nov-11	13,309	-	13,309	-
S.733 NHS Pipeline Rehab 13-18 & 48 Total			26,363	-	7,354	19,009
S.733 S.68212.6717 Planning/EIR	Nov-09	Apr-11	2,055	-	2,055	-
S.733 S.68213.6718 Design/CA/RI	Apr-12	Nov-16	2,854	-	947	1,907
S.733 S.68214.6719 Construction	Jan-15	Nov-16	13,454	-	-	13,454
S.733 S.68259.6959 Rehab of Sect 33,49,49A,Des	Apr-09	Nov-16	1,400	-	1,052	348
S.733 S.68260.6960 Rehab of Sect 33,49,49A, Const	Jan-12	Nov-15	6,600	-	3,300	3,300
S.734 SEH Pipelines-Sections 30,40,44,39 Total			7,000	-	750	6,250
S.734 S.68233.6835 Design	Jun-12	Dec-13	1,000	-	750	250
S.734 S.68234.6836 Construction	Jan-14	Jan-17	6,000	-	-	6,000
S.735 Section 80 Rehabilitation Total			9,693	3,957	5,737	-
S.735 S.68248.6890 Water Supply Contingency ...	May-07	Sep-09	1,000	483	517	-
S.735 S.68249.6891 Section 80 Construction	Nov-07	Sep-09	7,172	2,458	4,714	-
S.735 S.68250.6892 Section 80 Design CS/RI	Jan-06	Dec-09	1,521	1,016	505	-
S.753 Central Monitoring System Total			100	100	-	-
S.753 S.75487.6652 Permits Monitoring & Control Comm Net	Dec-99	Sep-04	100	100	-	-
<i>Business & Operations Support</i>						
S.933 Capital Maintenance Planning/Development Total			750	750	-	-
S.933 S.19192.6593 Facilities Asset Mgmt Phase 3	Jul-05	Jul-07	750	750	-	-
TOTAL Project and Phases Removed¹			542,143	67,900	300,654	173,357

¹ Total excludes inflation and contingency included as part of the CAP calculation.

Capital Improvement Program

PROPOSED FISCAL YEAR 2006 APPENDICES



MASSACHUSETTS WATER RESOURCES AUTHORITY

APPENDIX 1

Project Budget Summaries and Detail of Changes

Project Budget Summaries and Detail of Changes

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S. 102 Quincy Pump Facilities

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*
- ☑ *Results in a net reduction in operating costs*
- ☑ *Improves system operability and reliability*

MWRA's three pump facilities in Quincy (Quincy, Squantum, Hough's Neck) were beyond their useful lives and prone to failure. Force mains connected to the stations were corroded and maintained a very low velocity resulting in high-energy losses because of friction and other flow constraints. Under this project MWRA is constructing new pump stations and has rehabilitated force mains to ensure continuous pumping of sewage flows to treatment facilities. Operating costs have been reduced as a result of reduced staffing needs following the completion of the automated Quincy Pump Station.

Project History and Background

The Quincy pump facilities, serving the City of Quincy, include:

- Quincy Pump Station, a 21.5 million gallons per day (mgd) facility in operation since 1906.
- Squantum Pump Station, an 8-mgd facility built in the late 1930s.
- Hough's Neck Lift Station, a 1-mgd facility in service since 1942.
- Quincy Force Main, comprised of two 3,000 feet force mains. One main, 24 inches in diameter, was built in 1902. The other, 30 inches in diameter, was built in 1923.
- Squantum Force Main, built in 1972, 19,000 feet long, and ranging in diameter from 24 to 30 inches.

Construction of the Hough's Neck Lift Station, Squantum Force Main, and Quincy Force Main all began in the summer of 1998 and were substantially completed in 1999. Construction of the Quincy Pump Station was completed in December 2002, corrosion mitigation of the Squantum Force Main was completed in April 2003 and construction of the Squantum Pump Station was completed in September 2003.

Scope

Sub-phase	Scope
Facilities Plan/EIR	Evaluation of existing conditions, development of proposed improvements, and assessment of the impacts of those improvements.
Design/CS and Construction - Rehabilitation	Design, construction services, and construction for short-term improvements at the Quincy and Squantum Pump Stations
Design/CS/RI 1	Design, construction services, and resident inspection for Squantum P.S., Quincy P.S., Hough's Neck P.S., Squantum Force Main, and Quincy Force Main.
Squantum P.S. Construction	Construction of new 8-mgd pump station.
Quincy P.S. Construction	Construction of new 26-mgd pump station.
Hough's Neck P.S. Construction	Construction of new 1.5-mgd lift station.
Early Rehabilitation – Squantum Force Main	Rehabilitation of 4,576 linear feet of the Squantum Force Main through installation of a cured-in-place resin-impregnated flexible liner.

Sub-phase	Scope
Squantum Force Main Rehabilitation	Rehabilitation of the remaining 8,100 linear feet of the Squantum Force Main by cleaning and application of a cementitious lining.
Quincy Force Main Rehabilitation	Rehabilitation of the existing 30-inch, 2,700 linear feet Quincy Force Main and abandonment of the existing 24-inch Quincy Force Main.
Corrosion Mitigation	Completion of corrosion mitigation work in the Squantum Force Main to repair corrosion damage discovered during rehabilitation.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$26,152	\$26,046	\$106	\$604	\$106				

Project Status 11/04	99.3%	Status as % is approximation based on project budget and expenditures. The project is substantially complete with only close out items remaining. Pumping station is operating as intended.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$26,245	\$26,152	(\$93)	Dec 04	Dec 04	-	\$803	\$710	(\$93)

Explanation of Changes

- N/A

CEB Impact

No additional impacts expected at this time.

S. 104 Braintree-Weymouth Relief Facilities

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

In accordance with a DEP administrative consent order, construction of relief facilities and the resulting reduction in community infiltration and inflow will provide capacity for peak sewage flow from Braintree, Hingham, Holbrook, Randolph, Weymouth, and sections of Quincy. This project will reduce surcharging in Braintree and Weymouth, and reduce frequent overflows into the Weymouth Fore River during wet weather.

Project History and Background

The Braintree-Weymouth interceptor system and pump station serves Braintree, Hingham, Holbrook, Randolph, Weymouth, and sections of Quincy. Because of population increases, the sewerage system cannot handle the volume of sewage received. Sewage overflows are severe and frequent along the Weymouth Fore River during wet weather.

Interim rehabilitation work was required to ensure continued operation of the existing Braintree-Weymouth Pump Station during the long-term design and construction period. Rehabilitative work completed to date includes installation of a motorized influent gate and a mechanical bar screen, as well as heating improvements. After initially proceeding with a dual track design approach for part of this project, MWRA decided to construct a deep rock tunnel rather than a marine pipeline from the new pump station to the Nut Island shaft of the Inter-Island Tunnel to Deer Island. Construction of the Emergency Mill Cove Siphon was completed in June 1998. Construction of the deep rock tunnel was completed in September 2003, and the North Weymouth Relief Intercept was completed in June 2002. The Intermediate Pump Station was put into service in December 2004. The Fore River Siphons construction contract was awarded in May 2003, and construction is expected to be completed in January 2005. Construction of the Replacement Pump Station will begin in early 2005 and be completed in April 2007.

Scope

Sub-phase	Scope
Design 1/CS/RI – Tunnel & IPS	Design of the tunnel and IPS. Includes completion of design modifications for sludge pumping facilities at Deer Island and residuals filtrate facilities at Fore River.
Sediment Tests	Tests required as part of the evaluation of marine pipeline option.
Design 2/CS/RI – Surface	Design of remaining construction including siphons and pump station.
Tunnel Construction & Rescue	Construction of a 2.9-mile, 12-foot diameter tunnel beginning at the Nut Island shaft of the Inter-Island Tunnel and ending at the Fore River Staging Area. Two 14-inch sludge pipelines within the tunnel will convey Deer Island sludge from the Inter-Island Tunnel to the pelletizing plant. 0.4 miles of twin 12-inch pipelines within the tunnel will convey filtrate from the pelletizing plant to the Intermediate Pump Station. 2.5 miles of 42-inch force main will carry flows and filtrate to the Inter-Island Tunnel. Also includes a MOA with Quincy, Braintree, and Weymouth for tunnel rescue and fire support services.
Intermediate Pump Station Construction	Construction of a 45-mgd pump station and headworks in North Weymouth. Also includes modifications to the sludge pumping facilities at Deer Island and the filtrate facilities at Fore River.

Sub-phase	Scope
No. Weymouth Relief Interceptor Construction	Construction of 2,000 linear feet of 60-inch gravity sewer running from the Intermediate Pump Station and along the Exelon Energy site.
Fore River Siphons Construction	Construction of 36-inch, 3,900-foot long twin siphons beneath the Fore River from the Idlewell section of Weymouth to the southeast corner of the Exelon Energy site in North Weymouth. Constructing 1,000 linear feet of 36-inch to 54-inch new sewers in Idlewell.
B-W Replacement Pump Station	Construction of a new 28-mgd Braintree-Weymouth Pump Station which will handle flows from Hingham, Weymouth, and portions of Quincy.
Mill Cove Siphon Construction	Installation of 1,700 linear feet of 42-inch siphon pipe between Newell Playground and Aspinwall Street in North Weymouth to act as second barrel of existing Mill Cove Siphon.
Construction – Rehab	Interim rehabilitation of the existing Braintree-Weymouth Pump Station.
Community Technical Assistance	Technical assistance for the Town of Weymouth for hydraulic modeling of its sewer system, leak detection for the water system, and mitigation.
Geotechnical Consultant	Consulting services related to the tunnel shaft excavation.
Communication System	Radio systems for the intermediate and replacement pump stations.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$219,288	\$181,332	\$37,955	\$26,560	\$15,742	\$10,683	\$9,975	\$1,200	\$355

Project Status 11/04	86.3%	Status as % is approximation based on project budget and expenditures. Work that is substantially complete includes the deep rock tunnel, N Weymouth Interceptor, and Intermediate Pump Station. The Fore River Siphons contract 91% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$226,531	\$219,288	(\$7,243)	May 08	April 08	(1)	\$71,271	64,160	\$7,111

Explanation of Changes

- Decrease in Project Cost due to deletion of Rehabilitation of Sections 624 & 652 (formerly 123A & 124) sub-phase as part of MWRA initiative to contain rate increases.
- Offset by increase in base cost estimate for Replacement Pump Station.

CEB Impact

The impacts of the Intermediate Pump Station and Tunnel are reflected in MWRA's Proposed FY06 CEB. The start-up of the Replacement Pump Station will result in increased operating costs of \$51,000 as of FY08 to run the facility. MWRA will update the CEB impacts for this project for the Final FY06 CIP.

S. 105 New Neponset Valley Relief Sewer

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Improves system operability and reliability*

Construction of relief facilities to correct structural and hydraulic deficiencies in the New Neponset Valley Interceptor Sewer System. This project will reduce surcharging and sewage overflows which, combined with other pollution, threatened the Neponset River Watershed, the water supply for Canton and the Dedham/Westwood Water District. Completion of the facilities will also accommodate an anticipated increase in demand resulting from population growth in the service area.

Project History and Background

The New Neponset Interceptor Sewer System consists of the New Neponset Valley Sewer, the Westwood Extension Sewer, the Walpole Extension Sewer, the Stoughton Extension Sewer, and the Dedham Branch Sewer. The system serves Walpole, Stoughton, Canton, Norwood, Westwood, and parts of Dedham, Hyde Park, and Milton. Structural deficiencies within the system included deteriorated manhole risers, improper castings, structural damage due to superimposed loadings, and segments that required cleaning. Hydraulic problems included a six-mgd deficiency in the downstream segment and an approximately 22-mgd deficiency in several upstream segments during heavy rainfall, resulting in surcharging and sewage overflows to ground surfaces and adjacent water bodies.

Construction of the new relief facilities commenced in 1993. The pump station began operating in March 1996. The interceptor was placed into service in September 1997. Remaining contract activity is related to environmental compliance.

Scope

Sub-phase	Scope
Consultant-Canton	Funding of an environmental monitor for the Canton Conservation Commission to oversee wetlands related work.
Construction 1	Construction of a 46-mgd pump station and 2,850 linear feet of 48-inch force main.
Construction 2	Installation of 5,900 linear feet of 54-inch gravity sewer for the New Neponset Valley Relief Sewer.
Construction 3	Installation of 5,330 linear feet of 36-inch gravity sewer for the downstream section and 4,055 linear feet of 24- to 30-inch gravity sewer for the upstream section of the Stoughton Extension Sewer.
Construction 4	Installation of 6,920 linear feet of 30- to 48-inch gravity sewer for the Walpole Extension Sewer.
Construction 5 and Consultant-Milton	Installation of the remaining 18,544 linear feet of 48-inch force main for the New Neponset Valley Relief System. Funding of an environmental monitor for the Milton Conservation Commission to oversee wetlands related work.
Study Dedham Street	Study to determine if a section of settled sewer line was repaired in the early 1960s and whether it may have contributed to groundwater contamination.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$30,334	\$30,297	\$37	\$0	\$37				

Project Status 11/04	100%	Status as % is approximation based on project budget and expenditures. Project is essentially complete except for wetlands restoration which will be done by the end of FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$30,334	\$30,334	\$0	Jul-99	Jul-99	None	\$37	\$37	\$0

Explanation of Changes

- None.

CEB Impact

Operating cost impacts from this project are already incorporated into the CEB.

S. 131 Upper Neponset Valley Sewer System

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Improves system operability and reliability*

The Upper Neponset Valley Sewer is hydraulically deficient resulting in frequent community system back-ups and interceptor overflows during wet weather to adjacent residential areas and water bodies in Brookline, Boston, Newton, and Dedham. Construction of a new replacement interceptor will reduce chronic wastewater overflows and surcharging during wet weather and improve service and water quality.

Project History and Background

The Upper Neponset Valley Sewer (UNVS), constructed between 1896 and 1902, extends approximately four miles through West Roxbury and Newton, and receives wastewater from West Roxbury, Brookline, Newton, and a small portion of Dedham. Based on the results of the 1994 Combined Sewer Overflow Master Plan, work on Section 530 in Newton and West Roxbury has been added to this project, because the hydraulic improvements are needed in this section.

The 1984 Wellesley Extension Sewer Facilities Plan/Environmental Impact document estimated that the UNVS overflowed an average of six to ten times per year with occurrences lasting as long as ten days. The Facilities Plan/EIR indicated that installation of a new interceptor would be the most cost-effective solution to these problems. With the increased capacity of the new interceptor, chronic wastewater overflows during wet weather will be reduced, improving water quality. The project will increase the hydraulic capacity in the Upper Neponset Valley Sewer by 8 mgd, through the construction of replacement sewers, to the level of service provided to all MWRA sewer member communities. The project will eliminate surcharging and overflows during the one-year, six-hour DEP designated design storm, with no increase in downstream overflows. It will also reduce overflows for 5-year and above storms. The project includes design and construction of sections 685 and 686 replacement sewers for sections 526 to 529. It also includes design and construction of Section 687 to replace Section 530.

Scope

Sub-phase	Scope
Designs/CS/RI	Completion of design and provision of construction services and resident inspection during the construction phases.
Boston Paving	Payment to the City of Boston for paving work on city streets.
Replace Sewer Sections 685-686 construction	Installation of 16,500 feet of new sewers within public roadways to reduce overflows to adjacent residential areas and water bodies in West Roxbury.
Replace Section 687	Installation of 8,400 feet of new sewers to reduce overflows to adjacent residential areas and water bodies in West Roxbury and Newton

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$40,028	\$2,120	\$37,908	\$436	\$2,450	\$12,557	\$13,403	\$9,341	\$157

Project Status 11/04	8.8%	Status as % is approximation based on project budget and expenditures. Design phase approximately 40% complete with completion expected in FY06. Construction on Section 685 and 686 to begin in late FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$35,835	\$40,028	\$4,193	Sept 08	Nov 08	2 Mos	\$31,104	\$38,187	\$4,083

Explanation of Changes

- Cost – Amendment for 29 month contract extension and revised cost estimates for Sections 685-686 and replacement of Section 687 resulted in project cost increase.

CEB Impact

None identified at this time.

S. 107 Framingham Extension Relief Sewer

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*
- Extends current asset life*
- Improves system operability and reliability*

The Framingham Extension Sewer had inadequate capacity to serve current and projected demand, resulting in surcharging and discharging of sewage into local water bodies such as the Charles River and Beaverdam Brook. The installation of a new force main and gravity sewer, construction of a new pump station, and rehabilitation of approximately 23,000 linear feet of existing pipe resulting in sufficient capacity to transport peak flows and reduce overflows. This project is being completed in accordance with an EPA/DEP administrative consent order.

Project History and Background

The Framingham Extension Sewer, constructed in the mid 1950s, is approximately 31,150 feet long, with a diameter varying between 42 and 54 inches. The sewer receives wastewater from the towns of Framingham, Ashland, and Natick and transports these flows to the Wellesley Extension Sewer for eventual conveyance to the Deer Island Treatment Plant. The current peak wet weather flow is approximately 42.8 mgd. Insufficient capacity and aging of the pipes led to deterioration and excessive discharging of the sewer system. The new system is designed for a peak flow of 43.7 mgd. Construction of a new pump station, force main, and gravity sewer was completed in April 1998. Early Sewer Rehabilitation was completed in March 1995 and Late Sewer Rehabilitation was completed in August 2002.

Scope

Sub-phase	Scope
Install Force Main	Installation of 25,000 linear feet of 36-inch force main in Framingham and Natick.
Gravity Sewer	Installation of 11,000 linear feet of 36- to 60-inch gravity sewer in Natick, Wellesley, and Dover. Micro-tunneling under a 150-year old oak tree on Elm Bank.
Pump Station	Construction of a 21-mgd pump station in Framingham.
Early Sewer Rehab	Rehabilitation of 7,439 linear feet of 42- to 48-inch sewer in Framingham and Natick.
Late Sewer Rehab	Rehabilitation of 15,000 feet of sewer in Natick and Dover.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$48,009	\$47,896	\$112	(\$3)	\$112				

Project Status 11/04	99.8%	Status as % is approximation based on project budget and expenditures. Project is nearing completion with only Conservation Committee work outstanding.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$47,996	\$48,009	\$13	Sept 04	Sept 04	-	\$96	\$109	\$13

Explanation of Changes

- N/A

CEB Impact

No additional impacts expected for this project.

S. 127 Cummingsville Replacement Sewer

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

Capacity deficiencies in the MWRA system may be associated with overflows of local sewers upstream from the Cummingsville Branch System. Sewer moratoriums are in effect in the upstream communities of Woburn and Burlington. Construction of a replacement sewer and rehabilitation of existing sewers will provide additional capacity to ensure adequate and reliable wastewater service for upstream communities.

Project History and Background

The Cummingsville Branch Sewer System is located in the Town of Winchester and receives wastewater from sections of Winchester and Woburn and all of Burlington. The Cummingsville Branch Sewer System consists of the Cummingsville Branch Sewer, constructed around 1894, and the Cummingsville Branch Relief Sewer, constructed in 1952. The existing system consists of 9,475 linear feet of 15- to 30-inch pipeline and has a capacity of 13 mgd. The 1975 Eastern Massachusetts Metropolitan Study recommended relief of the Cummingsville Branch Sewers to meet wastewater demand.

In 1988, MWRA informed local and state officials that the Cummingsville Branch Sewers would be on a priority list in any future sewer planning and design efforts. Then in 1995, MWRA published the Cummingsville Branch Sewers Facilities Plan recommending construction of the Cummingsville Branch Replacement Sewer to add a total of 8 mgd of capacity to the system. The facilities plan also recommended the rehabilitation of Section 86 to ensure its continued service.

In June 1999, MWRA filed a Notice of Project Change in accordance with the Massachusetts Environmental Policy Act at the Executive Office of Environmental Affairs, to change the alignment to avoid construction in parkland. The Secretary's Certification of November 1999 found no further Massachusetts Environmental Policy Act review was required. In December 1999, the Town of Winchester files a lawsuit against MWRA and the Executive Office of Environmental Affairs to require preparation of an Environmental Impact Report and cessation of project advancement pending completion of environmental review. The Town's concerns related to the potential effects of the project on pre-existing surcharge and/or overflow problems in the Town.

On September 18, 2002, the Board of Directors approved a Settlement Agreement between the Town of Winchester, MWRA and the Secretary of the Office of Environmental Affairs, which provided closure to the litigation matter. In consideration of the mutual promises contained in the Agreement, MWRA agreed to design and construct a modification of the Section 113 downstream siphon chamber to provide 30-foot wide (above elevation 115) river access across the Aberjona River to alleviate the historical constriction that the Town asserts results in chronic flooding.

Scope

Sub-phase	Scope
Facility Plan/EIR	Evaluation of potential adverse impacts associated with additional flows downstream and recommendations for improvements to the system.
Design/CS/RI	Design and construction services during the construction phase.
Construction (new sewer) and Rehab (existing sewers)	Replacement of the Section 47 sewer with a new 5,000 linear feet, 36-inch gravity line and cleaning and repair of the existing 5,000 linear feet Section 86 sewer.

Sub-phase	Scope
Siphon Modifications	Construction of new downstream chamber for section 113 siphon in Winchester.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$8,200	\$1,420	\$6,779	\$149	\$400	\$4,899	1,282	\$199	

Project Status 11/04	19.0%	Status as % is approximation based on project budget and expenditures. Facilities planning complete. Construction of both Siphon and Cummingville Branch Pumping Station scheduled to begin in June 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$7,061	\$8,200	\$1,138	April 08	Sept 07	(7) mos	\$5,788	\$6,929	\$1,141

Explanation of Changes

- Cost – Revised cost estimate for Cummingsville Branch Sewer construction work and amendment for additional design, construction services and resident inspection resulted in overall budget increase.
- Schedule – Schedule accelerated to meet intent of the agreement.

CEB Impact

None identified.

S. 132 Corrosion and Odor Control

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Extends current asset life*
- Improves system operability and reliability*

High sulfide levels in the Framingham Extension System cause corrosion and odors in that system and downstream in the Wellesley Extension Sewer System and West Roxbury Tunnel. A study has identified the causes of corrosion and odors and recommended corrective measures. Completion of corrosion control measures will extend the useful life of these assets and minimize the impact on the existing wastewater conveyance infrastructure. Improved odor control will mitigate the impact on surrounding areas.

Project History and Background

Hydrogen sulfide produces sewer odors and is highly corrosive of pipes and pump stations. Collapses in the Framingham Extension Sewer (FES) have alerted MWRA to problems in that area. Odor complaints have been received from residents abutting both the FES and the Wellesley Extension Sewer (WES) systems resulting in legal claims totaling several hundred thousand dollars. Severe corrosion has occurred in the West Roxbury Tunnel. This situation has prompted MWRA to add odor control chemicals at various points in the local systems and FES to try to reduce the hydrogen sulfide levels. The results have been mixed; not all of the chemicals were effective even over the short term, and none completely eliminated hydrogen sulfide.

While MWRA attempts to minimize odor and corrosion impacts through chemical intervention and sealing locations where odors escape, a more permanent solution is being sought. MWRA awarded a Planning/Study contract in January 1997. The consultant completed inspections in Ashland, Framingham, and Natick and drafted a report identifying, locating, and categorizing the sources and the extent of odor and corrosion problems. The Odor and Corrosion report indicated that significant levels of sulfides are discharged into the FES from Ashland and Framingham. These sulfide levels increase as the wastewater flows through the FES/FERS system. The report recommends a combination of MWRA and community actions, such as modifications to industrial discharge limits and municipal permits, chemical addition at community pump stations and the FES, and air treatment. The final planning/inspection report was completed in December 1998.

Interim Corrosion Control commenced in July 2000. The design for the modifications to the FERS pump station, FES Tunnel, and air treatment systems started in August 2002.

Scope

Sub-phase	Scope
Planning	Identification of causes and sources of odors; collection of local sewer system information in Ashland, Natick, and Framingham; recommendations for long-term corrective measures.
Design/CS/RI	Design, construction services, and resident inspection for FERS Pump Station, FES tunnel, and air treatment systems. By June 2005 it is anticipated the FERS Pump Station will have achieved 50% Design status, the FES tunnel will have achieved 30% Design status and the air treatment systems will have achieved 100% Design status.
Construction	Improvements to the FERS Pump Station, gravity sewer, rehabilitation of the FES tunnel, and air treatment systems for the FES and FERS.
Interim Corrosion Control	Implementation of chemical addition program at the FERS Pump Station. The program includes the addition of potassium permanganate, and monitoring of the wastewater flows and hydrogen sulfide levels downstream.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$3,515	\$2,243	\$1,272	\$555	\$672	\$600			

Project Status 11/04	74%	Status as % is approximation based on project budget and expenditures. All construction sub-phases, improvements to the FERS Pump Station, rehabilitation of the FES tunnel and air treatment systems for the FES and FERS, have been deleted in the Proposed FY06 CIP as part of strategy to contain rate increases. The status of these contracts is subject to reevaluation and may change in the Final FY06 CIP.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$17,215	\$3,515	(\$13,700)	May 09	June 05	(47) mos	\$14,369	\$1,827	(\$12,543)

Explanation of Changes

- Project Cost, Schedule and Spending all reduced due to the elimination of all construction sub-phases, improvements to the FERS Pump Station, rehabilitation of the FES tunnel and air treatment systems for the FES and FERS, from the Proposed FY06 CIP as part of MWRA strategy to contain rate increases.

CEB Impact

MWRA's CEB will continue to include cost for chemical treatment to control odors and corrosion in this part of the sewerage system.

S. 137 Wastewater Central Monitoring

Project Purpose and Benefits

- Extends current asset life.
- Results in a net reduction in operating costs
- Improves system operability and reliability

To study, define, design, and implement a centralized monitoring and control system most appropriate for MWRA's wastewater transport system. Through facility automation and remote monitoring and control, SCADA implementation will result in cost savings and improve wastewater system operation and maintenance.

Project History and Background

MWRA has already made substantial progress towards increased automation and central monitoring and control of its water and wastewater systems and facilities. Substantial investments have been made in implementing such systems for the Deer Island Treatment Plant and Nut Island Headworks, and SCADA implementation is ongoing within the water conveyance system. The recommended wastewater SCADA system and associated business practices will support a single philosophy for central monitoring and control of all MWRA facilities and systems.

The SCADA Master Plan, which was completed in July 1999, recommended expansion of the automated control concepts developed for water system operation and identified long-term savings related to staffing reductions and optimization of operations and maintenance. Following the master planning recommendations, a detailed scope of services was prepared to procure professional services contract to provide design, integration, training, construction administration and resident inspection services for various SCADA improvements. Camp Dresser & McKee, Inc. (CDM) was awarded this contract in June 2002. Three construction packages will be developed by CDM to procure construction services for SCADA implementation.

Scope

Sub-phase	Scope
Planning	Development of a plan for a monitoring and control system for the MWRA wastewater transport system.
Design and Integration Services	Includes design, integration (PLC programming, operator graphics development, MIS/CMMS data transfer), and development and implementation of training. Also covers preparation of documentation and manuals for automating equipment and systems and for remote monitoring and control of the wastewater transport systems and facilities. Includes construction administration, engineering services during and after construction, and resident inspection.
Construction 1 (CP1)	Construction and installation of SCADA equipment and systems at seven pumping facilities, three CSOs and one screen house. Also covers Operation Control Center improvements. Facilities include Alewife, Caruso, Hingham, New Neponset, Hayes, Delauri, Houghs Neck, Chelsea Screen House, Cottage Farm, Prision Point, and Somerville Marginal. This construction package will also include the major components of the SCADA communications infrastructure (microwave radios, routers, etc.).
Construction 2 (CP2)	Construction and installation of SCADA instrumentation and control equipment at the three older headworks facilities and Nut Island Headworks. OCC improvements will also be made to support these additional facilities.
Construction 3 (CP3)	Construction of permanent power at up to 35 interceptor monitoring locations and minor instrumentation and control improvements at newly commissioned pumping facilities (IPS, Quincy, and Squantum).
Equipment Prepurchase	Purchase SCADA system components including computer hardware to ensure consistency with MWRA MIS infrastructure through existing Commonwealth of MA blanket contracts and low cost small quantity system components (ex. fuel tank monitoring units and interfaces).
Technical Assistance	Technical assistance work to support all subphases.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$15,475	\$1,928	\$13,548	\$1,016	\$1,380	\$8,101	\$4,044	11	11

Project Status 11/04	14.1%	Status as % is approximation based on project budget and expenditures. The Planning phase is complete and Design and Integration contract is in process. Expect to award Construction 1 in April 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$14,432	\$15,475	\$1,043	Jan-07	Jan-07	None	\$13,515	\$14,552	\$1,037

Explanation of Changes

- Revised costs for construction work. Also, CP3 reconfigured to provide electrical power to select interceptor-monitoring sites for continuous data collection and to cover minor modifications to newly constructed facilities.

CEB Impact

Proposed FY06 CEB already reflects staffing reductions in preparation for implementation of remote monitoring. Expect additional reductions totaling \$200,000 during FY08 and FY09 from optimization of chemicals and maintenance after SCADA start-up.

S. 139 South System Relief

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To protect public health and property from sanitary system overflows and back-ups into homes and businesses during extreme wet weather events. Completion of the project will also extend the useful life of system assets and potentially avoid extraordinary costs resulting from system failures.

Project History and Background

Archdale Road Diversion Structure

On October 20, 1996 a 100-year rainstorm caused the MWRA High Level Sewer (HLS) (Section 70) to overflow in the area of Archdale Road in Boston. Following this overflow event, MWRA established a task force to recommend action to mitigate and/or prevent future overflows. The task force developed an emergency response plan and examined several relief alternatives. The first component of the recommended relief plan consisted of construction of a diversion structure that includes two 30-inch by 60-inch sluice gates connecting the HLS to BWSC's Stony Brook drainage conduit. The diversion structure is located at the end of Bradeen Street in Roslindale. If, based on monitoring results, it appears that the High Level Sewer is about to overflow in the Archdale Road area due to an extraordinary storm event, the overflow volume is diverted to the Stony Brook Conduit through the sluice gates. This eliminates the need to deploy large emergency response crews to build temporary sandbag dikes. Construction of the diversion structure was completed in August 1999.

High Level Sewer Repair

Subsequent to the October 1996 storm, MWRA initiated some short-term modifications to the sewer system to reduce overflows. However, during a June 1998 storm, these modifications actually pressurized the HLS. As a result, MWRA began an emergency evaluation of the HLS in June 1998 to analyze its hydraulic capacity and structural integrity. The evaluation, which was completed in January 1999, discovered cracking at a 77-degree bend in the sewer in the Archdale Road area that required immediate attention. Inspection also indicated that approximately 40 feet of the HLS, located in the Arnold Arboretum, needed repair. A construction contract notice to proceed was issued in June 1999 and construction was completed in October 1999.

Outfall 023 Cleaning and Structural Improvements

Following the October 1996 storm, the City of Boston engaged a consultant to review the events and recommend remedial actions to prevent future flooding under similar conditions. One recommendation was to clean sediment and debris from the Stony Brook Conduit. BWSC has cleaned the upstream portion of the conduit and MWRA has cleaned the outfall from the MDC gatehouse at Charlesgate to the Charles River. This part of the project also covers structural repairs to Outfall 023, with work scheduled to commence in July 2007.

Milton Financial Assistance

Two residential areas in the Town of Milton have experienced sewage backups into homes during wet weather events and periods of prolonged wet weather. One area affected is a direct tributary of MWRA's High Level Sewer and the other is a tributary to MWRA's New Neponset Valley Sewer. In September 1999, MWRA and Milton entered into a financial assistance agreement to fund design and construction of new sewers, rehabilitation of an existing pump station, and construction of a new pump station to mitigate downstream impacts from high flow conditions in the improved High Level Sewer.

Pump Station Feasibility

MWRA considered investigating the feasibility of constructing a small pump station to convey wastewater from a small area of Quincy away from the Braintree Howard Street Pump Station. The flow would be rerouted back to the Quincy collection system. The City of Quincy would own and operate the pump station. Upon further evaluation, MWRA has decided to delete this project and instead, will continue an MOU with Braintree to pay the town annually for use of 25 percent capacity of Braintree’s Howard Street Pump Station.

Scope

Sub-phase	Scope
Archdale Des/CS/RI and Construction	Design, construction services, and resident inspection for the Archdale Road Diversion Structure. Construction of an underground diversion structure that houses two 30-inch by 60-inch horizontal sluice gates on the sidewall of the HLS. This structure controls flow into BWSC’s Stony Brook Conduit.
Sections 70 and 71 HLS Evaluation/ Construction	Initial evaluation and construction of recommended improvements.
Construction and Improvements for Outfall 023	Removal and disposal of sediment and debris from Outfall 023 as well as continuation of structural improvements.
Milton Financial Assistance	Payment to the Town of Milton for local projects to mitigate downstream impacts from high flow conditions.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$5,021	\$3,440	\$1,581	\$0	\$26	\$27	\$26	\$814	\$687

Project Status 11/04	68.5%	Status as % is approximation based on project budget and expenditures. All sub-phases are complete except for Outfall 023 Structural Improvements which is scheduled to begin in July 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$4,546	\$5,021	\$475	Dec 07	Dec 08	12 mos	\$1,105	\$893	\$212

Explanation of Changes

- Increased cost estimate for Outfall 023 Structural Improvements, offset by deletion of Pump Station Feasibility sub-phase.
- Schedule change reflects more realistic pace of completion.

CEB Impact

No additional impacts identified.

S. 141 Wastewater Process Optimization

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Extends current asset life*
- Improves system operability and reliability*

To optimize wastewater system operating procedures and make system improvements and modifications to ensure maximum wastewater treatment, minimum operating and maintenance costs, and extension of the useful life of system assets.

Project History and Background

This project was established to support MWRA Business Plan strategies, which recommend the development of a wastewater process optimization plan, central monitoring facilities for the sewerage system, rehabilitation of wastewater interceptors, and the utilization of automation and new technology to increase efficiency.

The completed planning phase included the development of an updated hydrologic and hydraulic model (InfoWorks CS) and the evaluation of optimization alternatives under typical and extreme storm events. MWRA will evaluate several of the alternatives and use hydraulic information gained during this phase to develop facility control logic under the Wastewater Transport SCADA Implementation Project. Two alternatives, which include pipeline modifications, will be taken further as defined below. The model developed under this project continues to be used by MWRA staff for in-house system evaluation and NPDES reporting requirements and by outside consultants to support CSO-related projects.

Scope

Sub-phase	Scope
Planning	Evaluate collection system and facility modification alternatives to maximize wastewater treatment and minimize operating and maintenance costs.
Somerville Sewer	Design and construct 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 Delauri Pump Station.
Siphon Planning	Further evaluate the benefits of constructing a redundant siphon crossing the Mystic River from the Cambridge Branch Sewer to the Delauri Pump Station.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$2,187	\$865	\$1,322	\$141	\$89	\$0	\$0	\$0	\$1,233

Project Status 11/04	41.7%	Status as % is approximation based on project budget and expenditures. Planning phase is complete. Expect NTP for the Somerville Sewer Design in October 08.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$24,985	\$2,187	-\$22,799	Jul 14	Jun 12	-25 mos.	\$360	\$230	-\$130

Explanation of Changes

- Deletion of Siphon Design and Construction sub-phases from the Proposed FY06 CIP as part of MWRA strategy to contain rate increases.

CEB Impact

None identified at this time.

S. 142 Wastewater Metering System Equipment Replacement

Project Purpose and Benefits

- Extends current asset life
- Improves system operability and reliability.

To improve the accuracy of meter data used to determine wholesale wastewater charges. This will be accomplished by replacing the existing wastewater metering system, including hardware and software utilizing the latest available technology. This technology will reduce confined space entries, making the metering system safer and less costly to maintain. This project will be coordinated with and support SCADA implementation for the wastewater system. Meter replacement is expected to be completed in FY05.

Project History and Background

Installation of MWRA's wastewater metering system began in 1989 and was completed in 1994. Individual meters in 43 customer communities receive routine maintenance on a continuous basis. This initial system is now more than ten years old and has become difficult to maintain due to limited availability of replacement parts. The original meters now require significant rehabilitation and many have been rebuilt from replacement parts. Also, meter technology has continued to advance so the current system is obsolete.

Scope

Sub-phase	Scope
Planning	Development of a long-term plan to upgrade or replace the existing wastewater metering system (hardware, software, telemetry) is complete.
Equipment Purchase/Installation	Purchase and installation of equipment is underway.
Permanent Site Improvements Design and Constr	Supply of power and enhanced wireless communications to approximately 218 permanent wastewater metering sites. The data from these key sites will be used to optimize MWRA operation and maintenance activities during normal and wet weather conditions.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$6,578	\$859	\$5,720	\$859	\$4,420	\$0	\$0	\$100	\$1,200

Project Status 11/04	52.1%	Status as % is approximation based on project budget and expenditures. The planning phase is complete. The purchase and installation of new meters is in process and is scheduled for completion in FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$6,578	\$6,578	\$0	Jan 11	Jan 16	60 mos	\$5,378	\$5,378	\$0

Explanation of Changes

- Delayed design and construction of Permanent Site Improvements as part of strategy to contain rate increases.

CEB Impact

Potential cost savings associated with this project have not yet been quantified.

S. 145 Interception and Pumping Facility Asset Protection

Project Purpose and Benefits

- Extends current asset life
- Improves system operability and reliability

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems.

Project History and Background

This project was developed to ensure that MWRA maintains ongoing service while optimizing operations in its wastewater facilities. This project in its current form addresses immediate critical facility and equipment issues. This project will eventually include five areas:

1. Equipment replacement (pumps, HVAC equipment, blowers, etc.).
2. Architectural projects (concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, electrical wiring, heating system, etc.).
4. Support Projects (process control system upgrades, etc.).
5. Specialty Projects (instrumentation upgrades, fuel storage tanks, etc.).

While the current schedule indicates a completion date of 2010 for construction, the Interception and Pumping Asset Protection project will be ongoing throughout the useful life of the facilities.

Scope

Sub-phase	Scope
Rehab of Section 93A Lexington	Rehabilitation of 4,000 linear feet of pipeline in Lexington (Section 93A). Completed in April 2004.
Sections 80 and 83	Evaluation of the condition of Sections 80 and 83 and design and construct repairs to damaged portions. TV inspection revealed numerous cracks and holes, which impair the structural integrity of the pipe.
Section 160	Evaluation of the condition of Section 160 of the Mystic Valley Sewer and design and construct repairs to damaged portions. TV inspection indicated extensive cracking and possible loss of structural support.
93A Force Main Replacement	Replacement of 1,200 feet of 24-inch ductile iron force main. Recent physical observations and testing have shown that portions of the existing pipe have extensive corrosion from hydrogen sulfide attack.
Mill Brook Valley Sewer Sec 79 & 92	Rehabilitation of a portion of Section 79 pipeline in Arlington. Under MOU trust agreement, MWRA to absorb 50% of total cost of rehabilitation.
Prison Point HVAC Upgrades, Design & Construction	The HVAC system improvements include the replacement of a boiler that is approximately forty years old with a more efficient system. The remaining components of the HVAC system, ductwork, air handling equipment, dampers, louvers, and odor control are need of upgrade. The existing equipment will be evaluated as part of the design effort. An assessment will be performed to develop the scope of the project and more accurately estimate the cost of construction. The conversion of the control system for the HVAC to electronic digital control will be completed in FY05 under the CEB.

Sub-phase	Scope
Remote Headworks Heating System Upgrades	Existing boilers at each of the remote headworks require significant maintenance and consume substantial fuel. A preliminary design report was completed and alternative energy-saving systems are recommended to replace the existing heating systems. The system at Chelsea Creek will be replaced in FY05/06. The remaining systems at Ward Street and Columbus Park are under evaluation in FY05, and those systems will be replaced based on priority and 'end of useful life' forecasts.
Remote Headworks Screen Replacement	The three Headworks, Chelsea Creek, Ward Street, and Columbus Park have screens that are experiencing a high rate of operational and maintenance failures. There are 12 climber screens installed in 1985 that are at the end of their useful lives. This project will include design and installation of a new state-of-the-art screening system. An in-depth mechanical assessment is being prepared to address immediate operations and maintenance needs until the screens are replaced under this CIP.
Headworks Condition Assessment and Facilities Plan	A Facilities Plan will be developed to identify the operational needs of all remote headworks facilities to recommend equipment replacement and upgrades for further design and construction. The Facilities Plan will include a Condition Assessment of all equipment and non-equipment assets to establish a basis for adding process improvements or upgrades to meet business goals and objectives. An RFQ/P process will be used to procure engineering consultant services.
Hingham Pump Station Isolation Gate Design	The Hingham Pump Station was built without an influent gate. The station services the Town of Hingham and presently has no direct means to isolate the flow to this station. Presently, labor intensive and inefficient means using stop logs, sand bags, sewer plugs and pumps are required to isolate and divert flow. An isolation gate will allow work in the wetwell and on grinders and other related station equipment. This project will include the design and installation of a mechanical means, such as sluice gates in a diversion chamber, to isolate the station and bypass flow if required. This will allow maintenance to take place in the station without interruption of service.
Alewife Brook Pump Replacement Design and Construction	The Alewife Brook Pump Station was built in 1951 and the pumps are original equipment. They are discharging with less efficiency and the check valves are leaking. Staff has replaced rotating parts on the pumps over the past several years and it is difficult to maintain proper tolerances for internal pump components due to the age and wear of the pumps. The replacement is intended to increase pump reliability, efficiency, and pumping capacity at this facility. The Wastewater Optimization Study recommends increasing the capacity for pumping at this station. This project will include replacing the larger pumps and motors, check valves, and VFDs. The fourth pump, the smallest one, will be replaced under the SCADA contract.
Alewife Brook Screen Replacement Design and Construction	Alewife Brook Pump Station has two climber screens currently in need of replacement. The screens jam and do not capture screenings on a regular basis thus causing constant, intensive labor to clean the screens. This project will replace the climber screens possibly with catenary screens and will improve operations of the pump station.
Caruso Pump Station Generator Replacement	The Caruso Pump Station generator, which is currently 13 years old, is one of only two existing generators of this type made by Wakesha. The manufacturer is no longer making spare parts and there is only a limited quantity of available spare parts at this time, which may not be readily available in the future. This project is to replace the generator, due to obsolescence, with a newer model with readily available parts to ensure reliable back-up power at this facility.
Chelsea Screenhouse Sluice Gate Engineering Study	The Chelsea Screenhouse has seven hydraulic gates used to divert flow from one facility to another, between the Caruso Pump Station and the Chelsea Headworks. One gate in particular is pulling away from the wall during operation which causes it to jam and bind. This may need extensive repairs or even replacement. This project is a study and condition assessment of all seven gates in the facility to include recommendations for replacement.

Sub-phase	Scope
Prison Point & Cottage Farm Washdown System Piping Design and Construction	At both the Prison Point and Cottage Farm CSO Facilities the piping system that provides water for washing down the detention tanks, wet wells and screen room areas after storm activations is made of PVC and cast iron. The glued joints in the plastic pipe are problematic, when the water pressure causes a break or even leaks. The PVC pipe and associated hangers & hardware is twenty years old in some instances, and the replacement of these systems should include an upgrade of the materials, connections, and pressure controls.
Framingham Pump Station Sluice Gates Condition Assessment	There are six 48-inch sluice gates at the Framingham Pump Station that may be experiencing premature corrosion resulting from exposure to high levels of hydrogen sulfide in the influent that occurs from turbulence in the water. The No. 3 gate has experienced severe deterioration and will be repaired in an amendment to the Framingham Pump Station Rehab under the Odor & Corrosion Control project. The sluice gates are 5-6 years in operation. An Inspection/Condition Assessment of all gates is recommended to determine the extent of corrosion and level of damage to all gates. The assessment will help to determine remaining useful life and will result in recommendations to design and replace with appropriate materials. The design could be limited to bid specifications only.
Caruso Pump Station Shaft Replacement Construction	Caruso Pump Station has seven pumps that are fourteen years old. The vertical shafts of the four 21 MGD rated pumps are worn and cannot support mechanical seals. Currently, a 'soft packing' is in place to seal around the shafts. This is due to the extensive leakage from the worn shaft sleeves. Of the seven pumps at this facility, The four (21 MGD) pumps are used 24 hours/day, 7 days/week and are recommended to have mechanical seals installed to replace the conventional pump packing. Mechanical seals will reduce maintenance and operational costs, such as water consumption and energy.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$20,455	\$1,550	\$18,906	\$1,548	\$664	\$4,032	\$6,687	\$4,428	\$3,094

Project Status 11/04	7.7%	Status as % is approximation based on project budget and expenditures. The Headworks Condition Assessment and Facilities Plan, with a Notice to Proceed of January 2006, will spearhead all upgrade and replacement work to be performed at all facilities in accordance with business goals and objectives. The one exception to this assessment study is the Remote Headworks Heating System Upgrade work at the Chelsea Creek Headworks scheduled to commence in April 2005, which is based on past assessments of the immediate need for this upgrade.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$117,166	\$20,455	(\$96,711)	June 19	Feb 10	(114) mos	\$16,321	\$17,359	\$1,039

Explanation of Changes

- Deleted the Interceptor Renewal sub-phase from the Proposed FY06 budget as part of a strategy to contain rate increases. The future need and funding for this project will be evaluated and considered as part of MWRA's master planning process.
- Revised budgets for Sections 80 & 83 and 93A Force Main Replacement based on Preliminary Design estimates.
- Added Mill Brook Valley Sewer Section 79 & 92 sub-phase to the Proposed FY06 budget.
- Revised costs for Remote Headworks Heating System Upgrades based on Final Engineer's estimate.
- Revised cost estimate for screen replacements at all Headworks facilities.
- Revised estimate for Headworks Condition Assessment and Facilities Plan sub-phase to expand the scope to include a facilities plan for all Headworks facilities.

CEB Impact

CEB impacts for this project have not yet been identified.

S. 200 Deer Island Plant Optimization

Project Purpose and Benefits

- Extends current asset life
- Results in a net reduction in operating costs
- Improves system operability and reliability

This project addresses the need for capital investment to optimize plant operations after initial start-up. The project provides for design, construction support and services, and construction for work at the Deer Island Treatment Plant necessary for safe and efficient start-up and optimal operation.

Project History and Background

The Deer Island Treatment Plant consists of an extensive infrastructure of facilities and utility services. Due to the size, scope, and complexity of the Deer Island facility, it was inevitable that unanticipated repairs and/or modifications to various structures and utilities would be necessary following substantial completion of the plant. Contracts to support these modifications do not address routine plant operations and maintenance needs.

Scope

Sub-phase	Scope
Supplementary Modification Package	Installation of safety railings, primary access hatches, scum screen bypass, and access platforms at the Deer Island grit facility (completed in March 2000).
As-Needed Design Phases 1-4	Design services to supplement existing engineering resources for specialized and or complex engineering issues.
CEMS Modifications	Construction of an enclosure and catwalks around the continuous emissions-monitoring system (CEMS) probes on the exhaust stack at the Thermal Power Plant.
BHP Site Completion	Final landscaping and installation of public safety, education, and orientation signage.
<i>Ancillary Modifications:</i>	
Design and Construction 1	Design and construction of improvements to the Winthrop Terminal Facility, including replacement of primary scum screens; replacement of valves and gas meters at digester modules; installation of vacuum relief dampers; corrosion repair; replacement of sump pump at North Main Pump Station; and telescoping valve work in digester module 3.
Design and Construction 2-2	Design and construction for installation of Variable Frequency Drives (VFDs) and DC chokes at the South System Pump Station.
Design and Construction 3	Design and construction of improvements to the secondary clarifier scum removal system; installation of clarifier access manholes; correction of sludge manifold vibrations; replacement of clarifier intermediate hatches; and other secondary clarifier improvements.
Design and Construction 4	Design and construction of modifications to the cryogenics facility, plant-wide odor control systems, digester gas systems, and scrubber improvements.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$43,971	\$11,660	\$32,312	\$3,377	\$8,920	\$9,051	\$3,879	\$2,714	\$7,748

Project Status 11/04	33%	Status as % is approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Contracts in process include As-Needed Design Phase 3, BHP Site Completion, Ancillary Modifications 1,2, and 3. Expect to award Ancillary Modification Design Phase 4 by end of FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			Impact on FY04-08 Cap		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$33,020	\$43,971	\$10,951	Sep 08	Jun 13	58	\$23,656	\$27,941	\$4,285

Explanation of Changes

- Budget increases primarily due to addition of phases to continue as-needed design contracts through FY13. Also due to cost increases due to scope changes or change orders for Ancillary Modifications 1, 2, and 3.

CEB Impact

Impacts will be absorbed within existing budget projections.

S. 206 Deer Island Treatment Plant Asset Protection

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To protect the investment of MWRA ratepayers in the new Deer Island treatment facility by ensuring timely replacement of DI's systems and approximately \$1 billion in equipment (more than 60,000 pieces of equipment). Key pieces of equipment are now more than ten years old and will need replacement upon reaching the end of its' useful lives.

Construction of the Deer Island Treatment Plant (DITP) was one of the largest wastewater projects ever undertaken in the United States. DITP construction was a 12-year, \$3.5 billion (not including the cost of off-island residuals) effort started in 1988. MWRA commenced primary disinfection at the new plant started in 1995 and secondary disinfection in July, 1997.. With the completion of the Effluent Outfall Tunnel in September 2000 the plant now discharges treated effluent 9.5 miles offshore in Massachusetts Bay through a series of 55 diffusers spaced along the last 1.5 miles of the tunnel.

Project History and Background

The Deer Island Treatment Plant Asset Protection program was formerly titled "Facilities Asset Management Program" (FAMP). Since the Facilities Asset Management Program has been expanded to include other Operations units throughout MWRA, this Deer Island project has been renamed. A major component of the program, the Inventory and Evaluation phases (previously a part of this project), are now part of the Capital Maintenance Planning and Development project in the *Business Operations and Support* capital budget.

Since unanticipated equipment and system failures have the potential to cause operational and maintenance crises it is a prudent industry practice to take a pro-active approach to establish programs to anticipate when equipment and systems approach the end of their reliable service lives, and overhaul, upgrade, or replace equipment, systems, and structures as needed. This project encompasses five major functional areas:

1. Equipment Replacement (described in more detail below).
2. Architectural projects (expansion joint replacements, concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, piping, electrical wiring, heating systems, etc.).
4. Support projects (process control system upgrades, security projects, etc.).
5. Specialty projects (laboratory modifications, chemical and fuels storage tanks, etc.).

Scope

Equipment Replacement:

Sub-phase	Scope
Equipment Replacement Projection	Cost projection placeholder for ten years into the future. Funds needed for projects identified during each CIP development phase are deducted from this total and then shown under the new sub-phases as they are added to the CIP.
Equipment Condition Monitoring	Installation of temperature and vibration-monitoring equipment in areas identified during the Inventory and Evaluation phases.
Clarifier Chain Replacement	Replacement of longitudinal and cross-collector chains in the primary clarifier tanks.

Sub-phase	Scope
Cathodic Protection Evaluation	Evaluate condition of DI's cathodic protection system. Will recommend repair or decommissioning of protection for specific sections of piping system.
North Main Pump Station Motor Repairs	Sequentially replace ten 3,500-hp motors experiencing cracks in the end rings.
CEMS Equipment Replacement	Upgrade or replace all the gas sampling analyzers, components, and equipment for the Continuous Emissions Monitoring System on the two high-pressure boilers.
Pump Packing Replacement	Ongoing program to replace remaining pump packing seals with mechanical seals for six North Main Pump Station pumps, one South System Pump Station pump, and three Winthrop Terminal Pumps.
LOCAT Scrubber Replacement Construction	New project for FY06. Replace the Thermal Plant's high-maintenance digester gas and wet scrubber system with a dry scrubber system.
Digester Chiller Replacement	New Project for FY06. Replace the refrigeration-based digester gas chiller with a chilled water system that can perform well at lower loads.
Dystor Tank Membrane Replacement	New project for FY06. Emergency replacement of a torn gas membrane on a digester storage tank; will also replace the membrane on tank 2.
Grit Blower Replacement Construction	New project for FY06. Replace a high-maintenance grit blower with a dedicated air-handling/compressor system for improved grit handling.
Thickened Primary Sludge Pump Replacement	New Project for FY06. Design and construction to replace the thickened primary sludge pumps.
Centrifuge Backdrive Replacement	New Project for FY06. Replace the centrifuge backdrives.

Architectural:

Sub-phase	Scope
Coastal Protection	Restoration of Deer Island shoreline if damaged by the weather or construction of the seawall and revetments (zero-funded placeholder).
Wall/Pier/Berths Rehabilitation	Design and completion of repairs to the seawalls, piers, and barge berths as needed.
Study/Concept Design-Concrete Repairs	Study, followed by conceptual design for installation of a protective coating on concrete below the water line in the secondary clarifiers and disinfection basins.
Expansion Joint Repairs	Evaluation of expansion joint failure in the clarifier decks, design of the repair program, and construction. As needed repair of failed expansion joints.

Utilities:

Sub-phase	Scope
Outfall Modifications	Inspection of the old outfall tunnels (decommissioned after startup of the new outfall tunnel; inspection completed, July 2002).
Electrical Equipment Upgrades	On-going program to replace transformers and bus ducts at the end of their useful lives.
VFD Replacements	On-going program to replace variable frequency drives at the end of their useful lives at the North Main Pump Station, and Winthrop Terminal Facility.
Power System Improvement Design and Construction	New project for FY06. Design and implement modifications to DI's electrical system as recommended in consultant report after FY04 power outage.
Switchgear Replacement	On-going program to replace switchgear due to obsolescence.

Sub-phase	Scope
PICS Replacement	Replacement or upgrade of components of the Process Information Control System including keypads, consoles, and software due to obsolescence.
Sodium Hypochlorite Pipe Replacement	Replacement of ½ mile of PVC piping that transports sodium hypochlorite from the barge to the storage tanks with a better-suited pipe. This project will address issues with leaks, corrosion, and health and safety hazards.
Pipeline Replacement Design and Construction	Planned periodic replacement of the various chemical pipelines in the odor control and disinfection facility due to deterioration from corrosion.
Heat Loop Pipe Replacement Construction 1	Replacement of a segment of the pipelines supplying hot water for various plant processes. This project will also modify the piping system to reduce the risk of corrosion from groundwater contact and to improve accessibility.
Fuel Transfer Pipe Replacement	Replace the pipeline which conveys diesel fuel from the barge area to the storage tank in the Thermal Power Plant.
North Main Pump Station Motor Control Center Design and Construction	Sequential replacement of motor control centers in the North Main Pump Station since this switchgear and its electrical components have become obsolete and unreliable.
Second Deaerator Design and Construction	Addition of second, small deaerator to supply feed water to one Zurn boiler. Presently, both boilers must be shut down if the deaerator is off-line thereby causing a loss of plant heating capability.

Support:

Sub-phase	Scope
DISC Application	Provision of hardware, software, and contract services to implement a Deer Island plant-wide computerized database of all plant systems (electrical, gas, water, etc).
Document Format Conversion	Conversion of Deer Island construction documents into electronic format and completion of document-reference database.

Specialties:

Sub-phase	Scope
Sodium Hypochlorite Tank Repair	Repair or replacement of failed linings in one tank.
Metals Lab Fume Hood Replacement	Replace the fume hood in the Central Laboratory and improve the HVAC system.
Metals Lab Modification Construction	Metals lab improvements; design of the replacement of metal fixtures and fume hoods which contaminate metals samples; installation of filtered air supply; and reconfiguration of workspace to put team members together.
Lab Sample Area Modifications Design and Construction	Design and construction of improvements at the Central Lab at Deer Island. Improvements include changes in the physical layout to improve workflow and to capture fumes from sample containers and bottle-wash process.
Gravity Thickener Improvements Design and Construction	Install catwalks and other modifications around sludge thickeners to improve staff access and operating efficiency of the thickeners.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$95,360	\$2,472	\$92,889	\$601	\$3,517	\$5,268	\$9,422	\$12,825	\$61,858

Project Status 11/04	5%	Status as % is approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Contracts in process include Equipment Condition Monitoring, Pump Packing Replacement, and Dystor Membrane Replacement. Expect to award contracts for Digester Chiller Replacement, Design of Power Consultant Recommendations, Heat Loop Pipe Replacement construction, NMPS VFD Replacement Design, Metals Lab Modifications, and Sodium Hypochlorite Tank Repairs.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			Impact on FY04-08 Cap		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$102,697	\$95,360	-\$7,337	June 14	June 15	12	\$34,166	\$31,633	-\$2,533

Explanation of Changes

- Deleted several projects from CIP as part of MWRA efforts to limit rate increases.
- Shifted some spending to account for more realistic project schedules.

CEB Impact

Any identifiable impacts will be absorbed within CEB.

S. 261 Residuals Management Facilities

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*
- ☑ *Fulfills a regulatory requirement*

To expand the residuals processing plant at the Fore River Staging Area (FRSA) in Quincy to provide the capacity to process all sludge produced at the Deer Island Treatment Plant.

Project History and Background

MWRA ceased the discharge of sludge and scum into Boston Harbor in December 1991. Interim and long-term treatment alternatives have been developed to manage these residuals of the wastewater treatment process.

An interim sludge processing and disposal phase included the construction and operation of sludge handling facilities at Deer Island, Nut Island, and FRSA. The interim facility at FRSA had four process trains and was equipped with air pollution and odor control equipment. MWRA completed construction of these facilities and began operation at Fore River in December 1991.

MWRA owns the sludge dewatering and drying facilities at FRSA. A private contractor, the New England Fertilizer Company (NEFCO) operates the facility, and markets and/or disposes of the final product. This approach provides MWRA with ownership of the processing facilities and preserves the option to operate the facilities in the future.

Modification and expansion of the sludge processing facilities to accommodate the increased sludge volumes generated by secondary treatment at Deer Island is nearly complete. In addition, to eliminate the need to barge sludge, MWRA is constructing two 14-inch sludge pipelines to convey sludge from Deer Island to the processing facility at FRSA. One pipe is sized to convey peak sludge volume while the second pipe will act as a back up for sludge transport or for filtrate return. The construction budget and schedule for the sludge pipelines from Nut Island to Fore River are included in the Braintree-Weymouth Relief Facilities project.

The need to barge sludge from Deer Island will continue until the new Braintree-Weymouth siphon and intermediate pump stations go on line early in 2005. A contract with NEFCO, which MWRA signed in March 2001, is funded in the Current Expense Budget. Contract work on this project was declared complete in December 2001.

Scope

Sub-phase	Scope
Design/CS/RI Pelletizing Plant	Evaluation of the capacity of the existing pelletizing plant and use of the solids quantity projections derived from the Deer Island pilot plant and other design studies to determine the scope of the expansion. Design of instrumentation and control updates, additional permitting and air emissions requirements, and design of pellet coating, chemical feed, and ventilation/Regenerative Thermal Oxidizer (RTO) manifold systems.
Fast Track Equipment Pre-purchase	Pre-purchase of two pellet coolers and screens.
Fast Track Equipment Installation	Installation of new safety and process equipment, two new screens, and a pelletizer air recirculation and scrubbing system.

Sub-phase	Scope
Outside Construction – Phase 2	Work outside the pelletizing building including Pier 2 rehabilitation, additional rail tracks, an extension to the existing sludge cake loadout garage, additional pellet silos, increased pneumatic transport capacity, demolition of a crane, and hazardous materials clean-up.
Inside Equipment Pre-purchase Phase 3	Pre-purchase of 12 centrifuges for dewatering sludge and two sludge dryer trains. Additional equipment storage insurance costs and acceptance of the equipment upon delivery to MWRA.
Inside Construction-Phase 3	Work inside the facility consisting of dewatering equipment replacement, modifications to the four existing pelletizing trains, and installation of two new pelletizing trains. Some outside building and utility modifications are also included: explosion suppression systems, cooling towers, air compressors, pellet coating, chemical feed, and ventilation/RTO manifold systems.
Fire Related Costs	Repair costs associated with the December 1998 fire at the plant.
Residuals Research	Study of the appropriate application methods, environmental impacts, and agronomic benefits of MWRA's fertilizer in a variety of settings and investigation of the cause of pellet self-heating and other microbial activity in the material. Study results aided in developing recommendations for product use, answering questions about environmental suitability, and developing marketing strategies.
License Fee	License fees may be due to a patent holder, Enviro-gro, when NEFCO stops operating the facility.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$67,654	\$65,549	\$2,105	\$8,930	\$1,401	\$29	\$0	\$0	\$675

Project Status 11/04	97.7%	Status as % is approximation based on project budget and expenditures. Facilities are constructed and operational. Legal cost recovery efforts by MWRA are on going.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$67,113	\$67,654	\$541	Dec-01	Dec-01	None	\$9,819	\$10,360	\$541

Explanation of Changes

- Legal costs for cost recovery by MWRA.

CEB Impact

Costs for the NEFCo contract are funded in the CEB.

Introduction to Combined Sewer Overflow (CSO) Program

Discharges of combined wastewater and stormwater runoff from 63 remaining CSO outfalls in the MWRA system and four service area community systems (Boston, Cambridge, Chelsea, and Somerville) affect water quality in the Charles, Mystic, and Neponset Rivers and in Boston Harbor. Pursuant to a 1987 stipulation entered in the Clean Water Act case, MWRA has responsibility for developing and implementing a long-term plan for CSO control at all locations. MWRA first proposed the current long-term plan in its CSO Conceptual Plan and Sewer System Master Plan in December 1994. The CSO Conceptual Plan incorporated then-current information about the CSO flows and water quality impacts, and developed a plan in accordance with EPA's National CSO Policy.

In July 1997 MWRA completed its Final CSO Facilities Plan and Environmental Impact Report, based on the CSO Conceptual Plan. The Final CSO Facilities Plan recommended 25 site-specific projects, including sewer separation, interceptor improvements, CSO treatment upgrades and new CSO treatment facilities, and storage. Fourteen of the projects are complete, five are in construction, and the remaining projects are in the planning or design stage. The Proposed FY06-08 CIP includes \$747 million for planning, design, and construction of these projects. Design and construction of the CSO projects began in 1995 and is governed by more than 50 CSO milestones first adopted by the Federal District Court in June 1996 (Schedule Six) as part of the Clean Water Act case.

Some of the projects and milestones have been revised since 1997. MWRA plans to seek additional changes to milestones in Schedule Six to account for recent revised plans for North Dorchester Bay, the Reserved Channel, Alewife Brook, and East Boston. For these areas, MWRA, in cooperation with BWSC and Cambridge, completed project reassessments in the period 2003-2004. For North Dorchester Bay, the original plan to construct a conveyance tunnel and large pumping and treatment facility was replaced in April 2004 with a plan to construct a larger storage tunnel, small dewatering facility and related stormwater control conduits. A proposed storage tunnel to control CSOs to the Reserved Channel was replaced in 2004 with a plan for sewer separation. For Alewife Brook, MWRA and the City of Cambridge recommended a new plan in 2003 that expanded the sewer separation project to overcome significant stormwater system problems that compromised the original plan's ability to meet CSO control goals. MWRA also reevaluated the East Boston Branch Sewer Relief project in 2003-2004, in response to higher cost estimates, to determine if it were cost effective and would meet CSO control goals. These project reassessments, as well as earlier reassessments (e.g. deleting Dorchester Brook Conduit In-System Storage, revising Upgrades to CSO Treatment Facilities and replacing Fort Point Channel Storage Conduit with sewer separation), were conducted to overcome cost and/or siting obstacles with the original plans.

DEP and EPA have approved most of the CSO facilities plan and have made most of the regulatory determinations necessary for the plan to comply with state water quality standards, including revising water quality standards for certain water bodies. The plans for CSOs affecting the Charles River, Upper Mystic River, and Alewife Brook areas have received approval through variances from water quality standards, pending the outcome of ongoing additional studies to determine whether higher levels of CSO control are cost beneficial. In 2004, DEP issued the latest extensions to these variances to the fall of 2007. Additional facilities may be required to address the CSO objectives outlined by regulatory agencies for these areas. Those objectives primarily involve increasing the level of CSO control by removing extraneous flows (stormwater runoff, infiltration, inflow) from the interceptor systems.

Anticipated operating cost impacts of the CSO program are summarized below and will be further developed as part of the planning and design phases for individual projects.

Program

Project	Purpose
MWRA Managed	
North Dorchester Bay & Reserved Channel	Eliminate CSO discharges and a high level of stormwater control to greatly reduce beach closings along North Dorchester Bay in South Boston. The project is court mandated in accordance with MWRA's approved CSO control plan and is necessary to meet DEP water quality standards.

Project	Purpose
Hydraulic Relief	Eliminate hydraulic restrictions between local and MWRA systems at locations in Boston and Cambridge to improve transport of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles River. Project is court mandated, is in accordance with MWRA's approved long-term CSO plan, and is required to meet DEP water quality standards.
East Boston Branch Sewer Relief	Increase hydraulic capacity and provide long-term structural integrity to MWRA's East Boston Branch Sewer through the replacement or rehabilitation of the existing sewers. Completion of this project will increase wet weather transport capacity and reduce CSO discharges along the East Boston shoreline, minimizing CSO impacts to the Mystic/Chelsea Confluence and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments most of the time. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
BOS019 Storage Conduit	To control CSO discharges at outfall BOS019, in accordance with MWRA's approved long-term CSO control plan. Outfall BOS019 discharges to the Little Mystic Channel in Charlestown. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Chelsea Trunk Sewer Relief	To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008 in accordance with MWRA's approved long-term CSO control plan. These outfalls discharge to the Mystic River/Chelsea Creek Confluence and Chelsea Creek. In addition, the project will relieve the MWRA Chelsea Branch Sewer as well as the lower portion of the Revere Extension Sewer to improve service and control surcharging. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Union Park Detention Treatment Facility	To reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station (CSO outfall BOS070). Outfall BOS070 discharges into the Fort Point Channel. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Upgrade Existing CSO Facilities and MWRA Floatables Control	To minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay receiving waters by upgrading five MWRA CSO treatment facilities (Fox Point, Commercial Point, Cottage Farm, Prison Point, and Somerville Marginal), and providing floatables control to MWRA CSO outfalls not associated with treatment facilities (located along the Charles River). These projects are court mandated, are in accordance with MWRA's approved long-term CSO control plan, and are required to meet DEP water quality standards.
MWR003 Gate and Siphon	To minimize CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards determinations.
Charles River CSO Controls	Evaluates and implements system optimization measures and evaluates inflow controls that may further reduce CSO discharges to the Charles River Basin, in response to conditions on the extension to the Charles River CSO Variance issued by DEP on October 1, 2004. Also, responds to conditions on the extension to the Alewife Brook/Upper Mystic River CSO Variance, issued by DEP on September 1, 2004. This project is required to meet DEP water quality standards determinations.

Project	Purpose
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	This project will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
South Dorchester Bay Sewer Separation (Commercial Point)	This project will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Stony Brook Sewer Separation	To minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Charles River, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of this sewer separation will reduce the number of overflows to the Stony Brook Conduit from as many as 22 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Neponset River Sewer Separation	Elimination of CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean Beach) by separating combined sewer systems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with outfalls BOS093 and BOS095. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Constitution Beach Sewer Separation	Elimination of CSO discharges at the Constitution Beach CSO facility by separating combined sewer systems in parts of East Boston. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Cambridge CAM002-004 Sewer Separation	To minimize CSO discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge. This project is court mandated, is in accordance with MWRA's approved long term CSO control plan, and is required to meet DEP water quality standards.
BWSC Floatables Control	To limit the discharge of floatable materials from five BWSC combined sewer outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Cambridge Floatables Control	To limit the discharge of floatable materials from eight Cambridge CSO outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Fort Point Channel Sewer Separation	To minimize CSO discharges to Fort Point Channel by separating sewer systems tributary to outfalls BOS072 and BOS073. Implementation of the recommended sewer separation plan will reduce the number of overflows from these outfalls from as many as 23 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Morrissey Boulevard Drain	To reroute stormwater from the BOS087 area (and the North Dorchester Bay consolidation storage tunnel) to Savin Cove to increase level of stormwater control to the beaches.
Reserved Channel Sewer Separation	To minimize CSO discharges to Reserved Channel by separating combined sewer systems in a portion of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to reserved Channel from as many as 37 to 3 in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project	Purpose
CSO Support	
CSO Planning and Support	The goals of the CSO Program are to minimize CSO discharges, reduce beach closings following wet weather events, and maximize the beneficial use of CSO receiving waters. This project includes CSO conceptual planning, system master planning, and facilities planning/environmental review. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans or SOPs), various as-needed technical support activities, and acquisition of land and easements required for CSO control plan implementation.

Expenditure Forecast (in \$000s) and Program Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$747,035	\$251,207	\$495,828	\$45,867	\$59,827	\$65,688	\$90,176	\$124,272	\$155,865

Program Status 11/04	37.8%	Status as % is approximation based on project budget and expenditures. MWRA continues to make significant progress towards completing several projects and gaining regulatory and public acceptance for plans that will allow CSO control to move forward in several areas. (See individual project status and background information).
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Changes to Program Scope, Budget, and Schedule

Program Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$701,310	\$747,035	\$45,725	Jul-20	Dec-17	(31)	\$277,294	\$385,830	\$108,536

Explanation of Changes

- **Community Managed +\$83.7M**

Project Increases: Reserved Channel Sewer Separation +\$54.4M and Morrissey Boulevard Drain +\$20.9M. For the Proposed FY06 CIP, these projects are broken out from North Dorchester Bay Project in the MWRA-managed section and set up as separate Community-managed projects. South Dorchester Sewer Separation (Commercial Point) +\$4.5M; Cambridge CAM002-004 Sewer Separation +\$1.6M; Stony Brook Sewer Separation +\$1.1M; South Dorchester Bay Sewer Separation (Fox Point) +\$909K.

- **MWRA Managed (\$38.4M)**

Project Decreases: North Dorchester Bay decreased by a net \$47M due to shift of \$67m for Reserved Channel Sewer Separation and Morrissey Boulevard Drain sub phases to the Community-managed section. Offset by \$20m increase for the cost of the remaining work primarily due to inflation adjustments based on revised ENR estimates and the addition of one more year of inflation to December 2006.

Project Increases: East Boston Branch Relief Sewer +\$4.9M; Union Park Treatment facility +\$1.6M; Charles River CSO Controls +\$824K; BOS019 Storage Conduit +\$606K.

- Schedule change based on SEIR in April 2004 for the North Dorchester Bay & Reserved Channel related work.

CEB Impact

Completion and start-up of these projects will result in a total net increase of \$955 (in FY06 dollars) by FY11. By year, the CEB impact is as follows:

Fiscal Year	CEB Impact	Explanation
2007	\$619	Expect to start-up Union Park Detention Treatment facility during the first six months of 2006 (FY06). Assume MWRA's share of total annual operations and maintenance costs for this facility will be approximately \$950,000 of which \$330,000 is incorporated into the FY06 CEB and the remainder will affect the FY07 CEB.
2010	(\$124)	Expect to decommission Fox Point and Commercial Point CSO treatment facilities during the summer of 2009. Annual savings of \$107,000 for Fox Point and \$58,000 for Commercial Point.
2011	\$459	Estimate \$500k/year for operation, maintenance, and odor control for infrastructure associated with North Dorchester Bay project. Off set by cost savings from decommission of Fox Point and Commercial Point facilities.

S. 339 North Dorchester Bay CSO Plan

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*

Elimination of CSO discharges and a high level of stormwater control to greatly reduce beach closings along North Dorchester Bay in South Boston. The project is court mandated and is in accordance with revisions to MWRA's approved long-term CSO control plan recommended in the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, April 2004. The project is necessary to meet DEP water quality standards, which prohibit CSO discharges to North Dorchester Bay and similar sensitive receiving waters (i.e. swimming and shellfishing).

Project History and Background

Under MWRA's original recommended plan for CSO control in South Boston, CSO flows along North Dorchester Bay and Reserved Channel would be captured by respective consolidation conduits (tunnels) and stored in the tunnel system. Following each storm, the tunnels would be dewatered to the South Boston Interceptor, for transport to the Columbus Park Headworks and Deer Island. In large storms when flows would surpass the tunnel capacity, the excess flows would be discharged to Reserved Channel through a 600 mgd CSO treatment and pumping facility that MWRA had proposed to construct on vacant land off East First Street ("Site J"). This preferred site lay adjacent to the former and existing Massachusetts Bay Transportation Authority (MBTA) power plants and the Cardinal Medeiros Pier. The plan called for the excess flows to receive fine screening, chlorination, and dechlorination prior to discharge to the Reserved Channel.

Despite MWRA's belief at the time it filed the related *1999 Notice of Project Change* that the projects could be implemented as outlined in that Notice, opposition by elected officials and some residents to siting the Reserved Channel CSO Facility on Site J intensified. In December 1999, elected officials representing South Boston informed the MWRA's Board of Directors that they would block efforts by MWRA to obtain legislation necessary to build parts of the project on or under designated parkland.

MWRA stopped design work on all elements of the projects in January 2000, and was unable to commence construction by September 2000, as required. In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the project and overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary's Certificate, issued in June, approved the reassessment as scoped by MWRA, and also required MWRA to include a reevaluation of all CSO control alternatives that had previously been considered during earlier CSO planning and environmental review. MWRA began the reassessment in September 2001, which included updating planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel (the "SEIR"), recommending a new plan.

The new plan recommended in the SEIR calls for a larger consolidation storage tunnel along the North Dorchester Bay beaches to capture CSO flows up to the 25-year design storm and, together with a recommended storm drain along Morrissey Boulevard, provide a 5-year level of stormwater control for the beaches. The tunnel would be dewatered with a 10 mgd pumping station to be located on MassPort's Conley Terminal. At the upstream end of the tunnel, a remote odor control facility would be constructed adjacent to the State Police building and CSO outfall BOS087 to provide tunnel ventilation. Surface piping, diversion chambers and control gates would be constructed at each existing outfall to direct CSO and stormwater flows into the tunnel. The Morrissey Boulevard storm drain (included in the CSO CIP, under "Community Managed Projects") will allow large stormwater flows at outfall BOS087 to be redirected away from the tunnel to Savin Cove (South Dorchester Bay) in storms greater than the one-year design storm, to increase the level of stormwater control afforded by the tunnel to the beaches. Finally, the North Dorchester Bay plan also includes improvements to the Department of Conservation and Recreation's stormwater system along Pleasure Bay to redirect stormwater discharges from Pleasure Bay, a beach, to the Reserved Channel, which does not support primary contact recreation.

MWRA plans to seek revisions to the court milestones in Schedule Six to account for the new plan. Design of the revised tunnel began in September 2004; design of the dewatering and odor control facilities is expected to begin in

2006, and construction of all facilities related to CSO control for North Dorchester Bay, including the Morrissey Blvd. and Pleasure Bay stormwater improvements, are scheduled to be complete by the fall of 2010, followed by a period of start-up testing and optimization.

Scope

Sub-phase	Scope
Design/Tunnel and Pleasure Bay	Design and engineering services during construction for the North Dorchester Bay tunnel and CSO/stormwater controls and the Pleasure Bay drainage improvements Preliminary design for the dewatering facility.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater controls.
Dewater/Odor Control Construction	Construction of the 10 mgd dewatering pump station at Conley Terminal and the remote odor control facility at outfall BOS087
Tunnel and Facilities CM Services	Construction management services for the North Dorchester Bay tunnel, dewatering and odor control facilities, related piping and diversion/control structures and Pleasure Bay drainage improvements.
Pleasure Bay Constr	Construction of Pleasure Bay drainage improvements.
Design ESDC/Facilities	Design and engineering services during construction for the dewatering pump station and remote odor control facility.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$223,692	\$14,928	\$208,764	\$1,266	\$4,788	\$14,488	\$44,718	\$76,604	\$68,165

Project Status 11/04	7%	Status as % is approximation based on project budget and expenditures. The Authority's design consultant completed most of the field surveys and soil borings necessary to supplement data collected during the original design. The Authority is working on plans and schedules which include interacting with various regulatory agencies for approvals and permits. Expect to award Pleasure Bay Drain Improvements in August, 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$270,663	\$223,692	(\$46,971)	Nov-12	Mar-10	(32)	\$52,564	\$141,864	\$89,300

Explanation of Changes

- As with the Approved FY05 CIP, this CIP reflects the revised plan for CSO control for North Dorchester Bay as recommended in the April 2004 SEIR. Components of this project in the FY05 CIP that related to the Reserved Channel and the Morrissey Blvd. storm drain are now being reflected as separate projects in the Community-managed section.
- The budget change for this project reflects a shift of \$67 million for two projects to the Community-managed section; offset by an increase of \$20 for the remaining work primarily due to revised inflation assumptions.
- Design and construction of the North Dorchester Bay tunnel, related facilities and Pleasure Bay drainage improvements have been accelerated by up to one year from the schedule in the FY05 CIP in response to concerns raised by regulatory agencies and court parties.

CEB Impact

Estimate \$500k/year as of FY11 for operation, maintenance, and odor control for infrastructure associated with this project.

S. 354 Hydraulic Relief

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Elimination of hydraulic restrictions between local and MWRA systems at locations in Boston and Cambridge to improve transport of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles Rivers. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project combines two local hydraulic relief projects, one in Cambridge to minimize CSO discharges at CAM005 and one in Charlestown to minimize CSO discharges at BOS017.

In Cambridge, the 24-inch, 40-foot long dry weather connection between the CAM005 regulator and the North Charles Metropolitan Sewer, adjacent to Mount Auburn Hospital, was relieved with a new 54-inch connection.

In Charlestown at BOS017, 190 feet of 36-inch pipe were installed in Sullivan Square to divert two local (BWSC) combined sewers to a direct connection with the Cambridge Branch Sewer. In addition, a 10-foot long restriction between the Charlestown and Cambridge Branch Sewers, adjacent to Sullivan Square, was eliminated. This improvement is expected to lower hydraulic grade lines in the Charlestown Branch Sewer during wet weather.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$2,295	\$2,295	\$0	(\$7)	\$0	\$0	\$0		\$0

Project Status 11/04	100%	Completed in 2000.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$2,295	\$2,295	\$0	Aug-01	Aug-01	None	(\$7)	(\$7)	\$0

Explanation of Changes

- None.

CEB Impact

N/A

S. 347 East Boston Branch Sewer Relief

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Improves system operability and reliability*

To increase hydraulic capacity and provide long-term structural integrity to MWRA's East Boston Branch Sewer through the replacement or rehabilitation of the existing sewers. Completion of this project will increase wet weather transport capacity and reduce CSO discharges along the East Boston shoreline, minimizing CSO impacts to the Mystic/Chelsea Confluence and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments most of the time. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project will relieve the interceptor system serving most of East Boston, minimizing CSO discharges to Boston Harbor and Chelsea Creek through outfalls BOS003-014. Existing sewers will be replaced or were rehabilitated using a combination of construction methods, including microtunneling, pipe bursting, open cut and relining. The rehabilitation construction contract commenced in March 2003 and was completed in May 2004. Other design and construction is delayed pending completion of a project reassessment that commenced in June 2003 to assure cost benefit. The reassessment work was substantially completed in December 2003, but related discussions with regulatory agencies are ongoing towards recommending a new plan.

Scope

Sub-phase	Scope
Design/CS/RI	Design, project reassessment, construction services, and resident inspection.
East Boston Branch Relief Sewer Construction	Construction of 13,500 feet of replacement sewers, primarily by micro-tunneling.
Boston Paving	Payment to City of Boston for paving.
East Boston Branch Sewer Rehab Construction	Rehabilitation of 6,000 feet of existing sewer.
Sections 38 & 207 Replacement Construction	Replacement of 4,900 feet of existing sewers by pipe bursting.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$68,058	\$8,338	\$59,720	\$5,293	\$662	\$1,091	\$18,709	\$27,854	\$11,405

Project Status 11/04	12.3%	Status as % is approximation based on project budget and expenditures. The rehabilitation contract was substantially complete in May 2004. MWRA commenced discussions with EPA and DEP regarding a preferred plan and will then recommend a final plan and resume design efforts for the replacement contracts.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$63,115	\$68,058	\$4,943	Jun-08	Dec-08	6	\$60,023	\$53,609	(\$6,414)

Explanation of Changes

- No scope change, pending agreement with regulatory parties on the results of the reassessment and the recommendation of a new plan.
- Cost increase primarily due to inflation adjustments associated with new ENR index.
- Schedule delay associated with project reevaluation and ongoing negotiations with court parties.

CEB Impact

None identified at this time.

S. 348 BOS019 Storage Conduits

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To control CSO discharges at outfall BOS019, in accordance with MWRA's approved long-term CSO control plan. Outfall BOS019 discharges to the Little Mystic Channel in Charlestown. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards. A project reassessment and preliminary design for Outfalls BOS072 and BOS073 which discharge to the Fort Point Channel, were also performed for this project.

Project History and Background

The design services for this project initially included two CSO storage projects, one at Fort Point Channel in South Boston and one adjacent to the Little Mystic Channel in Charlestown. At Fort Point Channel, a 10-foot diameter, 1,500-foot long tunnel was originally proposed along A Street in South Boston to capture and store CSO flows from outfalls BOS072 and BOS073 for all but the largest storms in a typical year. The project reassessment determined that the CSO water quality goals could be met with sewer separation in the BOS072/073 tributary area and system optimization at the regulator structures, at much less cost to MWRA. Final design and construction of the revised plan, which will be performed by BWSC, are included in the CSO CIP under "Community Managed Projects." In Charlestown, twin 17 foot by 10 foot, box conduits, 230-feet long, will be constructed adjacent to the Tobin Bridge to store most CSO flows that now discharge at outfall BOS019. Storage volume in the conduit will be approximately 0.7 million gallons. The flows stored in the conduits will be pumped back to the Deer Island collection system after each storm passes and capacity becomes available in the interceptors.

Scope

Sub-phase	Scope
Design	Design; SCADA services during construction.
BOS019 Storage Conduit Construction	Construction of the storage conduit for outfall BOS019
Construction Management Services	Resident engineering and inspection services for the BOS019 CSO Storage Conduit

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$10,626	\$1,605	\$9,021	\$1,156	\$634	\$5,719	\$2,663	\$5	\$0

Project Status 11/04	18%	Status as % is approximation based on project budget and expenditures. Advertised the contract on November 13, 2004 and expect to award it by March 2005. Also expect to award the Construction Management Services contract by March 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$10,019	\$10,026	\$606	Sep-06	Mar-07	6	\$9,571	\$10,177	\$606

Explanation of Changes

- Construction management services were deleted from the design contract and will be procured separately.
- Revised construction duration to twenty-four months.

CEB Impact

None identified at this time.

S. 349 Chelsea Trunk Sewer Relief

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*
- Improves system operability and reliability*

To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008 in accordance with MWRA's approved long-term CSO control plan. These outfalls discharge to the Mystic River/Chelsea Creek Confluence and Chelsea Creek. In addition, the project will relieve the MWRA Chelsea Branch Sewer as well as the lower portion of the Revere Extension Sewer to improve service and control surcharging. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project combines three components recommended in MWRA's long-term CSO control plan: 1) relief of a City of Chelsea-owned trunk sewer to minimize CSO discharges to the Inner Harbor at three outfalls, 2) relief of the MWRA Chelsea Branch Sewer and Revere Extension Sewer to minimize CSO discharges to Chelsea Creek and reduce surcharging in the upstream transport system, and 3) repair of the existing CSO pipe in Chelsea at outfall CHE008. All of the work is complete and the contracts have been closed out.

Scope

Sub-phase	Scope
Design/CS/RI	Design, construction services, and resident inspection for the entire project.
Chelsea Trunk Relief	The existing Chelsea Trunk Sewer, which varies in diameter from eight to 15 inches, was replaced with 2,300 feet of 30-inch diameter pipe. Information obtained during design about the physical conditions of the CHE002, CHE003, and CHE004 outfalls led to a decision to include rehabilitation of sections of the CHE002 and CHE003 outfalls. Underflow baffles were installed at each regulator to provide floatables control.
Chelsea Branch Sewer	The MWRA Chelsea Branch and Revere Extension Sewers, which run in parallel along Eastern Avenue in Chelsea, were replaced and/or relieved with approximately 4,200 feet of 42-inch pipe and 3,500 feet of 66-inch pipe along or near Cabot Street and along Eastern Avenue in Chelsea. The construction also included repairs at outfall CHE008. One underflow baffle was installed at the sole regulator structure associated with this outfall to provide floatables control.
Rehab/Chelsea Branch/Revere Extension	Cured in place pipe rehabilitation methods were used to line approximately 4,200 feet of 36-inch pipe in the Chelsea Branch and 3,000 feet of 54-inch pipe in the Revere Extension Sewer.
Modify Chelsea Screen House	Installations of connection points and provision of flow control at the Chelsea Screen House in support of the Chelsea Branch Sewer rehabilitation.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$29,757	\$29,765	\$8	June 02	June 02	None	\$1	\$9	\$8

Project Status 11/04	100%	Status as % is approximation based on project budget and expenditures. Project is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$29,757	\$29,765	\$8	Jun-02	Jun-02	-	\$1	\$9	\$8

Explanation of Changes

- Project completed.

CEB Impact

None.

S. 350 Union Park Detention Treatment Facility

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*

To reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station (CSO outfall BOS070). Outfall BOS070 discharges into the Fort Point Channel. This project is court mandated, is in accordance with MWRA’s approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project will improve water quality in the Fort Point Channel by providing treatment of CSO discharges through BWSC’s Union Park Pumping Station. The existing pumping station, constructed in 1976, provides flood control for the South End neighborhood of Boston. The Final EIR called for the detention/treatment facility to be constructed adjacent to the existing pumping station, on property owned by BWSC at the intersections of Albany, Malden, and Union Park Streets in the South End. Flows will pass through the new treatment facility before entering the pumping station wet well. Construction of the treatment facility commenced in March 2003 and is scheduled for completion by January 2006.

The treatment facility will include fine screens, chlorination with sodium hypochlorite, dechlorination with sodium bisulfite, and below-ground, rapid-settling detention tanks measuring approximately 90 feet by 140 feet and 20 feet deep. The buried tanks, which will have a combined storage capacity of 2.2 million gallons, will reduce the number of pumping station discharges to the Fort Point Channel. While most of the new facility will be below ground, the plan includes an addition to the aboveground structure of the existing pumping station.

Some layout changes within the existing pumping station will optimize use of available space and minimize aboveground construction. The pumping station will remain in service during construction of the treatment facility. Per MWRA and BWSC agreement, operations of the new treatment facility and the existing pumping station will be integrated.

A neighborhood playground operated by the Boston Parks Department covered approximately half of the proposed treatment facility site. As discussed at public meetings during facilities planning and as stipulated in a lease agreement signed by Boston Parks, BWSC, and MWRA in 1997, MWRA removed the playground during construction. A replacement playground will be constructed at a nearby site owned by the Boston Parks Department, and MWRA will build a passive park over the CSO facility detention basin following construction.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction for the Union Park Detention/Treatment Facility, including storage tanks with a capacity of 2.2 MG, and an addition to the existing above grade pumping station.
Construction	Construction of MWRA’s Union Park Detention/Treatment Facility
Construction – Park	Construction of replacement playground and passive park during and after construction of the treatment facility.
BWSC Construction	Portions of the construction project involve upgrades to the existing pumping station that will directly support BWSC. To coordinate construction activities, the project was bid jointly and BWSC will pay for its portions of the contract.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$44,959	\$17,405	\$27,554	\$11,522	\$18,303	\$9,104	\$146		

Project Status 11/04	52.2%	Status as % is approximation based on project budget and expenditures. Construction contractor continued excavation for below grade detention basins and place concrete for the basin slabs, interior and exterior walls, continued with structural modifications for electric pumps five and six, process piping and plumbing, duct banks, and motor control centers.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$43,368	\$44,959	\$1,590	Jan-06	Apr-06	3	\$37,486	\$39,075	\$1,589

Explanation of Changes

- Additional change orders, expected change orders and amendments for greater than expected quantities of contaminated soil; expected amendment for additional shop drawing submittals, change order support and extended contract duration.

CEB Impact

Expect to start-up Union Park Detention Treatment facility during the first six months of 2006 (FY06). Assume MWRA's share of total annual operations and maintenance costs for this facility will be approximately \$950,000 of which \$330,000 is incorporated into the FY06 CEB and the remainder will affect the FY07 CEB.

S. 353 Upgrade Existing CSO Facilities and MWRA Floatables Control

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*

To minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay receiving waters by upgrading five MWRA CSO treatment facilities (Fox Point, Commercial Point, Cottage Farm, Prison Point, and Somerville Marginal), closing outfall MWR010, and providing floatables control at all MWRA CSO outfalls not associated with treatment facilities (located along the Charles River). These projects are court mandated, are in accordance with MWRA's approved long-term CSO control plan, and are required to meet DEP water quality standards.

Project History and Background

Five of the six existing CSO facilities (Commercial Point, Cottage Farm, Fox Point, Prison Point, and Somerville Marginal) were upgraded to improve treatment performance and meet new residual chlorine discharge limits. The work generally included replacement and upgrade of the existing chlorine disinfection systems and construction of dechlorination systems, as well as other process control and safety improvements. At the Cottage Farm and Prison Point facilities, the upgrade work took place entirely within the existing facility site bounds. The Commercial Point upgrade called for a remote 36-foot by 36-foot dechlorination building to be constructed nearly one-half mile downstream of the facility on Massachusetts Highway Department (MHD) property adjacent to the Southeast Expressway. The Fox Point upgrade included construction of a new chlorination and dechlorination building next to the existing facility and a 2,700-foot force main from the new building to the dechlorination point, where a 12-foot by 12-foot process control and sampling building was constructed adjacent to Morrissey Boulevard. The plan for Somerville Marginal was similar to that for Fox Point. A new chlorination and dechlorination building was constructed adjacent to the existing facility under the elevated portion of Route 93. A force main was installed to the dechlorination point 1,800 feet downstream of the facility, where a 12 feet by 12 feet process control and sampling building was constructed on the Assembly Square Mall property.

By 2002, MWRA completed systems optimization as part of the start-up period referenced in Schedule Six for all five upgraded facilities. Funds for programming process control systems at Cottage Farm were added to the CIP during FY01. Work has been completed.

Based on reevaluations conducted in 2001, MWRA recommended not closing outfall MWR010 and not implementing the second phase of floatables control tributary to outfall MWR018. These recommendations were accepted by DEP in October 2002.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction for upgrades to the five CSO facilities.
Design 2	Design of floatables controls upstream of MWRA outfalls along the Charles River. (eliminated)
Cottage Farm CSO Facility	Replacement/upgrade of the existing disinfection system and construction of a dechlorination system.
Prison Point CSO Facility	Replacement/upgrade of the existing disinfection system and construction of a dechlorination system.

Sub-phase	Scope
Commercial Point, Fox Point, Somerville Marginal	Upgrades including the replacement/upgrade of the existing disinfection systems. A 36 feet by 36 feet dechlorination facility was constructed approximately 0.5 miles downstream of the Commercial Point facility. New chlorination/dechlorination facilities were constructed next to the existing Fox Point and Somerville Marginal facilities. Force mains, 2,700 and 1,800 feet respectively; connect each facility to 12 feet by 12 feet process control/sampling buildings.
Non-Treated Floatables (Beacon)	MWRA non-treated CSO floatables control. Bulkhead and close MWR021 and MWR022 CSO outfalls (completed by MWRA). Construct underflow baffles at four regulators tributary to outfalls MWR019 and MWR020.
Non-Treated Floatables (Other)	Construction of underflow baffles at seven regulators tributary to outfall MWR018. (eliminated)
Closure of Outfall MWR010	Close CSO Outfall MWR010. (eliminated)
Cottage Farm Programming	Program final process control systems.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$22,388	\$22,337	\$51	\$36	\$51	\$0	\$0	\$0	\$0

Project Status 11/04	100%	Status as % is approximation based on project budget and expenditures. Project is completed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$22,301	\$22,388	\$86	Oct-02	Oct-02	None	\$0	\$87	\$87

Explanation of Changes

- Project completed.

CEB Impact

None.

S. 355 MWR003 Gate and Siphon

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Minimizes CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards determinations.

Project History and Background

The MWR003 Gate and Siphon project was recommended in the *Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook, April 2001*, and is part of the revised recommended CSO plan for Alewife Brook. The project consists of the following elements: an automated hydraulic relief gate and associated controls at CSO regulator RE031 upstream of CSO outfall MWR003; an inverted siphon barrel parallel to the existing inverted siphon barrel connecting the Alewife Brook Sewer and Alewife Brook Conduit; and floatables control consisting of an in-line net in outfall MWR003. Also included are improvements to the Alewife Reservation in the immediate project area that are expected conditions of the Department of Conservation and Recreation (DCR) construction permit and license agreement, based on preliminary discussions with DCR. Implementation of this project and other elements of the recommended plan for Alewife Brook is required by the Court Order and by conditions on the Alewife Brook/Upper Mystic River CSO Variance extension, issued by DEP on September 1, 2004.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction.
Construction	Construction of an automated gate and associated controls, 150 feet of new siphon and a floatables control structure.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$1,848	\$0	\$1,848	\$0	\$25	\$123	\$1,600	\$93	\$7

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded in April 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$1,371	\$1,848	\$477	Aug-07	Feb-08	6	\$1,365	\$1,841	\$476

Explanation of Changes

- Revised construction cost estimate.

CEB Impact None

S. 357 Charles River CSO Controls

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Evaluates and implements system optimization measures and evaluates inflow controls that may further reduce CSO discharges to the Charles River Basin, in response to conditions on the extension to the Charles River CSO Variance issued by DEP on October 1, 2004. Also responds to conditions on the extension to the Alewife Brook/Upper Mystic River CSO Variance, issued by DEP on September 1, 2004. This project is required to meet DEP water quality standards determinations.

Project History and Background

In response to MWRA's long-term CSO control plan recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending additional water quality information and evaluations of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions required MWRA to prepare a report assessing the performance of the upgraded Cottage Farm CSO treatment facility. The report also evaluated the cost and benefit of constructing additional storage at this facility to lower treated discharges to the Basin. MWRA submitted the Cottage Farm CSO Facility Assessment Report to MEPA and DEP in January 2004. While concluding that additional storage at Cottage Farm would not be cost effective, the report also concluded that further CSO control could be achieved through system optimization and inflow removal (such as with sewer separation projects already underway or planned by the City of Cambridge and the Town of Brookline). The report specifically recommended system optimization measures at Cottage Farm, including revising procedures for dewatering the Cottage Farm storage basins, constructing an interconnection between the two overflow chambers that direct overflows to Cottage Farm, and raising overflow weirs within these chambers.

On October 1, 2004, DEP issued a three year extension to the Charles River CSO variance, with conditions requiring MWRA to implement the system optimization measures recommended in the Cottage Farm report and to evaluate the CSO benefits of infiltration and inflow removal and stormwater recharge. MWRA must prepare and submit related reports to DEP each year of the extension. Similar CSO evaluations are necessary to respond to the requirements of the three-year extension to the Alewife Brook/Upper Mystic River variance issued by DEP on September 1, 2004.

MWRA staff believe that other opportunities for reducing CSO discharges through system optimization exist for the Charles River. This project will identify additional optimization measures as well as respond to the variance requirements described above.

Scope

Sub-phase	Scope
Design CS/RI	Evaluation of system performance and opportunities for reducing CSO discharges to the Charles River Basin with system optimization measures. Design and engineering services during construction for system optimization measures at Cottage Farm. Engineering assistance to respond to the conditions of the Charles River and Alewife Brook/Upper Mystic River variance extensions.
Construction	Construction of system optimization measures for controlling CSOs to the Charles River Basin.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$824	\$0	\$824	\$0	\$0	\$197	\$601	\$26	\$0

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded in July 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$824	\$824		Jun-07			\$824	\$824

Explanation of Changes

- New project in Proposed FY06 CIP.

CEB Impact

To be identified upon completion of the design contract.

S. 340 South Dorchester Bay Sewer Separation (Fox Point)

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

This project, together with sewer separation at Commercial Point, will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project involves the construction of new storm drains and appurtenant structures, relocation of storm runoff connections from the existing combined sewers to the new storm drains, and rehabilitation of existing combined sewers for use as sanitary sewers. The plan calls for construction of approximately 69,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

A contract for design services was executed by BWSC in June 1996, and a preliminary design report was submitted in December 1997. BWSC executed a separate contract for construction management services in December 1998.

BWSC commenced construction in April 1999. To date, BWSC has completed construction on two separation contracts, totaling over 31,000 linear feet of new storm drains. The commission has two ongoing separation contracts, which are now approximately 33% and 81% complete, respectively, representing an additional 38,000 linear feet of new storm drain. According to the court ordered schedule, beginning in 1999 work was to progress at 10% per year. Based on this required schedule, 57% of the work should be complete. Actual progress by BWSC is 76% complete, which is ahead of the court ordered schedule. In addition to the separation contracts, BWSC plans a total of seven additional contracts (including sediment removal, downspout disconnection and paving) that cover both the Fox and Commercial Point.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded, and managed by BWSC.
Construction	Construction of 69,000 feet of new storm drains and appurtenant structures. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$54,521	\$34,095	\$20,426	\$7,900	\$11,894	\$5,031	\$1,338	\$1,282	\$881

Project Status 11/04	72%	Status as % is approximation based on project budget and expenditures. BWSC has completed construction on two separation contracts resulting in more than 31,000 feet of new stormdrains. Two contracts are in process which are approximately 33% and 81% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$53,612	\$54,521	\$909	Nov-06	Nov-06	-	\$26,609	\$27,445	\$835

Explanation of Changes

- Construction increase due to revised estimates for police details and change orders partially offset by a decrease in Design due to reduced eligibility of some costs per a review by MWRA's Internal Audit Department. Change orders due to need to remove unforeseen structures within existing pipe and to use larger diameter pipes for replacement.

CEB Impact

Expect to decommission the Fox Point Treatment Facility during the summer of 2009 resulting in an annual savings of \$107,000.

S. 341 South Dorchester Bay Sewer Separation (Commercial Point)

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

This project, together with sewer separation at Fox Point, will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project involves the construction of new storm drains and appurtenant structures, 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. The plan calls for construction of approximately 65,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

A contract for design services was executed by BWSC in June 1996, and a preliminary design report was submitted in December 1997. BWSC executed a separate contract for construction management services in December 1998.

BWSC commenced construction April 1999. To date, BWSC has completed construction on three separation contracts, totaling over 25,000 linear feet of new storm drains. The commission has two ongoing separation contracts, which are now approximately 1% and 60% complete, representing an additional 40,000 linear feet of new storm drain. According to the court ordered schedule, beginning in 1999 work was to progress at 10% per year. Based on this required schedule, 57% of the work should be complete. Actual progress by BWSC is 58%, consistent with the court ordered schedule. A placeholder for additional inflow removal/off-line capacity (Dorchester Interceptor relief) is maintained in the project schedule and budget. In addition to the separation contracts, BWSC plans a total of seven additional contracts (including sediment removal, downspout disconnection and paving) that cover both the Fox and Commercial Point areas.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded, and managed by BWSC.
Construction	Construction of 65,000 feet of new storm drains and appurtenant structures. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$62,993	\$33,595	\$29,398	\$6,533	\$8,033	\$8,719	\$8,083	\$3,740	\$823

Project Status 11/04	58.7%	Status as % is approximation based on project budget and expenditures. BWSC has completed construction on three separation contracts resulting in more than 25,000 feet of new stormdrains. Two contracts are in process and are approximately 11% and 60% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$58,456	\$62,993	\$4,537	Nov-07	Nov-07	None	\$30,654	\$35,108	\$4,455

Explanation of Changes

- Budget increase due to additional change orders to address issues with utilities, revised cost estimates, actual awards for the downspout contract, revised estimates of police details, and updated contingency and inflation adjustments on unawarded contracts. These were partially offset by decrease in Design due to reduced eligibility for certain costs per review by MWRA's Internal Audit Department.

CEB Impact

Expect to decommission the Commercial Point CSO Treatment facility during the summer of 2009 resulting in an annual savings of \$58,000.

S. 344 Stony Brook Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Charles River, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Stony Brook Conduit from as many as 22 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project, which involves constructing approximately 73,000 feet of new storm drains, is being managed by BWSC with MWRA funds and oversight. The CIP reflects the FEIR recommendation for sewer separation. BWSC has agreed to complete the project and fund any costs in excess of \$45 million plus appropriate inflation adjustments.

BWSC commenced construction in July 2000. To date, BWSC has completed construction of two contracts totaling 28,000 linear feet of storm drain and work on two additional contracts totaling 45,000 linear feet are approximately 30% and 60% complete. In addition, BWSC has awarded the final paving and downspout disconnection contracts. The Stony Brook Sewer Separation project is approximately 68% complete. The court required 15% of construction per year since July 2000 construction start. Actual progress is in line with the court-required progress. BWSC plans a total of seven construction contracts to complete the project.

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Construction of 73,000 feet of new storm drains. This work will be managed by BWSC.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$43,711	\$24,767	\$18,944	\$8,843	\$11,099	\$6,966	\$879		

Project Status 11/04	69.1%	Status as % is approximation based on project budget and expenditures. BWSC has completed two construction contracts resulting in 28,000 linear feet of stormdrains. Work in process on two additional contracts (total 45,000 lf) which are 30% and 60% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$42,646	\$43,711	\$1,065	Sep-06	Sep-06	None	\$26,722	\$27,787	\$1,065

Explanation of Changes

- Budget increase due to actual awards, revised estimates for police details, updated inflation and contingency adjustments on unawarded contracts.

CEB Impact

None identified at this time.

S. 342 Neponset River Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Elimination of CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean Beach) by separating combined sewer systems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with outfalls BOS093 and BOS095. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project involved construction of approximately 10,000 feet of new storm drains, and was managed by BWSC with MWRA funds and oversight. It has resulted in closing the last two CSO outfalls to the Neponset River (BOS093 and BOS095).

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Three contracts for the construction of 10,000 feet of new storm drains.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$2,681	\$2,444	\$237	\$0	\$0	\$237			

Project Status 11/04	91.2%	Status as % is approximation based on project budget and expenditures. Project was substantially complete in October 2002. MWRA will release remaining balance pending completion of its review of cost eligibility.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$2,681	\$2,681	\$0	Oct-02	Oct-02	-	\$237	\$237	\$0

Explanation of Changes

- None.

CEB Impact

None.

S. 343 Constitution Beach Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Elimination of CSO discharges at the Constitution Beach CSO facility by separating combined sewer systems in parts of East Boston. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

The separation work involved construction of approximately 14,000 feet of new storm drains. The project was managed by BWSC with MWRA funds and oversight. It resulted in the elimination of the CSO discharge to the Constitution Beach area and the decommissioning of the MWRA's Constitution Beach CSO Facility, which has been surplus.

Scope

Sub-phase	Scope
Design	Design services.
Construction	Construction of 14,000 feet of new storm drains.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$3769	\$3,769	\$0						

Project Status 11/04	100%	Status as % is approximation based on project budget and expenditures. Project is completed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$3,769	\$3,769	\$0	Apr-02	Apr-02	None			

Explanation of Changes

- Project completed.

CEB Impact

None.

S. 346 Cambridge CAM002-004 Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To minimize CSO discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

The City of Cambridge is managing the separation work with MWRA funds and oversight.

As reported to the court in 1999, information gathered by the City of Cambridge during the design phase of this project indicated that the physical configurations of the Cambridge sewer and storm drain systems, including the degree to which these systems are interconnected, was significantly different from conditions shown on the city's base plans and older design plans. Both sets of plans were used by MWRA to develop the conceptual plan for the project. As a result, extensive additional work to separate sewers is required to meet CSO control goals. While construction began in 1998 on schedule, completion of construction has been delayed.

MWRA responded to the significant increase in estimated project costs by instructing Cambridge to suspend remaining final design efforts and award of any construction contracts not yet approved, until MWRA and Cambridge could complete a thorough reassessment of project costs and alternatives. At that time, Cambridge had received approval from MWRA to commence four of the ten proposed construction contracts that comprised the original scope.

Based upon an evaluation conducted by MWRA and Cambridge of alternatives that considered cost, performance, and non-monetary factors, the revised recommended plan for controlling CSO discharges to Alewife Brook, like the original plan, is a partial sewer separation alternative that includes the following components:

- Completion of sewer separation in the CAM004 tributary area (similar to the original CSO control plan, but with expanded scope).
- Separation of the CAM400 tributary area (new).
- Relief of dry weather flow connections at CAM002, CAM401B, and SOM01A (new).
- Relief of an existing siphon and installation of a flow control gate at MWR003 (new).
- No further sewer separation in the CAM002 tributary area. (Although this work was included in the original plan and a small, related construction contract was completed by Cambridge in 1999, the revised plan recommends not completing separation in this area.)
- No additional CSO control recommended for the recently discovered outfall at CAM401B.
- Floatables control at remaining CSO outfalls.

On May 24, 2000, the Board of Directors approved a revised CSO Control Plan for Alewife Brook. This budget reflects MWRA's estimate of the cost and MWRA's share of the revised plan. The federal court schedule milestone for completion of construction of sewer separation was January 2000. MWRA previously informed the court and court parties that MWRA would be unable to meet this milestone due to the increased scope of the project. Finalizing proposed changes to the court schedule has been deferred until the public review process has been completed, in part through public review of a Notice of Project Change filed in April 2001, the Response to Comments document submitted in May 2003, and the Final Variance document filed in July 2003, and project scope and cost sharing has been agreed upon by MWRA and the City of Cambridge

Cambridge has submitted a Second Supplemental Preliminary Design Report (SSPDR) for the final recommended plan as presented in the Final Variance Report for the Alewife Brook/Upper Mystic River which is currently being reviewed by MWRA. In the meantime, Cambridge continues to make design progress on Contract 12, involving the new storm drain outfall and stormwater wetland necessary to support future sewer separation in the CAM004 area and closing of the CAM004 regulator

The City of Cambridge executed a contract for design services in January 1997. The first four construction contracts were completed in 2002.

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Four construction contracts for sewer separation work have been completed The remaining scope of work for this project, outlined above, is still being reviewed by MWRA.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$39,467	\$16,306	\$23,161	\$2,372	\$1,939	\$1,447	\$2,274	\$1,950	\$15,551

Project Status 11/04	44.1%	Status as % is approximation based on project budget and expenditures. City of Cambridge continues to prepare the Second Supplemental Preliminary Design Report to update work plans, design and construction requirements, schedules, and costs in order to be consistent with the Final Variance Report.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$37,875	\$39,467	\$1,592	Jun-11	Dec-12	18	\$11,302	\$9,982	(\$1,320)

Explanation of Changes

- Budget increase primarily due to inflation adjustments due to new ENR index.
- Schedule delayed due to additional preparation of the Second Supplemental Preliminary Design Report and revising construction end dates to avoid overlapping contacts to minimize public disturbances.

CEB Impact

None identified at this time.

S. 351 BWSC Floatables Control

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To limit the discharge of floatable materials from five BWSC combined sewer outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

Floatables control at the five BWSC outfalls included in this project involved the installation of underflow baffles in existing CSO regulator structures. The work was managed by BWSC with MWRA funds and oversight. Design began in December 1998, following completion of an MWRA study on the performance of underflow baffles and a preliminary design report, which was completed in November 1999. All work was completed in 2002.

Scope

Sub-phase	Scope
Design	Design services.
Construction	Installation of underflow baffles at ten BWCS combined sewer outfalls.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$933	\$933	\$0	\$0					

Project Status 11/04	100%	Status as % is approximation based on project budget and expenditures. Project is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$933	\$933	\$0	Mar-02	Mar-02	None	\$0	\$0	\$0

Explanation of Changes

- Project completed in March 2002.

CEB Impacts

None

S. 352 Cambridge Floatables Control

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To limit the discharge of floatable materials from eight Cambridge CSO outfalls. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

Floatables control devices will be installed at each outfall in this project include combing screens, continuous deflective separation devices, brush screens, and underflow baffles. Floatables control at one location (CAM401A) was completed in 2004. The City of Cambridge is managing the work with MWRA funds and oversight

Scope

Sub-phase	Scope
Design	Design for the City of Cambridge construction contract.
Construction	Installation of floatables control devices at eight combined sewer outfalls.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$2,660	\$377	\$2,283	\$0	\$545	\$321	\$869	\$548	

Project Status 11/04	34.7%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$2,520	\$2,660	\$140	Dec-06	Jun-08	18	\$2,143	\$2,283	\$140

Explanation of Changes

- Budget increase primarily due to inflation adjustment to reflect new ENR index.
- Schedule delayed due to prolonged preparation of the Second Supplemental Preliminary Design Report and increased design effort and construction complexity of revised plan.

CEB Impact

None

S. 356 Fort Point Channel Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*
- Extends current asset life*

To minimize CSO discharges to Fort Point Channel by separating combined sewer systems tributary to outfalls BOS072 and BOS 73. Implementation of the recommended sewer separation plan will reduce the number of overflows from these outfalls from as many as 23 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

On August 14, 2003, MWRA received a Certificate from the Secretary of Environmental Affairs accepting the Notice of Project Change that recommended replacing the Fort Point Channel CSO Storage Conduit project with a plan for sewer separation and system optimization. On September 17, 2003, the Board of Directors authorized the Executive Director to negotiate related revisions to Schedule Six of the Federal Court Order in the Boston Harbor Case. On February 27, 2004 MWRA's motion to revise Schedule Six was approved by the Federal Court.

MWRA and BWSC have agreed that this project, like other sewer separation projects in the CSO control plan, should be implemented within the MOU and FAA, with BWSC performing final design, construction services and construction and MWRA funding eligible costs. BWSC would also own and operate the separated systems upon construction completion.

MWRA received the *Draft Preliminary Design Report on the Sewer Separation and System Optimization for BOS072 - BOS073* from its consultant in March 2004. The preliminary design submission includes a breakdown of eligible and ineligible project costs. BWSC is continuing with final design, which is approximately 75% complete, and expects to commence construction by March 2005, in compliance with Schedule Six.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of approximately 4,600 linear feet of new storm drains and appurtenant structures tributary to outfalls BOS072 and BOS073. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$5,258	\$0	\$5,258	\$0	\$1,111	\$2,356	\$1,778	\$13	

Project Status 11/04	9.5%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$5,095	\$5,258	\$163	Mar-07	Mar-07	None	\$5,095	\$5,258	\$163

Explanation of Changes

- Budget increase primarily due to inflation adjustment per new ENR index.

CEB Impact

None

S. 358 Morrissey Boulevard Drain

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Reroute stormwater from the BOS087 area (and the North Dorchester Bay consolidation storage tunnel) to Savin Cove to increase level of stormwater control to the beaches.

Project History and Background

In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary's Certificate, issued in June, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, recommended re routing stormwater from BOS087 to a new Morrissey Boulevard Drain. Design is scheduled to begin in June 2005, with construction starting and ending in December 2006 and June 2009, respectively.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of a new storm drain and appurtenant structures along Morrissey Boulevard to Savin Hill Cove.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$20,883	\$0	\$20,883	\$0	\$45	\$1,310	\$4,340	\$7,572	\$7,616

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Expect design to begin in June 2005, with construction starting and ending in December 2006 and June 2009, respectively.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$20,883	\$20,883	Dec-10	Jun-09	(18)	\$0	\$13,267	\$13,267

Explanation of Changes

- Shifted \$18.8 million from the North Dorchester Bay and Reserved Channel Project to establish this separate project. Net increase of \$2.1 million due to inflation adjustments and revised cost estimates.
- Schedule based on SEIR in April 2004.

CEB Impact

None identified at this time.

S. 359 Reserved Channel Sewer Separation

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

To minimize CSO discharges to Reserved Channel by separating combined sewer systems in a portion of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to Reserved Channel from as many as 37 to 3 in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards

Project History and Background

In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary's Certificate, issued in June, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, recommended a new plan which included sewer separation in the area tributary to Reserved Channel. Design is scheduled to begin in January 2007, with construction starting and ending in May 2009 and December 2017 respectively.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of new storm drains and appurtenant structures within a 355-acre tributary area to the SBI-NB. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$54,372	\$0	\$54,372	\$0	\$0	\$120	\$1,081	\$2,041	\$51,131

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$54,372	\$54,372	Jul-20	Dec-17	(31)	\$0	\$3,242	\$3,242

Explanation of Changes

- Shifted \$48 million from the North Dorchester Bay and Reserved Channel Project to establish this separate project. Net increase of \$6.3 million due to inflation adjustments and revised cost estimates.
- Schedule based on SEIR in April 2004.

CEB Impact

None identified at this time.

S. 324 CSO Planning and Support

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

The goals of the CSO Program are to minimize CSO discharges, reduce beach closings following wet weather events, and maximize the beneficial use of CSO receiving waters. This project includes CSO conceptual planning, system master planning, and facilities planning/environmental review. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans or SOPs), various as-needed technical support activities, and acquisition of land and easements required for CSO control plan implementation.

Project History and Background

MWRA CSO planning work began in 1986. A revised Final Conceptual Plan and System Master Plan was completed in 1994, and a Final CSO Facilities Plan and EIR were filed with MEPA in August 1997. A MEPA certificate was issued in October 1997. In December 1997, DEP issued water quality determinations that were necessary for final CSO plan approval by DEP and EPA. DEP issued a two-year variance for the Charles River in October 1998. DEP has extended the Charles River variance three times, to October 2003. A three-year variance for Upper Mystic River and Alewife Brook CSOs was issued in March 1999. In 2002, DEP extended the term of this variance to September 2003. Consultant services include assisting MWRA in satisfying variance conditions.

As part of CSO Planning and Support, MWRA provided financial and technical assistance to the Charles River Watershed Association in its watershed planning efforts for the Charles River, known as the IM3 Study. MWRA also funded a portion of the costs of a USGS water quality study of the Charles River Basin. Results of these studies will provide additional technical information to support the reassessment of the appropriateness of the recommended Charles River controls in the CSO plan. To comply with its requirements under the Charles River CSO variance, in 1999 MWRA began funding USGS efforts to collect updated information on Charles River water quality. Final payments to the Charles River Watershed Association and USGS were made in the fall of 1998 and the fall of 2001, respectively.

Schedule Six of the federal court order in the Boston Harbor Case required MWRA to develop, by June 1993, a plan for optimizing the existing combined sewer systems to maximize transport and in-system storage capacities, thereby minimizing CSO discharges prior to developing and implementing a long-term control plan. In June 1993, MWRA completed a report entitled System Optimization Plans for CSO Control, which recommended more than 100 relatively low cost and easily implemented projects to optimize operation of existing systems. The projects were designed and constructed primarily by the CSO communities, pursuant to SOP financial assistance agreements executed between MWRA and each CSO community. Under the agreements, MWRA reimbursed the communities for design and construction costs. SOP work also includes two projects that are part of the long-term plan: Somerville Baffle Manhole Separation and Somerville Floatables Control. Short-term plans for CSO SOPs were completed in 1997 and MWRA obtained regulatory approvals for its long-term plan in 1997 and 1998.

The performance of the sewerage system is constantly improving as CSO and non-CSO projects are completed and as maintenance efforts continue to increase the system's capacity. Updated assessments of the system's hydraulic performance and estimates of CSO discharges based on actual field data are essential to verify the predicted benefits of various CSO-related improvements, to recalibrate the system hydraulic model to reflect updated conditions, and to provide up-to-date information to support CSO planning and design efforts. This project provides for temporary flow metering and other efforts to gather and evaluate new data and track system performance.

Various CSO plan reevaluations and systems assessments have been performed under amendments to the CSO Master Planning contract. These include: reevaluation of the Alewife Brook sewer separation plan; reevaluation of the need for the Dorchester Brook In-line Storage Project (not included in the CSO Plan or the CIP); reevaluation of the feasibility of closing MWR010; reassessment of CSO discharges from the Boston Marginal Conduit to reevaluate the need for floatables control; and reevaluation of the cost-effectiveness of the East Boston Branch Sewer Relief project in light of cost increases.

By amendment to the Master Planning contract MWRA also added system modeling services to estimate and report actual CSO discharges on an annual basis, in compliance with provisions in MWRA's new NPDES permit.

Scope

Sub-phase	Scope
Technical Assistance	Preliminary planning services prior to and in support of the 1988-90 Facilities Planning/EIR efforts.
Planning/EIR	Facilities planning and environmental review of CSO control alternatives (1990 Recommended CSO Control Plan).
Master Planning	System inspections, flow monitoring, water quality monitoring, and performance assessments to improve MWRA's understanding of the combined sewer and regional wastewater systems, optimize the performance of the existing systems, and reassess CSO control needs in the context of evolving EPA policy and a system master plan. Revisions to Facilities Plan/EIR.
Watershed Planning	External watershed planning efforts that may affect CSO control needs, including the Charles River Watershed Association IM3 Study and ongoing USGS water quality studies.
Modeling	Receiving water quality modeling support to the Master Planning efforts.
SOP Program	Development and implementation of System Optimization Plans for short-term CSO control. Implemented by CSO communities.
System Assessment	Temporary flow metering and other efforts to gather and evaluate new data on system performance.
Technical Review	Technical assistance for the entire CSO control plan including affordability analysis.
Land/Easements	Acquisition of land and easements for construction of MWRA-implemented projects. Also, permits not covered in existing contracts.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$51,334	\$38,256	\$13,078	\$952	\$691	\$8,458	\$1,097	\$2,545	\$287

Project Status 11/04	74.9%	Status as % is approximation based on project budget and expenditures. Master Planning was substantially complete in September 2004. Expect easement agreement with Massport for land acquisition at Conley Terminal in the second quarter of FY06.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$50,834	\$51,334	\$500	Dec-09	Dec-09	None	\$13,530	\$13,743	\$213

Explanation of Changes

- Revised Land/Easement costs for North Dorchester, BOS019, and East Boston projects.

CEB Impact

None identified at this time.

S. 128 Infiltration/Inflow Local Financial Assistance Program

Project Purpose and Benefits

- Contributes to improved public health*
- Provides environmental benefits*
- Fulfills a regulatory requirement*

Infiltration and inflow (I/I), groundwater and storm water that enter the collection system, contributes significantly to the total wastewater flow treated by MWRA. This depletes capacity that would otherwise be available to transmit sanitary flows, resulting in sewer surcharging, overflows of untreated sewage, more frequent combined sewage overflows, and higher pumping and treatment costs. The I/I Local Financial Assistance Program provides funding assistance for communities to rehabilitate their collection systems with the goal of structurally reducing I/I flows. Funding assistance for local projects complements other MWRA strategies for regional I/I reduction including wastewater metering to support flow based rates, provision of I/I estimates to communities, technical assistance to communities on local projects, regional coordination of I/I policy issues, and interaction with DEP and EPA.

Project History and Background

MWRA's Deer Island Wastewater Treatment Plant receives flow from 43 communities. The collection system encompasses 230 miles of MWRA interceptors and 5,400 miles of community sewers. These sewers are of varying size, shape, age, material, depth, and conditions. All contribute some quantity of infiltration and inflow.

On August 19, 1992, the Board of Directors approved \$25 million to fund the initial phase of the I/I Local Financial Assistance Program. On June 28, 1995, the Board approved \$38.8 million to fund a second phase of the program. Both Phase I and II funds were distributed as 25% grants and 75% interest-free loans. The Board approved \$37 million to fund a third phase of the program on May 6, 1998, an additional \$40 million for Phase 4 on June 13, 2001, and an additional \$40 million for Phase 5 on June 23, 2004. Because the grant/loan ratio was revised for Phase 3, 4, and 5 to 45% grants and 55% interest-free loans, MWRA decided that a community would need to exhaust its available Phase 2 funds prior to becoming eligible for any Phase 3, 4, and 5 allocations. All program funds are allocated to the 43 sewer service area communities based on their share of MWRA's wholesale sewer assessment. Binding commitments for funds are issued by MWRA in the form of Financial Assistance Agreements. Distribution of funds is authorized through FY2013. Through November 2004, MWRA has distributed \$37 million in grants and \$72 million in no-interest loans to fund 261 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$68,593	\$51,002	\$17,592	\$1,468	\$7,444	\$5,067	\$948	\$1,497	\$2,636

Project Status 11/04	83.9%	Through November 2004, MWRA has distributed \$37 million in grants and \$72 million in no-interest loans to fund 261 separate projects in 43 communities under the I/I Local Financial Assistance Program.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$68,593	\$68,593	\$0	May-18	May-18	None	\$15,767	\$16,424	\$657

Explanation of Changes

- No changes to project scope, budget, and schedule. Spending shift due to timing of community requests.

CEB Impact

The marginal costs savings from flow reduction are already accounted for in the CEB.

S. 138 Sewerage System Mapping Upgrade

Project Purpose and Benefits

- Provides environmental benefits
- Improves system operability and reliability.

Completion of this project will enhance the accuracy of existing and newly created GIS maps of sewerage communities to improve the quality of hydraulic analysis and reduce staff time and effort necessary to respond to emergencies within the transport system.

Project History and Background

MWRA maintains geographic data on 44 municipalities: the 43 municipalities in the service area and Dover, which is traversed by MWRA interceptors. The level of data improvement proposed for this project depends on the data available and MWRA facilities in the communities. This project uses data from the waterworks system to create new base maps for 31 towns, develop new base map data for six towns for which new data is not available but in which MWRA has significant lengths of interceptors, and make existing data visually consistent with the new adjacent base maps for seven towns.

MWRA has invested significant amounts of money and staff time to develop the SAMS GIS data used to produce various maps for MWRA and communities within the MWRA service area. Recently, MWRA began development of its own distribution facilities data and maps of the waterworks system. As part of the project, Camp Dresser and McKee (CDM) performed a life cycle cost analysis (LCCA) looking at needs, and at existing base map data within MWRA and from other sources. One critical finding was that operations staff could not always use existing maps to reliably locate facilities, and that the resulting loss of staff time was very costly. Based on the analysis, MWRA purchased a license from Boston Edison (BECo) for a set of high accuracy up-to-date base map data. MWRA staff worked with CDM to overlay the MWRA water distribution system and facilities on these base maps to produce accurate high quality maps. The BECo base map data is not only more accurate than the SAMS data but also provides good feature labeling and elements not now available to MWRA users.

Scope

Sub-phase	Scope
Base Maps	Create new base maps for Norwood and Randolph.
Edit Existing Data	Use existing SAMS data to update the current base maps for 31 towns.
Quincy Data Sharing	Data and map development for the City of Quincy. Quincy will provide MWRA with final base maps.
Weymouth Data Sharing	Data and map development for the Town of Weymouth. Weymouth will provide MWRA with final base maps.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$284	\$278	\$6	\$67	\$6	\$0	\$0	\$0	\$0

Project Status 11/04	98.9%	Status as % is approximation based on project budget and expenditures. This project is substantially complete as of April 2004.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$284	\$284	\$0	Apr 04	Apr 04	-	\$73	\$73	\$0

Explanation of Changes

- No change to project cost, schedule or spending.

CEB Impact

Any identifiable impacts will be absorbed within the CEB.

S. 542 Walnut Hill Water Treatment Plant

Project Purpose and Benefits

Contributes to improved public health

Fulfills a regulatory requirement

To provide high quality drinking water to MWRA customers and to ensure that the water delivered from the Wachusett Reservoir meets the drinking water quality standards established by the federal Safe Drinking Water Act (SDWA). Part of this objective will be met by constructing a 405 million-gallon per day (maximum) water ozonation/chloramination treatment plant primarily in Marlborough with portions of the facility located in Southborough and Northborough.

Project History and Background

MWRA provides drinking water to more than 2 million people in 40 communities in the Greater Boston area. Its supply consists of two large, high quality, reservoirs in Central Massachusetts, the Quabbin and Wachusett Reservoirs. About 50% of the water flowing from the Wachusett Reservoir comes first from the Quabbin Reservoir, the larger reservoir to the west which received a waiver from filtration requirements in 1991 from the Massachusetts Department of Environmental Protection (Mass DEP), the agency granted primacy by the United States Environmental Protection Agency (USEPA) in Massachusetts to enforce the SDWA.

In June 1993, MWRA negotiated with Mass DEP, an administrative consent order setting forth the steps needed to comply with the Surface Water Treatment Rule (SWTR). The Metropolitan District Commission (MDC), the state agency in charge of the reservoirs and watersheds that yield MWRA's source water, was also a party. The consent order required MWRA to find a site, design a filtration plant, and build it, unless MWRA with MDC could demonstrate to Mass. DEP no later than 1998 that the system met the criteria for avoiding filtration and therefore that filtration was not required.

In October 1998 the MWRA Board of Directors voted to build a new water treatment facility using ozonation with chloramination for the water from Wachusett Reservoir as part of the Integrated Water Supply Improvement Program and to request a waiver of the filtration requirements from Mass DEP. The decision recognized that an ozonation/chloramination plant would provide appropriate treatment of the MWRA water supply from Wachusett Reservoir, and that adding filtration components costing \$180 million to the new plant would not provide as much additional benefit as would using funds to rehabilitate old unlined cast iron pipes in the MWRA and local distribution systems. As part of the treatment technology decision, MWRA's Board also made a commitment to an expanded program of public health surveillance, financial incentives for communities to target rehabilitation of community pipes, and a full review of the need for further treatment including filtration by December 2003.

Mass DEP agreed with the MWRA approach in December 1998 and determined that filtration was not required for the MWRA system. Through the Department of Justice, USEPA continued to prosecute an enforcement action it had previously filed under its SDWA "overfiling" rights, seeking to require MWRA to build a filtration plant and contending that the SDWA allowed no other option.

U.S. District Judge Richard Stearns ruled in May 1999 that MWRA was not in compliance with the filtration waiver criteria as a result of its having detected fecal coliform levels in the Wachusett Reservoir above permissible levels on 14 days (in December 1998 and January 1999) out of 130 days tested for the six month period¹, but set the question of remedy for trial.

On May 5, 2000 Judge Stearns issued his decision that MWRA is currently in compliance with all 11 federal criteria for avoiding filtration under the Surface Water Treatment Rule of the Safe Drinking Water Act. He evaluated the current quality of MWRA water and found MWRA's integrated drinking water improvement program including ozonation treatment technology the better approach to "preserving its safety." He found EPA failed to show that filtration of MWRA water was required either as a matter of cost-benefit or scientific necessity. The judge denied

¹ The SDWA criteria permit exceedances of the fecal coliform standard for source water on only 13 days in a six-month period (10% of the samples).

EPA's request for injunctive relief, but ordered MWRA to give the Court notice of any future violations of the avoidance criteria to allow the consideration of whether the type of relief requested by USEPA might be necessary. No other order was issued. On July 16, 2001, the U.S. Court of Appeals for the First Circuit affirmed Judge Sterns ruling.

Scope

Sub-phase	Scope
Study 1	Investigation of the potential impacts of SDWA amendments on the MWRA system and evaluation of the need, feasibility, and benefits of improved treatment processes.
Study 2	Evaluation of alternative filtration, disinfection, and corrosion control processes to determine the most appropriate for MWRA source waters. Construction and operation of a pilot plant at the Wachusett Reservoir to allow testing of various treatment technique combinations. Identification of potential locations for treatment facilities.
AWWARF Red Water Control Strategy Study	Evaluation of treatment options for eliminating discolored water caused by unlined cast-iron pipe. Also investigation of the fundamental aspects of iron chemistry and corrosion using unlined cast-iron pipe from the MWRA community distribution system.
Emergency Distribution Reservoir Water Management Study	Investigation of potential impacts on the emergency distribution reservoirs resulting from their replacement by new covered distribution reservoirs, and study of ways to maintain their water quality for emergency supply. Norumbega, Weston, Spot Pond, Fells, and Blue Hills Reservoirs have been studied. A pilot study was conducted to evaluate in-reservoir algae treatment for Wachusett Reservoir.
<i>Cryptosporidium</i> Inactivation Study	Determination of the site-specific efficacy of inactivating <i>Cryptosporidium</i> in Wachusett Reservoir source water using disinfectant alternatives (chlorine/chloramine and ozone/chloramine), and then development of design criteria for the full-scale disinfection contacting system.
Construction: Cosgrove Disinfection Facility Phases I and II	Construction of the Cosgrove Disinfection Facility. Free chlorine is applied at the Cosgrove Aqueduct to utilize travel time to achieve primary disinfection prior to corrosion control treatment and secondary disinfection.
Immediate Disinfection-MECO	Massachusetts Electric Co. power line installation to support the disinfection process at the Cosgrove Disinfection Facility.
Distribution Water Consultant	To provide technical assistance related to distribution system management.
EIR/Conceptual Design	Environmental reviews, data collection and analyses, and facility designs to support the dual track compliance approach, evaluation of design criteria, site plans, plant hydraulics, and construction of a small-scale demonstration water treatment plant.
Design/CS/RI: Walnut Hill WTP	Design and Engineering Services During Construction for the water treatment plant and associated components.
WHCP1: Wachusett and Cosgrove Intakes	Upgrade of the Cosgrove Intake and powerhouse to allow automatic, unstaffed operation of the facility. Replacement of the valves and piping in the Wachusett Intake is required to allow this facility to serve as a backup water supply.
WHCP2: Interim Aqueduct Rehabilitation	Shotcrete lining of the Wachusett Aqueduct to ensure supply of water continues to greater Boston during modifications to Shaft C and to enable it to serve as a backup to the Cosgrove Tunnel.
WHCP3: Site Work and Storage Tank	Includes clearing and excavation, site access roads, yard piping, and construction of a 45-million gallon storage tank.

Sub-phase	Scope
WHCP4: Treatment Facilities	Construction of ozonation, corrosion control, chloramination operations and emergency generator buildings, modifications to Shafts B and C, and installation of system wide instrumentation from Wachusett Reservoir to Norumbega Reservoir.
WHCP6: Late Site Work	Final grading, landscaping, and paving of treatment facility site.
Design & Construction WHCP7: Existing Facilities Modifications	Modification to and conversion of the Interim Corrosion Control Facility, Cosgrove Disinfection Facility, Transmission Maintenance Facility, and the space available above the ozone contact tanks at Walnut Hill. These buildings will be converted from water treatment/quality uses to expanded maintenance/storage/warehouse facilities for the new water treatment plant. In addition, the contract includes demolition of pipe loop building, old electrical building, old wooden building at Southboro, some miscellaneous items at Cosgrove Intake Building and replacement of the roof and HVAC system for Water Quality Lab at Southboro.
Design Management Support	Professional services and value engineering support to MWRA in review of the water treatment plant design.
Construction Management/RI	Construction management and resident inspection during construction of the water treatment plant.
Cosgrove Disinfection Facility Underwater Improvements	Installation of underwater piping needed to apply sodium hypochlorite at Shaft A.
Community Chlorine Analyzers	Purchase of free chlorine residual analyzers for eight communities to work in association with interim chloramination facilities.
OCIP	Owner Controlled Insurance Program, providing pollution liability, workers' compensation, general liability, and excess loss coverage during construction of the Walnut Hill Water Treatment Plant.
Professional Services	As needed legal, insurance, design, and construction specialty services for the Walnut Hill Water Treatment Plant.
Marlborough MOA	Agreement to mitigate the impacts of the construction of the Walnut Hill Water Treatment Plant on Marlborough.
WHWTP – MECo	Relocation of electric power lines.
Site Security Services	Site security services at Walnut Hill Water Treatment Plant.
CSX Crossing	Railroad track improvements adjacent to WHWTP.
Wachusett Algae Design and Construction	Design and Construction of automated chemical dispensing system for algae control.
Public Health Research	With the assistance of public health agencies and researchers, evaluation of the public health impact of the water treatment changes that will occur in 2004.
Security Equipment	Design and installation of card access, improved motion and intrusion alarm systems, video surveillance, and monitoring equipment for MWRA facilities.
WHCP8– Cosgrove Screens Design/CS/RI and Construction	Replace existing manual screens with finer automatically controlled traveling screens.
Cosgrove Tunnel Inspection	Inspection of Cosgrove Tunnel while it is inactivated during construction of the connection to the Walnut Hill Water Treatment Plant.
AWWARF-Evaluation Ozone and UV	Study of the effects of ozone and ultraviolet treatment on cryptosporidium to ensure inactivation in Wachusett Reservoir.
Fitout/Construction	Non-construction related items for start-up and operation of the new water treatment plant including furnishings, shop and maintenance equipment, audio/visual supplies, laboratory equipment, and miscellaneous consumable supplies.

Sub-phase	Scope
Walnut Hill Ultra Violet Disinfection Design, and Construction	Design and construction programs to add Ultra Violet (UV) to the WHWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the WHWTP including electrical engineering, HVAC engineering, mechanical engineering, civil engineering and a variety of geotechnical, environmental, and architectural technical assistance.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$419,525	\$329,874	\$89,651	\$43,852	\$27,933	\$7,997	\$5,196	\$7,027	\$41,498

Project Status 11/04	81.4%	Status as % is approximation based on project budget and expenditures. Through November 2004, the WHWTP is 96.8% complete. WH CP4 Treatment Plant is 96.3% complete and WH CP6 Late Site Work is 18% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$414,426	\$419,525	\$5,099	Jun-12	Jun-12	None	\$85,192	\$92,005	\$6,812

Explanation of Changes

- Cost increase due to additional change orders for WHWTP CP4 for ambient air analyzers, conduit and duct banks at Shaft C, fire alarm modifications, and water main reconnections.
- Increases also due to revised cost for expected amendment for the Construction Management contract and actual award amount for Late Sitework CP6 contract.
- Added as-needed design contracts to support start-up of WHWTP.
- These increases were partially offset by deleting Corrosion Control Norumbega Construction and Booster Disinfection Design subphases from the budget as part of MWRA strategy to contain rate increases.

CEB Impact

The Proposed FY06 CEB for the Field Operations Department includes approximately \$2.9 million in additional funding for the first full year of operations and maintenance of this facility. Maintenance costs could increase by up to \$250,000 per year starting in FY07 after equipment warranties expire and as equipment ages. In addition, per EPA requirements, MWRA will commence use of UV as a second disinfection method as of FY2012. Staff expects the additional cost of UV treatment to be offset by savings achieved by applying ozone at a lower dosage.

S. 543 Quabbin Water Treatment Plant

Project Purpose and Benefits

- Contributes to improved public health*
- Fulfills a regulatory requirement*

To improve the quality of drinking water delivered to the Chicopee Valley Aqueduct (CVA) communities of Chicopee, Wilbraham, and South Hadley Fire District No. 1, and to ensure that the water delivered meets the drinking water quality standards established by the federal Safe Drinking Water Act. Improvements to the CVA system thus far have included the construction of covered storage at Nash Hill and construction of disinfection and contact time (CT) monitoring facilities.

Project History and Background

MWRA provides water to the three CVA communities under long-term contracts. The three communities pay assessments based on actual capital and operating costs for the CVA system. MWRA expects that these agreements will continue beyond the contract dates. In the event the communities do not choose to extend the contracts, they would be required to reimburse MWRA for the capital investment to improve the CVA system.

Quabbin Reservoir is the source of the water delivered to the CVA communities. Massachusetts DEP has granted a conditional waiver from filtration for Quabbin Reservoir water serving the CVA. A consent order covering activities to support the continuation of the filtration waiver under the Surface Water Treatment Rule (SWTR) was signed by MWRA and DEP in December 1991. One of the major requirements of the consent order was replacement of the open Nash Hill Reservoir with covered storage. The Nash Hill Covered Storage Facilities were constructed and put on-line in March 1999 in compliance with the consent order requirements.

The consent order schedule for design and construction of permanent disinfection facilities, which were needed to comply with the federal and state drinking water standards, was submitted to DEP in February 1994. Under the consent order, the approved treatment processes for disinfection were chlorination for primary disinfection, and chloramination for residual disinfection. The publication of new regulations for the Enhanced Surface Water Treatment Rule (ESWTR) and Disinfectant/Disinfection By-Products Rule (D/DBPR), and discussions regarding a possible *Cryptosporidium* rule have raised questions regarding the long-term efficacy of these treatment technologies and whether future modifications may be required.

MWRA developed an action plan for the CVA system in 1995 to address treatment requirements. A life cycle cost analysis performed in 1995 determined that disinfection with chlorine/chloramine was the most cost-effective treatment option, even if the treatment processes had to be upgraded as early as two years later.

The notice to proceed for construction of the chlorination and chloramination facilities was issued in November 1998 and field activities commenced in March 1999. After commencement of field construction activities, citizen opposition arose relative to the siting of the secondary disinfection facility and led to consideration of emerging treatment technologies. Based on this evaluation of treatment alternatives, it was determined that construction of the primary disinfection facility in Ware would meet the consent order requirements by achieving compliance with the CT requirements of the SWTR and also meet the Stage 1 D/DBPR. Construction of the secondary disinfection facility in Ludlow was cancelled. Instead a CT monitoring station was built at the Ludlow site. Both the primary disinfection facility and the Ludlow monitoring facility went on-line in summer 2000, in compliance with the consent order schedule.

New regulations will require adding a second primary disinfectant to the CVA system because the source water is unfiltered. MWRA will conduct an evaluation of the application of ultraviolet technology as the second primary disinfection treatment of the CVA system to allow cost-effective and efficient upgrades to be designed and implemented for the system.

Scope

Sub-phase	Scope
Quabbin WTP: Design/CA/RI and Construction	System hydraulics study, design, construction administration, resident inspection, and construction of disinfection and CT monitoring facilities.
Ware Fire Department MOA	“First Responder” training and protective clothing for the Ware Fire Department for Quabbin Disinfection Facility emergency scenarios.
WQ Analysis Equipment	Water quality analysis equipment for the Quabbin Disinfection Facility in Ware.
Quabbin Ultraviolet Water Treatment Plant: Study/Pilot, Design SS/RI, and Construction	Evaluation and implementation of ultraviolet technology at the Quabbin Disinfection Facility to meet new regulations requiring two primary disinfectants for unfiltered systems.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$15,456	\$9,832	\$5,624	\$389	\$425	\$25	\$134	\$358	\$4,683

Project Status 11/04	64.5%	Status as % is approximation based on project budget and expenditures. Completed disinfection and contact time monitoring facilities in September 2000. Expect to complete the Quabbin Study/Pilot by Jul 2005. Expect to begin Quabbin UVWTP Design CS/RI by December 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$14,983	\$15,456	\$473	Jul 10	Jan 11	6	\$1,286	\$1,331	\$44

Explanation of Changes

- Cost increase due to inflation adjustments as a result of new ENR index.
- Schedule pushed out due to project priorities.

CEB Impact

Annual incremental operating costs for UV treatment are estimated at \$25,000 per year as of Q4 FY2011.

S. 544 Norumbega Covered Storage

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Improves system operability and reliability*

To help provide high quality drinking water to MWRA customers and to ensure that the water meets the drinking water quality standards established by the federal Safe Drinking Water Act (SDWA) by constructing a 115 million gallon covered storage facility at Norumbega Reservoir.

Project History and Background

Norumbega Reservoir is an uncovered distribution storage reservoir connected to the Hultman Aqueduct in Weston. It normally provides active distribution storage and hydraulic control for 100% of the water supplied to the metropolitan Boston area. The reservoir has a capacity of 205 million gallons and a surface area of approximately 40 acres.

DEP, MWRA, and MDC entered into a consent agreement on June 11, 1993 for the Wachusett Reservoir water supply. The consent order requires MWRA to bring Norumbega Reservoir into compliance with state and federal regulations. Based on the fifth amendment to the consent order (dated July 12, 1999), construction of two cells of covered storage facilities must be substantially complete by December 2003. The third tank cell and final site work must be completed by December 2004. MWRA is meeting these milestones by using a design/build project delivery approach to construct distribution storage, connect to the MetroWest Water Supply Tunnel, and provide associated facilities in the vicinity of Norumbega Reservoir. The project site boundaries on the north, east, south, and west are the Massachusetts Turnpike (Mass Pike), Oak Street, the Hultman Aqueduct right-of-way, and Wellesley Street, respectively.

The primary component of the project is construction of a 115 million gallon reinforced concrete storage tank west of Schenk's Pond, between Norumbega Reservoir and the Mass Pike, on land previously owned by the Town of Weston and the Weston Forest and Trail Association. The tank will cover approximately 17 acres, and will store water that has been fully treated at the Walnut Hill Water Treatment Plant. Start-up of the new covered reservoir will coincide with the start-up of the MetroWest Water Supply Tunnel.

Existing disinfection facilities will be modified for emergency use in the event that it is necessary to draw water directly from the open Norumbega Reservoir and/or Schenck's Pond. Chlorine would be applied at the Norumbega gatehouse during emergency operation.

On January 14, 1998, the Board of Directors authorized staff to proceed with a design/build project delivery approach for the project. The Norumbega Covered Storage Design/Build contract notice to proceed was issued in November 1999. The MWRA took partial utilization of the covered tank in November 2003 and the open reservoir was removed from service in March 2004. The Covered Storage Tank became fully operational in August 2004.

Scope

Sub-phase	Scope
Conceptual Design/EIR	Environmental reviews, data collection and analyses, conceptual designs, and wetland permitting for covered storage at Norumbega Reservoir.
Owner's Representative	Provision of technical program management for the Norumbega covered storage design/build contract procurement, monitoring, and administration.
Design/Build	Design and construction by a single contractor of a 115 million gallon covered storage facility at Norumbega Reservoir.
Land	Land Acquisition for Norumbega Covered Storage.

Sub-phase	Scope
Booster Disinfection Design	Retrofit of disinfection facilities at Norumbega to remove chlorine and ammonia feed systems and install injection ports for sodium hypochlorite which would be delivered by truck in an emergency. This will allow emergency use of the open reservoir.
Professional Services	Technical assistance services for the Norumbega Covered Storage project.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$107,472	\$100,575	\$6,897	\$11,301	\$4,241	\$2,206	\$58	\$117	\$275

Project Status 11/04	95.9%	Status as % is approximation based on project budget and expenditures. The Covered Storage Tank became fully operational in August 2004. Expect Booster Disinfection Design to begin in July 2007 if needed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$106,446	\$107,472	(\$1,026)	Jan-10	Jan-10	None	\$16,555	\$17,923	\$1,367

Explanation of Changes

- Cost change primarily due to additional time and labor due to severe weather.
- Offset by removal of Booster Disinfection Construction subphase due to reevaluation of need.

CEB Impact

No additional operating costs identified at this time.

S. 545 Blue Hills Covered Storage

Project Purpose and Benefits

- Improves system operability and reliability
- Contributes to improved public health

To ensure sufficient distribution storage for MWRA's Southern High Service Area. Presently, the area relies on the existing open reservoir for non-potable emergency storage, creating the potential for supply disruption and a boil water order if repairs are needed on a major transmission line for Quincy and other communities in the Southern High Service Area. Covered distribution storage will equalize pressure at the extremities of the Southern High pressure zone and provide potable emergency storage in case of unexpected interruptions of supply. New covered storage facilities at the Blue Hills Reservation will have a capacity of 20 million gallons.

Project History and Background

Blue Hills Reservoir is an inactive, emergency, open distribution reservoir. MWRA's long-term plan is to provide 320 million gallons of enclosed storage at various locations throughout the waterworks system. This quantity represents approximately one day of maximum demand. A covered storage facility in the Southern High Service Area will equalize water pressure during periods of peak demand and work in conjunction with Section 22 to supply water in the event that the Dorchester Tunnel requires repairs. In addition, this facility will supply water to Quincy and Milton if the northern portion of Section 22 is shut down because of a break or for repairs. A citizens' working group has been formed to participate in the EIR/Conceptual Design process.

MWRA's consultant began conceptual design and environmental assessment activities in April 1997. The Secretary of Environmental Affairs certified the Final Environmental Impact Report as adequate and complete in December 2001. The DEP Commissioner issued a Wetlands Protection Act Variance for the project in November 2003, which was appealed by a citizens group. After the wetlands appeal is resolved, MWRA plans to award a Design/Build contract to complete the project.

Scope

Sub-phase	Scope
EIR/Conceptual Design/OR	Completion of an Environmental Impact Report, Conceptual Design and wetlands permitting. Preparation of Design/Build contract scope and specifications and technical support throughout Design/Build process.
Design/Build Field Oversight	Field oversight and administration of the Design/Build contract.
Design/Build	Design/Build of a 20 million gallon covered storage facility.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$35,956	\$1,446	\$34,510	\$165	\$213	\$3,553	\$10,992	\$10,876	\$8,876

Project Status 11/04	4.2%	Status as % is approximation based on project budget and expenditures. Design/Build Notice-To-Proceed presently scheduled for November 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$32,830	\$35,956	\$3,126	Jul 08	Sept 08	2 ms	\$31,488	\$25,799	(\$5,689)

Explanation of Changes

- Inflation adjustment due to new ENR index, and schedule extended to coordinate with permit appeal process.

CEB Impact

None identified at this time.

S. 604 MetroWest Water Supply Tunnel

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To provide transmission redundancy for the Hultman Aqueduct ensuring reliable water delivery and providing sufficient hydraulic capacity to support the new Walnut Hill Water Treatment Plant and covered storage distribution facilities. This project consists of construction of a 17.6-mile deep rock tunnel from Shaft D in Marlborough to Shaft 5 of the City Tunnel in Weston, and to Shaft W in Weston, as well as the construction of a covered storage facility at Loring Road in Weston. Also includes construction of shafts and valve chambers for connections of Shaft 4 in Southborough and to the Norumbega Covered Storage facility.

Project History and Background

Provision of adequate transmission capacity is a critical component of MWRA's Integrated Water Supply Improvement Program. MWRA's water delivery depends on a system of tunnels and aqueducts that transport water from the Quabbin and Wachusett Reservoirs to the distribution reservoirs in western metropolitan Boston. The existing tunnels and aqueducts are deficient in several respects. First, the transmission system is unable to supply sufficient hydraulic capacity during peak flow periods, leading to pressure deficiencies in all high service areas during the summer months. Second, key sections of the transmission system, such as the Hultman Aqueduct and the Southborough Tunnel, rely on a single conduit. In the event of failure of any of the major transmission sections, the remaining waterworks system could not meet the demand for water.

Construction of the MetroWest Water Supply Tunnel and its extension to the Weston Aqueduct Terminal Chamber will provide the critically needed minimum level of transmission redundancy for the Hultman Aqueduct. In the future, enhancements and improvements to the reliability of the City Tunnel and the City Tunnel Extension will be planned as part of the Metropolitan Tunnel Loop project. This will also enhance system maintenance by allowing each major supply conduit to be taken out of service for inspection, cleaning, and repair.

In June 1989, MWRA began engineering work on reconstruction of the Sudbury Aqueduct. On May 9, 1990, the Board of Directors directed staff to put minimum effort into further study of the Sudbury Aqueduct reconstruction alternatives and maximum effort into study of the all-tunnel alternative. The advantages of tunneling included a large reduction in surface activities resulting in a reduced environmental impact, and the potential to obtain a large increase in water transmission capacity to enable the tunnel to supplant the Weston Aqueduct as well as provide redundancy to the Hultman Aqueduct. Other advantages included a higher pressure rating by constructing a tunnel deeper into rock, and the ability to construct along a straight line, reducing the overall length of the project by three miles.

In November 1990, the Board of Directors directed staff to eliminate the planned tunnel from Norumbega Reservoir to the Chestnut Hill Reservoir in favor of connecting to Shaft 5 of the City Tunnel and to the eastern end of the Weston Aqueduct. The connection will allow the Weston Aqueduct and Weston Reservoir to be taken off-line and used only for emergency supply as required by the Safe Drinking Water Act.

In December 1995, the Board of Director has authorized solicitation of bids on the first major construction contract of the MetroWest Tunnel project. In June 1996, a notice to proceed was issued on this contract, beginning the transition from design to construction of the project. In November 2003, the tunnel was placed in service.

Program Elements

The MetroWest Tunnel is 17.6 miles long with a 14-foot finished diameter. The first segment of the tunnel extends from the water treatment plant site at Walnut Hill on the Marlborough/Southborough line to Shaft 4 of the Hultman Aqueduct in Southborough. From there, the tunnel continues to a "WYE" connection east of Norumbega Reservoir,

and continues east from the "WYE" to Shaft 5 of the City Tunnel and northward to the Weston Aqueduct Terminal Chamber. The tunnel depth varies from 200 to 500 feet below ground surface along the alignment.

Following start-up of the MetroWest Tunnel and the Walnut Hill Water Treatment Plant, the Hultman Aqueduct will be inspected and rehabilitated. Surface distribution facilities, including piping, valve chambers, and risers will connect the tunnel to the Hultman Aqueduct and local community services. Intermediate connections between the MetroWest Tunnel and the Hultman Aqueduct will permit operation of segments of either the aqueduct or the tunnel interchangeably, allowing flexibility in the maintenance of the two conduits.

Scope

Sub-phase	Scope
Study	Study of the aqueduct/tunnel system to determine the best alternative to improve hydraulic capacity and create redundancy.
Construction- Sudbury Pipe Bridge	Rehabilitation of the Siphon Pipe Bridge at the Weston Aqueduct which experienced significant leakage.
Design/EIR-Tunnel-Engineering Services During Construction	Environmental impact report (EIR) process and design of the 17.6-mile long, 14-foot diameter tunnel. Construction support services, including environmental and safety compliance, claims assistance, contract administration, quality assurance testing, and community relations.
Construction: Western Tunnel Segment – CP1	Construction of the western portion of the tunnel and associated surface facilities. Shaft E was constructed at the Sudbury Dam and a tunnel was excavated 4.9 miles to Shaft D, located adjacent to the clear well of the Walnut Hill Water Treatment Plant (WHWTP). A riser shaft has been excavated to connect the tunnel to Southborough's Hosmer Pump Station and includes the surface piping facilities necessary to bring water from the Wachusett Reservoir.
Construction: Middle Tunnel Segment – CP2	Construction of approximately 11.9 miles of tunnel between Southborough and Weston. Construction was staged from Shaft L, located at a sand and gravel pit in Framingham, where a permanent connection to the Hultman will be constructed. Along the alignment, four small-diameter shafts have been constructed for community connections to Framingham and Weston. The western reach of the Middle Tunnel Segment portion of the tunnel terminates at Shaft E. The eastern reach terminates at the "WYE" where it meets the East Tunnel Segment. Shafts NE and NW will be constructed on the northwest side of Norumbega Reservoir where surface work will include construction of valve chambers and surface piping to allow connections to the Hultman Aqueduct and Norumbega Reservoir. The design at Shaft N includes provisions for future connections to the Norumbega Covered Storage Facility and the proposed Metropolitan Tunnel Loop.
Construction: Shaft 5A- CP3	Shaft 5A was excavated near the intersection of Route 128 and the Massachusetts Turnpike.
Construction: Eastern Tunnel Segment – CP3A	Construction of the eastern portion of the tunnel. An approximately 4,400-foot long, 12-foot finished diameter tunnel was constructed from the Shaft 5A bottom through the "WYE" where it meets the Middle Tunnel Segment and on to Shaft W where a shaft connection to the Loring Road storage tanks was made.
Construction: MHD Salt Sheds – CP5	Massachusetts Highway Department (MHD) salt storage operations were relocated from the Shaft 5A site to a new, nearby location on MHD property on Recreation Road in Weston. This allowed demolition of the MHD salt sheds at the Shaft 5A site.
Testing and Disinfection – CP7	Pressure testing of the MWWST from Shaft E (west) to Shaft W and 5A, and disinfection and dechlorination of the entire tunnel from Shaft D to Shafts W and 5A, and final disinfection of the Norumbega Covered Storage tanks. Also includes the disinfection and dechlorination of the Wachusett Aqueduct and the piping connections through Walnut Hill to MetroWest Shaft D.

Sub-phase	Scope
Construction: Loring Road Covered Storage- CP8	Construction of surface facilities at the Shaft W site including a 20 million-gallon storage facility that replaces the function of the existing Weston Aqueduct/Weston Reservoir system, allowing the system to be taken off-line and placed on emergency stand-by status. The storage facility has been constructed as two concrete tanks partially buried in a hillside adjacent to Shaft W. Connections will be made under this contract at Shaft W to two WASM (1 and 2) low service mains and the WASM 4 high service main, as well as to the 7-foot diameter branch of the Hultman Aqueduct. Also includes rehabilitation of 4,100 linear feet of 60-inch pipe and four master meters.
Construction Management/RI	Full inspection of all construction activity, as well as provision of construction support services including environmental and safety compliance, claims assistance, contract administration, quality assurance testing, community relations, labor relations, engineering services during construction, and provision of technical assistance.
Hultman Study	Risk analyses to determine which leaks should be repaired now and a monitoring plan for leaks which presently do not threaten the integrity of the aqueduct.
Hultman Leak Repair	Test pit excavation and leak repair on the Hultman Aqueduct.
Hultman Repair Bands	Purchase of external repair bands to be installed as part of Hultman investigation and repair.
Hultman Investigation and Repair	Evaluation of various segments of the Hultman Aqueduct and installation of repair bands at major leak sites.
Land Acquisition	Easements along the 17.5-mile tunnel construction route, as well as land at the Shaft W and Shaft L sites.
Professional Services	Services such as construction safety, contractor audit, legal services, risk management consulting services, and other miscellaneous services.
Framingham MOU	Agreement to mitigate the impacts of the construction on the City of Framingham.
Weston MOU	Agreement to mitigate the impacts of the construction on the Town of Weston.
Southborough MOU	Agreement to mitigate the impacts of the construction on the Town of Southborough.
Local Water Supply Contingency Design/CA/RI and Construction	Design and implementation of a Water Supply Contingency Plan including the installation of new local mains where residential well supplies could be affected by tunnel construction.
Community Technical Assistance	Funds to assist communities with the redesign of utility plans.
Owner Controlled Insurance	Owner controlled insurance program providing workers' compensation, general liability, and pollution liability insurance for MetroWest construction.
Design CA/RI Hultman Interconnect CP6	Design CA/RI of the interconnections between the MetroWest Water Supply Tunnel and the Hultman Aqueduct as well as inspection and design of the rehabilitation of the aqueduct after it has been taken off-line. Inspection of Southboro Tunnel.
Construction: Hultman CP9	Construction of Valve Chamber E-3.
Interim Disinfection	Temporary disinfection related to CP-7 sub-phase.
Equipment prepurchase	Prepurchase two 10 feet diameter butterfly valves.

Sub-phase	Scope
Construction CP6A and 6B	Construction of interconnections between Metrowest Tunnel and the Hultman Aqueduct, and rehabilitation of Hultman Aqueduct including replacement or repair of air relief structures, blow off valves, culverts beneath the aqueduct; replacement of existing valves; and additional items to restore the aqueduct to safe and efficient operation after 60 years of service without an overhaul.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$703,384	\$621,293	\$82,091	\$7,228	\$5,212	\$8,535	\$2,885	\$20,889	\$44,569

Project Status 11/04	88.4%	Status as % is approximation based on project budget and expenditures. Placed Metrowest Tunnel into service in November 2003. Expect to award both the Hultman Rehab CP9 and Design CA/RI CP6 contracts in July 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$676,149	\$703,384	\$27,235	Dec-13	Jul-11	(29)	\$20,725	\$44,749	\$24,024

Explanation of Changes

- Updated cost estimates to reflect revised plan, costs and schedule from CP6 Preliminary Design Report.
- Schedule accelerated to utilize benefit of redundancy system reliability.

CEB Impact

Incremental operating costs are included in the FY05 CEB. No additional costs identified at this time.

S. 615 Chicopee Valley Aqueduct Redundancy

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To provide redundancy for water service for the three communities supplied by the Chicopee Valley Aqueduct (CVA) in case of a CVA failure or shutdown.

Project History and Background

The Chicopee Valley Aqueduct (CVA) supplies water to South Hadley Fire District No. 1, Chicopee, and Wilbraham. The 48-inch and 36-inch diameter aqueduct was built in 1949 of reinforced concrete pipe with an embedded steel cylinder. It is the only means of supplying these communities with water. The capacity of the aqueduct is 23 million gallons per day, which is sufficient to meet the communities' peak summer demand. It is currently not possible to perform routine maintenance without disrupting supply to these communities. However, if supply through the CVA were shut off upstream of Nash Hill Reservoir, Chicopee would be without water after two days, and South Hadley and Wilbraham would be without water even sooner. If the CVA were shut off downstream of Nash Hill Reservoir, Chicopee would be immediately disconnected from the CVA supply.

New construction under this project consists of a 9,000 feet long second barrel of the CVA from Nash Hill Reservoir to Chicopee of 30- to 36-inch diameter pipe and connections to South Hadley and Wilbraham from Nash Hill constructed of 16- to 20-inch pipe. With these new connections in place, the three communities will be connected to Quabbin Reservoir, Nash Hill Reservoir, or both in the event of a failure anywhere along the length of the aqueduct. Construction also includes rehabilitation of the Bondsville throttling station, and the Route 21 throttling station.

To address the upstream failure scenario, MWRA is implementing emergency response plans that include having quick access to spare materials and a contractor to expedite repairs. This project will complement that effort by providing additional mainline valves along the aqueduct that will help isolate manageable segments of the CVA; and by rehabilitating appurtenances such as meters, air valves, and blow-off valves. CVA meter connection improvements will be made for Wilbraham and South Hadley such that, in the event of an emergency, supply can be maintained from either Quabbin or Nash Hill Reservoir by isolating the damaged downstream or upstream section of the aqueduct for repair.

Scope

Sub-phase	Scope
Pipeline Redundancy – Planning	In-house planning of redundant pipelines and aqueducts for Chicopee, South Hadley Fire District # 1, and Wilbraham, and Bondsville construction.
Pipeline Redundancy – Design and Construction	Design, construction administration, resident inspection, and construction for CVA redundancy facilities.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$10,556	\$876	\$9,680	\$53	\$680	\$6,750	\$2,250		

Project Status 11/04	8.6%	Status as % is approximation based on project budget and expenditures. Construction delayed by permitting issues, but expected to begin by late FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$9,609	\$10,556	\$947	Dec 06	Mar 07	3 Mos.	\$8,786	\$9,733	\$947

Explanation of Changes

- Cost – Inflation adjustment for unawarded contracts resulted in overall budget increase.
- Schedule – Project delayed due to permitting issues.

CEB Impact

None identified at this time.

S. 601 Sluice Gate Rehabilitation

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

Completion of this project will improve the condition of and access to sluice gates used to regulate the release of water from upstream reservoirs and streams via aqueducts in accordance with legislative and flood control requirements. Motorized gates will replace manual gates and 12 facilities will be rehabilitated at Sudbury Reservoir, Framingham Reservoir, Spot Pond, and various locations along the Sudbury Aqueduct.

Project History and Background

MWRA operates and maintains sluice gates and facilities that house the gates at reservoirs and aqueducts throughout the waterworks system. The existing gates are typically 80 to 100 years old, are in poor condition, and must be operated by hand. In a Dam Safety Inspection Report by the Army Corps of Engineers, the sluice gates at Wachusett Reservoir and the four Sudbury System Reservoirs were cited as needing repairs to restore operability for flood control use. Failure to make repairs could lead to the Corps downgrading dam safety assessments at these sites. In addition, the structural condition of some of the facilities is such that they are unsafe for access by MWRA personnel for operation and maintenance purposes. To prevent further deterioration and to ensure safe access to and reliable operation of the sluice gates, MWRA is rehabilitating the facilities in conjunction with the replacement of the gates.

Phase 1 included the installation of motorized operators, upgrade of the gate houses and replacement of gates and sliding tracks at Sudbury Reservoir, Spot Pond, and Framingham Reservoir 3. The construction was completed in 1993. Design for Phase 2 rehabilitation began in April 1998. The design is 100% complete and includes input from the Boston Landmark Commission Order of Conditions and the Massachusetts Historical and Chestnut Hill Historical Commissions. Construction for Phase 2 Rehabilitation began in September 2003 and is scheduled to be completed in September 2005.

Scope

Sub-phase	Scope
Design/CS/RI and Construction 1	Design and construction of the installation of motorized operators, upgrade of the gate houses, and replacement of gates and sliding tracks at Sudbury Reservoir, Spot Pond, and Framingham Reservoir 3.
Design/CS/RI and Construction 2	Design, construction services, and resident inspection for Phase 2. Installation of motorized operators, upgrade of 10 gatehouses, and replacement of 30 gates at various distribution reservoirs.
Design and Construction – Stop Planks	Design and construction of stop planks at all sites required to de-water wet wells before sluice gates can be installed.
Construction – Sudbury Toe Drain Repair	Payment to the DCR for construction of new toe drains, filter blanket, and pressure relief wells, repair or abandonment of existing toe drains, and repair of the stone masonry spillway, dam crest roadway, gate house, and wing walls at the Sudbury Dam.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$9,787	\$6,191	\$3,596	\$1,937	\$3,021	\$521	\$53		

Project Status 11/04	89.0%	Status as % is approximation based on project budget and expenditures. Sudbury Toe Drain Repair and Stop Plank construction are complete. Phase II construction is 69.2% complete. Expect completion in Sept 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$9,621	\$9,787	\$166	Sept 06	Sept 06	-	\$5,366	\$5,532	\$165

Explanation of Changes

- Cost – Increased inflation index applied to unawarded contracts to adjust to FY06 dollars.
- Other increases due to expected change order to remove and dispose of wood roof truss and replace with steel truss system.

CEB Impact

None identified at this time.

S. 616 Quabbin Transmission Rehabilitation

Project Purpose and Benefits

- Provides environmental benefits
- Extends current asset life
- Improves system operability and reliability

To ensure continued reliable delivery of high quality water to MWRA customer communities through inspection, evaluations, and rehabilitation as needed of the aging Quabbin Tunnel. The hydraulic control facilities of the Quabbin Tunnel are 70 to 80 years old and badly in need of renewal and upgrade. This is one of six projects that will upgrade the older working parts of the aqueduct-tunnel system and improve its interconnections with the distribution piping systems it supplies. Based on the findings and recommendations of this inspection phase, MWRA will add design and construction phases at a later date.

Project History and Background

The Quabbin Tunnel was constructed in two phases. In the first phase, the Wachusett-Colebrook Tunnel was constructed in the 1920s to permit diversion of flow from the Ware River to Wachusett Reservoir. The remainder of the tunnel and the Quabbin Reservoir were constructed in the 1930s. Hydraulic facilities associated with the tunnel are 70 to 80 years old and badly in need of renewal and upgrade. This project is for the inspection of the major components of the Quabbin Transmission System to assess existing conditions, determine the reliability of the system operation, identify the need for improvements and repairs, provide cost estimates, and dedicated controls for remote monitoring and operation. A final report on the inspection results will be due in 2004. MWRA will add design and construction phases as needed improvements are identified. One critical component of the Quabbin Tunnel, the pressure-reducing valves at the Oakdale Power Station, has already been targeted for immediate replacement. These valves are in poor condition. Due to their important function of reducing hydraulic head to allow water from the Quabbin Reservoir to flow into Wachusett Reservoir, replacement of the Oakdale Valves is a high priority.

Scope

Sub-phase	Scope
Facilities Inspection	Assessment of existing conditions; update of infrastructure rehabilitation evaluation; identification of improvements/repairs/upgrades including instrumentation and controls for remote monitoring and operation; establishment of priorities for repairs, and preparation of cost estimates.
Oakdale Valves Phase 1	Study, design, and construction for the rehabilitation/replacement of two valves and miscellaneous support equipment at the Oakdale facility.
Equipment Pre-Purchase	The two large butterfly valves (84 inch and 72 inch) and the fixed orifice valve (48 inch), that will be needed in Phase I Valve Rehabilitation, require 6 to 10 months to fabricate and must be pre-purchased so the valves will be available for installation.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$5,731	\$0	\$5,731	\$0	\$650	\$3,750	\$975	\$150	\$206

Project Status 11/04	5.6%	Status as % is approximation based on project budget and expenditures. Facilities Inspection, Phase I Oakdale Valves study and design, and equipment prepurchase all under way in FY05 with construction scheduled to begin October 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$13,350	\$5,731	(\$7,619)	June 10	June 10	-	\$5,025	\$5,525	\$500

Explanation of Changes

- Eliminated phases for Phase II Oakdale Valves work as part of strategy to contain rate increases

CEB Impact

None identified at this time.

S. 617 Sudbury and Weston Aqueduct Repairs

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To ensure continued reliable delivery of high quality water to MWRA customer communities through study, design, and implementation of repairs to the Sudbury and Weston Aqueducts. These backup systems are both more than 100 years old, and need to be ready for emergency use.

Project History and Background

This project includes the inspection of the Sudbury and Weston Aqueducts in preparation for future repairs. These aqueducts are 120 and 100 years old, respectively, and are in need of renewal and upgrade. They are critical back-up facilities for the City Tunnel and the Sudbury Reservoir emergency supply. The project will start with an inspection phase, with construction phases to be added later as needed improvements are identified. The Sudbury Aqueduct will be inspected first, followed by the Weston. The inspections will identify the need for follow-up work such as repair of aqueduct walls, stream crossings, blow-off valves, and waste weirs in addition to improving security at hatches and building access points.

Scope

Sub-phase	Scope
Hazardous Materials	Remove contaminated sediment from aqueduct
Sudbury and Weston Aqueduct Inspection	Inspection of the Sudbury and Weston Aqueducts to identify need for future repair work.
Sudbury Short-Term Repairs	Repairs needed in order to prepare the Sudbury Aqueduct for short-term use (flow test and emergency activation). Recent study indicated that three main issues need to be addressed before any short – term use: remove contaminated sediment, repair heaved inverts and clean out siphon to prepare Aqueduct.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$3,648	\$263	\$3,385	\$3	\$463	\$2,922			

Project Status 11/04	7.3%	Status as % is approximation based on project budget and expenditures. Phase 1, removal of hazardous on-site materials nearly complete. Inspection of Weston and then Sudbury aqueducts followed by short-term Sudbury repairs beginning in FY06.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$40,086	\$3,648	(\$36,437)	Nov 14	Dec 05	(109) mos.	\$626	\$3,388	\$2,762

Explanation of Changes

- Cost – Revised project scope. Eliminated Sudbury Aqueduct design and construction work from the project as part of strategy to contain rate increases.
- Schedule – Project completion shifted back 109 months to December 05 due to the elimination of longer-term Sudbury Aqueduct work.
- Spending – New subphase for Sudbury Aqueduct short-term rehab and repairs of \$2.5 million will occur during next few years.

CEB Impact

None identified at this time.

S. 620 Wachusett Reservoir Spillway Improvements

Project Purpose and Benefit

- Extends current asset life
- Improves system operability and/or reliability.

Project will provide the necessary spillway improvements to the Wachusett Reservoir Dam including upgrading the existing flashboards regulating the reservoir water level and improving its storage capacity.

Project History and Background

The Wachusett Reservoir Dam is more than 100 years old. Previously it was under the care and control of the Department of Conservation and Recreation (DCR), formerly the Metropolitan District Commission (MDC). However, MWRA assumed responsibility for capital improvements to this facility as of April 2004 per legislative approval of a Memorandum of Understanding between the MWRA and the Massachusetts DCR. This project will upgrade the existing flashboards that regulate the reservoir water level and improve its water storage capacity.

The Wachusett Reservoir Dam is part of the major dam system that will be inspected, tested and repaired if necessary under a separate project. However, more urgently, its spillway and dike on the north side of the reservoir have shown signs of wear and tear since the early 1990s. In 1992, the MDC had contracted GZA Consultant to design the needed repairs to the dike as well as a series of mechanically operated gates to replace the old flashboards (100 ft lower section) that are used to regulate the reservoir level and to control flood. However, MDC postponed this project due to difficulty in issuing bonds to finance the work.

At a minimum, the scope of this project will include inspection and reassessment of the conditions for the entire spillway (100 ft lower section as well as 350 ft upper section) and the North Dike. It will also cover review and revision of the twelve (12) year old design as necessary to bring the existing design plans and specifications up to date for construction. It is likely that the 350 ft long upper section of the spillway will also require rehabilitation so the proposed budget also includes funding for this work.

Scope

Sub-phase	Scope
Design and Construction	Covers inspection and reassessment of the spillway design and rehabilitation of the spillway.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$8,200	\$0	\$8,200	\$0	\$0	\$46	\$554	\$2,950	\$4,650

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Expect to award design contract in April 2006. Expect to commence construction by October 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$8,200	\$8,200		May-09		\$0	\$3,550	\$3,550

Explanation of Changes

- New project in Proposed FY06 CIP.

CEB Impact

None identified at this time.

S. 619 Winsor Dam Repair

Project Purpose and Benefits

- Extends current asset life
- Improves system operability and reliability

This project will repair the Winsor Dam to include upgrading the existing flashboards regulating the reservoir water level and improving its water storage capacity.

Project History and Background

The Winsor Dam (Quabbin Reservoir) is more than 60 years old. Previously it was under the care and control of the Department of Conservation and Recreation (DCR), formerly the Metropolitan District Commission (MDC). However, MWRA assumed responsibility for capital improvements to this facility as of April 2004 per legislative approval of an Memorandum of Understanding between the MWRA and the Massachusetts DCR. This project will upgrade the existing flashboards that regulate the reservoir water level and improve its water storage capacity.

This project will provide a review of the recently completed existing design specifications and drawings that were produced by the Department of Conservation and Recreation (DCR), construction of the repairs to the dam, and contract administration and resident inspection during construction. Work will include repairs to the spillways and toe drain area as well as piezometer installation.

Scope

Sub-phase	Scope
Design and Construction	Review, design and construction for repairs to the Winsor Dam.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$1,200	\$0	\$1,200	\$0	\$0	\$12	\$198	\$880	\$110

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Expect to award Design CA/RI in April 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$1,200	\$1,200		Jun-08		\$0	\$1,090	\$1,090

Explanation of Changes

- New project in Proposed FY06 CIP.

CEB Impact

None identified at this time.

S. 621 Watershed Land

Project Purpose and Benefit

- Fulfills regulatory requirement.*
- Provides water quality benefits.*
- Continues to improve public health.*

Acquire, in the name of the Commonwealth, parcels of real estate or interests in real estate that are important or critical to the maintenance of water quality in MWRA water supply sources and the advancement of watershed protection.

Project History and Background

The Watershed Protection Act (WsPA) regulates land use and activities within critical areas of the Quabbin Reservoir, Ware River and Wachusett Reservoir watersheds for the purpose of protecting the quality of drinking water. Since the passage of WsPA in 1992, watershed lands had been purchased by the Commonwealth through its bond proceeds. The MWRA was then billed for and, over the years, paid increasing percentages of the debt service on those bonds, eventually reaching 100% of the debt service.

Since 1992, land acquisition has evolved into program-status and is a significant component of the Watershed Protection Plans for Quabbin Reservoir/Ware River and Wachusett Reservoir. Land in the watersheds undergoes analysis by the Land Acquisition Panel (LAP), which is comprised of Department of Conservation and Recreation (DCR) and MWRA staff. The LAP analyzes critical criteria for protection of the source water resources, including presence of streams and aquifers, steep slopes, forest cover, and proximity to the reservoirs. Parcels are ranked as to their value to the water supply system and, when the desirable parcels become available, are pursued through the LAP for acquisition through a “friendly taking” in fee or conservation restriction. LAP maintains an active list of parcels to pursue as seller and LAP interest, and funding availability, exist to support acquisition.

Under the revised Memorandum of Understanding between MWRA and DCR, executed April 2004, MWRA will utilize its own bond issuances for the purpose of acquiring, in the name of the Commonwealth, parcels of real estate or interests in real estate for the purpose of watershed protection. At its December 15th meeting, the MWRA Board of Directors approved the use of MWRA bond proceeds for such purpose.

Scope

Sub-phase	Scope
Land acquisition.	Acquire parcels of real estate or interests in real estate critical to protection of the watershed and source water quality.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$9,000	\$0	\$9,000	\$0	\$4,500	\$4,500	\$0	\$0	\$0

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. MWRA expects to purchase land in FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$9,000	\$9,000	-	Jun-06	-	0	\$9,000	\$9,000

Explanation of Changes

- New Project in Proposed 06 CIP.

CEB Impact

None identified at this time.

S. 622 Cosgrove/Wachusett Redundancy

Project Purpose and Benefit

- ☑ Improves system operability and/or reliability.
- ☑ Provides environmental benefits
- ☑ Extends current asset life
- ☑ Contributes to improved public health

Provides a detailed risk assessment of the Cosgrove Tunnel and evaluation of the Wachusett Reservoir Bypass.

Project History and Background

The Cosgrove Tunnel was inspected by video in December 2003. Longitudinal and circumferential cracks in the tunnel liner were observed. The inspection report concluded that these cracks should be repaired in the near future. The report further recommended that a detail risk assessment (risks, costs to repair, etc) be undertaken including the evaluation of various tunnel linear repair methods and their associated costs. This project will follow the recommendations of the inspection study and include a detailed risk assessment and evaluation of repair methods. It will also include an evaluation of the level of redundancy needed to provide water to the Walnut Hill Treatment Plant.

Scope

Sub-phase	Scope
Cosgrove Tunnel Alternatives Study	Detailed risk assessment of the Cosgrove Tunnel and evaluation of the Wachusett Reservoir Bypass.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$500	\$0	\$500	\$0	\$0	\$0	\$500	\$0	\$0

Project Status 11/04	0%	Status as % is approximation based on project budget and expenditures. Expect the study to commence by June 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$500	\$500		May-07		\$0	\$500	\$500

Explanation of Changes

- New project in Proposed FY06 CIP.

CEB Impact

None identified at this time.

S. 677 Valve Replacement

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To retrofit approximately 500 blow-off valves and replace several hundred main line valves within the pipeline distribution system. Blow-off valve retrofits eliminate cross-connections into sewers or drainage piping. Main line valve replacements improve MWRA's ability to respond to emergency situations such as pipe breaks and provide tight shutdown for pipeline construction projects. Faster responses reduce negative impacts on customers. Combining the two valve replacement efforts reduces the need for repeat construction at sites and alleviates traffic impacts, re-paving needs, and other site-specific issues.

Project History and Background

MWRA owns and operates nearly 300 miles of distribution pipeline, which contain approximately 767 blow-off valves and 1,160 main line valves. Some blowoff valves are cross-connected into sewers or drainage piping. To ensure there is no chance of contamination, DEP requires retrofitting of the blow off valves to provide air gaps to ensure that non-potable water cannot reach the potable water lines. In addition, many of the main line valves in the system are significantly beyond their original design life. Many of these are either inoperable or inadequate and require replacement, repair or retrofitting.

However, significant progress has been made in the last several years in correcting the cross connections at the blowoffs and in replacing defective main line valves and adding new valves to improve operations throughout the system. The valve replacement program continues this process. MWRA utilizes in-house crews and outside contractors to replace several blow off and main line valves every year, both as part of the Valve Replacement Program and pipeline rehabilitation contracts. MWRA anticipates completion of Phase 5 Valve Replacement in July 2005 and commencement of Phase 6 construction in February 2006.

Scope

Sub-phase	Scope
Design/Phase 1	Design of valve replacements, setting priorities based on the level of urgency or risk associated with each valve, and scheduling work on valves that would not otherwise be replaced during upcoming pipeline rehabilitation projects.
Construction - Phase 1	Purchase and installation of 27 blow-off valve retrofits.
Construction - Phase 2	Purchase and installation of ten blow-off valve retrofits and ten main line valve replacements.
Construction - Phase 3	Purchase and installation of ten blow-off valve retrofits and 12 main line valve replacements; rehabilitation of two meters.
Construction - Phases 4-6	For each phase, purchase and installation of blow-off valve retrofits and main line valve replacements, and rehabilitation of miscellaneous meters. Phase 4 Contract included 12 main line valves, 10 blow-off retrofits, 2 check valves, and the rehabilitation of 2 meters. Phase 5 Contract includes 10 blow-off valve retrofits and 13 main line purchase. Phase 6 includes 6 blow-off valve retrofits, 13 main line valve replacements and rehabilitation of one meter.

Sub-phase	Scope
Equipment Purchase	Purchase of approximately 20 main line valves per phase for ten phases for replacement work to be done by in-house staff. Also includes the cost of line stops associated with this work.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$14,502	\$6,150	\$8,352	\$484	\$1,409	\$1,333	\$2,366	\$651	\$2,592

Project Status 11/04	49.4%	Status as % is approximation based on project budget and expenditures. Phase I-4 are complete. Final design for Phase 5 complete with NTP for construction issued March 2004 with restoration scheduled for Spring 2005 with substantial completion in July 2005. Remaining Phases 6 and 7 scheduled for completion in May 2007 and May 2010, respectively.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$14,048	\$14,502	\$454	May 10	May 10	-	\$6,180	\$6,243	\$63

Explanation of Changes

- Cost – Expected change orders for additional work to replace 36" valve, corrosion control testing and revised estimates based on Preliminary Design. Inflation adjustments on unawarded contracts reflecting new ENR index also contribute to project increase.

CEB Impact

None identified at this time.

S. 712 Cathodic Protection of Distribution Mains

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To evaluate the condition of approximately 30 miles of steel pipelines and determine the feasibility of upgrading or installing cathodic protection systems to protect pipelines from corrosion.

Project History and Background

Approximately 60 miles or 23% of MWRA's waterworks pipelines ranging from 24 inches to 60 inches in diameter are made of steel and are particularly subject to corrosion from acidic soils, fluctuating groundwater levels (especially where the groundwater is saline), and stray electrical currents. These steel pipelines are located in 26 of MWRA's 46 water communities.

Cathodic protection reduces deterioration of steel pipelines, thereby increasing pipeline life and deferring the need for replacement. Without proper cathodic protection, pipeline leaks and failures increase, causing potentially costly property damage and possible loss of service to customers.

Some sections of MWRA's existing steel pipes were originally equipped with cathodic protection systems intended to reduce the effects of corrosion. Other steel pipelines had cathodic protection systems installed sometime after the original pipe installation. Still other sections of steel pipeline have never received cathodic protection.

Scope

Sub-phase	Scope
Planning	Evaluation of the condition of the steel pipelines, identification of areas of rapid corrosion due to stray currents, and design and installation of corrosion test stations.
Test Station Installation 1 to 4	Installation of approximately 415 test stations at approximately 400-foot intervals. Wires will be attached to the pipes and to reference anodes to collect test data. Upon completion of the four test contracts, planning and engineering staff will set priorities and determine the scope of rehabilitation work needed to ensure cathodic protection of the pipelines.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$1,706	\$141	\$1,655	\$0	\$100	\$299	\$0	\$0	\$1,257

Project Status 11/04	7.9%	Status as % is approximation based on project budget and expenditures. Project Planning Phase complete with Test Station Installation I to begin in late FY05. Test Station Installations 2 – 5 will continue through 2016.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$1,668	\$1,796	\$129	May-11	May-16	61 Mos.	\$387	\$399	\$12

Explanation of Changes

- Cost – Increase due to updated inflation index applied to unawarded contracts to adjust for new ENR.
- Schedule shifted as part of strategy to contain annual rate increases.

CEB Impact

None identified at this time.

S. 678 Boston Low Service Pipe and Valve Rehabilitation

Project Purpose and Benefit

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To improve the condition and operability of the pipelines comprising the Boston Low Service System. These unlined, cast iron pipelines are more than 120 years old. The mains have numerous non-functional valves, and have experienced frequent breaks. Improvements include some pipeline replacement, cleaning and lining, and selective abandonment of segments that are no longer needed.

Project History and Background

The Boston Low Service network serves downtown Boston and surrounding areas. Water delivered by this network accounts for 15% of MWRA use. The Boston Low Service System includes more than 20 miles of 36 to 48-inch diameter cast iron pipe. The pipes were laid in the 1800s before the advent of heavy vehicles. The pipes are subject to a disproportionate number of major breaks because of their age and surface loading in excess of design strength. Pipe breaks result in service disruptions, loss of water, property damage, and even collapse of street pavement. During a pipeline repair, the broken section is isolated by closing valves on either side of the break to shut off the water and prevent major water loss. More than 40% of the isolation valves on these pipelines are not operational and not repairable because of their age. Their condition inhibits MWRA's ability to shut down the lines quickly during an emergency. Rehabilitation of the pipelines and replacement of the valves will improve service reliability, reduce the risk of property damage, and improve water conservation by reducing leakage.

Scope

Sub-phase	Scope
Study – Pipe	Evaluation of the structural integrity of the pipelines, the condition of the bedding material, and the extent of pipe corrosion. Study revealed that approximately 10.6 miles of pipeline required either cleaning and/or cement-mortar lining with internal seals installed at pipe joints or other rehabilitation. Three pipelines with a total length of 3.7 miles will be filled with a sand and cement slurry and then abandoned.
Design/CS	Design and construction services for the rehabilitation and/or abandonment of Clinton Road and Boylston Street lines.
Design/CS Beacon St	Design and construction services for the rehabilitation and/or abandonment of Beacon Street lines, the Beacon/Longwood line, the Harvard Street line, and sections of the East and West Spot Pond Supply Mains in Brookline.
Phase 1 – Equipment Pre-purchase	Equipment purchases for the replacement of valves and other appurtenances near the Chestnut Hill Reservoir Gate House.
Construction – Clinton Road and Boylston Street	Sliplining of the Clinton Road line and rehabilitation and/or abandonment of Boylston Street lines.
Construction – Beacon Street	Rehabilitation and/or abandonment of the Beacon Street lines, the Beacon/Longwood line, the Harvard Street line, and sections of the East and West Spot Pond Supply Mains in Brookline.
Test Pits	Exploratory excavations completed in Brookline to expose cast-iron pipes at ten sites considered representative of conditions in the overall Boston Low Service System. MWRA staff completed work.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$23,840	\$23,616	\$224	\$288	\$224	\$0	\$0	\$0	\$0

Project Status 11/04	99.3%	Status as % is approximation based on project budget and expenditures. Project is substantially complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$23,873	\$23,840	(\$33)	Sep-03	Sep-03	None	\$545	\$512	(\$33)

Explanation of Changes

- Project substantially completed.

CEB Impact

No additional impacts identified at this time.

S. 730 Rehabilitation of Weston Aqueduct Supply Mains (WASM)

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To improve the condition and carrying capacity of these major supply lines and the quality of the water supplied to the communities in the Low, High, Intermediate, and Extra High pressure zones. Timely rehabilitation will reduce the costs of replacing corroded pipes, reduce red water and chlorine tastes, and improve water pressure.

Project History and Background

MWRA's tunnels and aqueducts bring water to the metropolitan area from the supply reservoirs in central Massachusetts. In Weston, where the existing Hultman Aqueduct and the future MetroWest Tunnel end, the water is still miles away from most customers. Together, the City Tunnel and the four Weston Aqueduct Supply Mains (WASMs) carry the water this final distance. When the rehabilitation of the WASMs is complete, they will transmit about one-third of the water to MWRA's service areas, and the City Tunnel will carry the remaining two-thirds. The WASMs are now the only means of conveying water to the city in the event of a problem with the City Tunnel. The Sudbury Aqueduct can deliver non-potable water during extreme emergency.

WASM 1 is a 48-inch diameter unlined cast iron pipeline about 38,700 feet long that was constructed in 1904. WASM 2, built in 1916, is a 60-inch diameter unlined cast iron pipeline about 34,800 feet long. WASMs 1 and 2 begin in Weston at the Weston Aqueduct Terminal Chamber (WATC) and run parallel through Newton, mostly along Commonwealth Avenue, ending in Boston near Chestnut Hill Reservoir. These pipelines supply water to the Boston Low pressure zone.

WASM 3 is an 11-mile steel pipeline that was installed in 1926 and 1927. This major supply line carries high service water from the 7-foot diameter branch of the Hultman Aqueduct to community connections and MWRA pumping stations serving the Northern High, Intermediate High, and Northern Extra High service systems. It also extends from the Hultman Aqueduct branch in Weston northeast to the Shaft 9 line in Medford and is the sole source of supply to 230,000 customers. WASM 4 was constructed in 1932 and is predominantly a 60-inch diameter pipeline consisting primarily of unlined steel with some pre-stressed concrete cylinder and cast iron sections. It extends 47,000 linear feet from Weston through Newton, Watertown, and Boston, and into Cambridge.

WASM 3 and WASM 4 were originally part of the Low Service System and conveyed water from the Weston Aqueduct to the Spot Pond Supply Mains. Upon completion of the Hultman Aqueduct, and its interconnection to the Weston Aqueduct Terminal Chamber in 1941, WASM 3 became part of the High Service System. With the addition of Newton to the metropolitan service area in the early 1950s, the western portion of WASM 4 was transferred to the High Service System as a temporary means of conveying water from the Hultman to portions of Newton and Watertown while still maintaining supply to the Spot Pond Supply Mains at their east ends through pressure reducing valves.

The WASMs are currently functioning below full capacity because of the build up of rust deposits and other matter along the pipeline walls, and undersized main line valves. Rehabilitation of these pipelines is necessary to restore their original carrying capacity and will include replacement of valves to provide more efficient operations and emergency response, elimination of tuberculation on the interior walls, and application of cement mortar lining to the interior pipe walls to prevent further internal corrosion and improve water quality.

The joints on WASM 1 and WASM 2 are constructed of bells and spigots filled with lead packing. The bell and spigot construction gives the joints some flexibility, but lead packed joints are more prone to failure compared to push-on or mechanical joints with modern synthetic gasket material. The existing joints are subject to potential failure because of deterioration, or pipe movement due to frost, settlement, or adjacent construction. Water leaking

from a failing joint can undermine the pipe, causing catastrophic failure. These failures can cause severe damage and disruption. WASM 2 also has insulating joints consisting of cast-iron pipes with wood fillers. These joints were intended to prevent electrical current from flowing along the pipeline but, in general, have been prone to failure and leakage.

When this project is complete WASM 1 and WASM 2 will connect to the new Loring Road tanks in Weston and will supply the Boston Low mains in Clinton Road, Beacon Street, and Boylston Street, which were rehabilitated as part of the Boston Low Service Rehabilitation project. With the completion of these projects the entire Boston Low Service System, which accounts for 15% of overall MWRA water demand, will have been rehabilitated from Weston to Boston.

There is no back up for WASM 3, which is the sole source of supply for the higher elevation portions of Waltham, Belmont, Arlington, Lexington, Bedford, and Winchester. This pipeline cannot be shut down for maintenance or rehabilitation until the initial segments of the Shaft 7 to WASM 3 connecting mains project are constructed. Next to a failure of the Hultman Aqueduct, analysis has shown that failure of WASM 3 is one of the highest risks in the MWRA distribution system. The Shaft 7 to WASM 3 Connecting Mains project will provide redundancy so that the main can be rehabilitated in phases.

Until recently, the middle portion of WASM 4 along Nonantum Road was shut down due to an excessive leakage rate. Nonantum Road construction (rehabilitation by sliplining and cleaning and lining) was completed in March 1997 and the rehabilitation of the western portion of WASM 4 was completed in March 2001, including meter upgrades. In order to remove the western portion of WASM 4 from service to allow it to be rehabilitated, MWRA provided alternative supplies for Watertown Meter 103 and Newton Meters 104 and 105. Meter 103 was upgraded and local water main improvements were built along Galen Street in Watertown. These efforts allow the other Watertown meters to temporarily supply the area normally served by Meter 103. These improvements were constructed as non-participating bid items (i.e., funded by MWRA) under a contract administered by the Massachusetts Highway Department. Alternative sources for the Newton northern pressure district, normally supplied by Meters 104 and 105, have been constructed. Two pressure reducing valves, one at Chestnut Street and one at Walnut Street, were installed to allow the southern pressure district that is supplied by the Commonwealth Avenue Pumping Station to temporarily serve the northern pressure district. The rehabilitation of the eastern portion of WASM 4 includes fixing a portion of the South Charles River Valley Sewer Sections 163 (D) and 164 (E), a 100+ year old brick sewer that is located directly below the water main. The rehabilitation of the eastern portion of WASM 4 is nearly complete.

WASM 4, when rehabilitated will continue to operate as a high service main from the Hultman Aqueduct Branch connection to Shaft W of the MetroWest Tunnel up to the pressure reducing valve facility at Nonantum Road. It will then continue as a low service main to its connection with the East and West Spot Pond Supply Mains. WASM 4 will also have the capability to operate completely as a low service main. This flexibility in operating conditions will allow WASM 4 to best support the system. When in the split high/low mode, WASM 4 will be able to support WASM 3 through the planned connecting mains during planned shutdowns or emergencies. The availability of this support has significantly reduced the cost of the New Connecting Mains-Shaft 7 to WASM 3 project.

Scope

Sub-phase	Scope
Design/CA/RI- Phases A and B/WASM 1 and WASM 2	Design, construction administration, and resident inspection for the rehabilitation of WASM 1 and WASM 2 (construction contracts 6280 and 6281).
Design/CA/RI- WASM 4	Design, construction administration, and resident inspection for the rehabilitation of WASM 4 (construction contracts 6203, 6175, 6312, 6176, and 6313).
Newton WASM 1 and WASM 2	Construction work on WASM 1 and WASM 2 along Commonwealth Avenue and WASM 1 through Centre Street to the Newton Commonwealth Golf Course (construction contract 6280).

Sub-phase	Scope
Boston WASM 1 & 2	Work on the remaining lengths of WASMs 1 and 2 and Master Meters 50 and 63 consists of rehabilitation of 8,640 linear feet of Section 4 of WASM 1 through the Newton Commonwealth Golf Course to Gatehouse #1, and rehabilitation of 11,450 linear feet of Sections 7 and 8 of WASM 2 between Grant Avenue and Cleveland Circle (construction contract 6281).
Design/CS/RI WASM 3	Design, construction administration and resident inspection for construction phases CP1, CP2, CP3 and CP4.
Waltham WASM3 – CP2	Rehabilitation of the westerly portion of WASM 3 generally located between the Hultman Branch and the Watertown Branch.
Construction – Belmont WASM 3 CP3	Rehabilitation of the middle portion of WASM 3 generally located between the Watertown Branch and the Belmont Pumping Station. Rehabilitation of the easterly portion of WASM 3 and a short segment of Section 51 generally located between the Belmont Pumping Station connection and the Shaft 9 line.
Construction - Arlington WASM 3 CP4	Rehabilitation of the westerly portion of WASM 3 generally located between the Hultman Branch and the Watertown Branch.
Section 28, Arlington- CP1	Rehabilitation of Section 28, the suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station.
Auburndale WASM 1,2 & 4	Cleaning and lining of 5,300 linear feet of 48-inch and 12,300 linear feet of 60-inch diameter mains of WASMs 1, 2 and 4 (Sections 2, 5, 13 and portions of 1) from Weston across the Charles River along Commonwealth Avenue to the Mass Pike in Newton, as well as replacement of existing line valves, air/vacuum valves and blow-off valves.
Newton WASM 2 & 4	Cleaning and cement lining of 21,200 linear feet of 60-inch pipe on WASM 4 (Sections 13 and 14) along Rowe, Webster, Elm and Washington Streets in Newton, and 5,800 linear feet of 60-inch pipe on WASM 2 (Section 2) along Commonwealth Avenue from Bullough Parkway to Grant Avenue. Rehabilitation of Meters 104 and 105, the Nonantum Road PRV and sliplining of 1,600 linear feet of pipe from Brooks Street to North Beacon Street.
Allston WASM 4 & W. Ave Sewer	Sliplining with some limited pipe replacement and cement lining of 10,538 linear feet of 60-inch pipe mostly along Western Avenue, 1,008 linear feet of 42-inch pipe mostly along Memorial Drive, 808 linear feet of twin parallel 30-inch pipes within the Western Avenue Bridge, replacement of Master Meter 100 and rehabilitation of the Charles River Valley Sewer to include installation of a cured-in-place liner in approximately 5,150 feet of sewer, as well as removal and disposal of sediment in the existing brick sewer, power washing, and rehabilitation of existing manholes and installation of new manholes.
Temporary Water Supply Plan	Temporary supply of water during WASM 3 construction work.
Section PCCP W-12	Replacement of approximately 2,100 linear feet of 60-inch Prestressed Concrete Cylinder Pipe (PCCP) on WASM 3 (Section 12) in Arlington. Includes replacement of air release manhole, replacement of two blow-offs and addition of new mainline butterfly valve with chamber and separate air release manhole.
WASM 3 SPL 12 PCCP Design	Design and construction administration services for the replacement of the PCCP pipe portion of WASM 3 (Section 12).

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$113,627	\$51,566	\$62,061	\$8,734	\$8,619	\$2,070	\$928	\$2,585	\$47,859

Project Status 11/04	48.6%	Status as % is approximation based on project budget and expenditures. Newton WASM 1 and WASM 2, Auburndale WASM 1, 2 & 4 and Newton WASM 2 & 4 are complete. As of November 2004, Allston WASM 4 & W. Ave Sewer was 98% complete and Boston WASM 1 & 2 was 68% complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$108,845	\$113,627	\$4,783	Jan 17	Jan 17	-	\$22,577	\$22,936	\$358

Explanation of Changes

- Project Cost increase due to inflation adjustments to reflect new ENR index for Design/CS/RI WASM 3, Waltham WASM3 – CP2, Construction –Belmont WASM 3 CP3, Construction - Arlington WASM 3 CP4, Section 28, Arlington- CP1.
- Also, award of Section PCCP W-12 contract greater than budget estimate.
- Slightly offset by award of WASM 3 SPL 12 PCCP Design contract at less than budget estimate.

CEB Impact

None identified at this time.

S. 732 Walnut Street and Fisher Hill Pipeline Rehabilitation

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To improve water quality and hydraulic capacity of a pipeline serving the City of Boston. Cleaning and cement mortar lining this cast iron main will enhance water quality, and enable this pipeline to meet maximum demand conditions.

Project History and Background

Through this project MWRA will rehabilitate the Walnut Street Pipeline. The work will include the rehabilitation of approximately 7,900 linear feet of 48-inch cast iron mains installed in 1895. The pipeline is located in Walnut Street in Brookline and serves Boston Meter 5. Due to internal corrosion, the hydraulic carrying capacity has been reduced. The hydraulic grade line at Meter 5 is not adequate at maximum demand conditions. In addition, unlined cast iron mains may be a significant contributor to diminished water quality within the distribution system. Rehabilitation through cleaning and cement mortar lining with internal joint seals will address this condition. The scope of work will include construction of a pressure reducing valve station.

Scope

Sub-phase	Scope
Construction	Design and rehabilitation of approximately 7,900 linear feet of 48-inch cast iron mains located on Walnut Street in Brookline, construction of a pressure reducing valve station, and the rehabilitation and relocation of Meter 5 serving Boston.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$3,141	\$1	\$3,141	\$1	\$8	\$15	\$2,260	\$843	\$15

Project Status 11/04	1.0%	Status as % is approximation based on project budget and expenditures. Final design work continues for Phase I. Construction of Phase I to begin in July 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$6,685	\$3,141	(\$3,543)	May-11	May-11	None	\$3,972	\$3,127	(\$846)

Explanation of Changes

- Eliminated Construction Phase II as part of strategy to contain annual rate increases.

CEB Impact

None identified at this time.

S. 683 Heath Hill Road Pipe Replacement

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To repair and improve pipelines and valves in the Southern High and Southern Extra High Service areas which are in poor condition. The targeted pipelines in Brookline and Boston have experienced numerous leaks and breaks, and their hydraulic performance is inadequate. Work includes a fast-track pipe replacement phase, and mostly cleaning and lining along the other pipe segments.

Project History and Background

These sections of pipeline near Heath Hill Road supply water to Brookline, Boston, and the Southern Extra High Service System. The severe corrosion on Sections 19, 20, 52, and 58 has resulted in 23 leaks during the last ten years. This project consists of the rehabilitation and/or replacement of these pipelines. Section 58 is 60 years old, and Sections 19 and 20 are 100 years old. All sections have extensive records of leaks and breaks and warrant rehabilitation or replacement. These 36-inch and 48-inch diameter cast iron and steel mains run parallel to the Dorchester Tunnel and serve as suction mains to the Hyde Park Pump Station which supplies the Southern Extra High System. Section 52, a 70-year old, 54-inch steel main, extends from the Chestnut Hill Pump Station to Sections 19, 20, and 58 and provides suction to the Newton Street Pump Station.

Scope

Sub-phase	Scope
Design/CS/RI Section 52 Phase 1	Design and related construction services for the replacement of 820 linear feet of pipe with new 54-inch diameter pipe and installation of a new butterfly valve.
Design/CS/RI Section 52 Phase 2	Design, construction services, and resident inspection for rehabilitation of Section 52.
Construction Section 52 New	Replacement of 820 linear feet of pipe with new 54-inch diameter pipe.
Construction Section 52 Rehabilitation	Cement mortar lining and sliplining of 11,500 linear feet of 54-inch steel pipe and removal and replacement of valves.
Design/CS/RI Sections 20 and 58	Design, construction administration, and resident inspection of rehab of sections 20 and 58 in the City of Boston.
Construction Sections 58,20,19	Rehabilitation of approximately 11,000 feet of 48-inch diameter and 10,000 feet of 36-inch diameter segments of Sections 19, 20, and 58. Also includes valve, meter, and vault construction at Shaft 7C to incorporate all hazardous material work at Shaft 7C into one contract.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$19,926	\$10,007	\$9,919	\$520	\$141	\$2,923	\$3,959	\$2,821	\$74

Project Status 11/04	50.9%	Status as % is approximation based on project budget and expenditures. Phase I is complete with only design and construction of Section 52 remaining to be completed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$19,047	\$19,926	\$878	Jun-09	Oct-08	(8) Mos.	\$8,971	\$10,363	\$1,393

Explanation of Changes

- Revised cost estimate for Section 52 Rehabilitation to reflect slip-lining costs.
- Accelerated schedule due to criticality of this project.

CEB Impact

None identified at this time.

S. 721 Southern Spine Distribution Mains

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To increase carrying capacity and improve valve operability along the large surface mains that run parallel to the Dorchester Tunnel and provide service to the Southern High and Southern Extra High systems. Currently these mains have serious hydraulic deficiencies and many inoperable valves. Hydraulic performance improvements are needed to provide redundancy for the Dorchester Tunnel. Work will include rehabilitation of more than 12 miles of large diameter pipeline.

Project History and Background

The Southern Spine Distribution Mains comprise the surface piping which parallels the Dorchester Tunnel. The mains begin in the vicinity of Shaft 7B in Brookline and end at the Blue Hills Reservoir in Quincy. The mains serve the Southern High and Southern Extra High System communities of Boston, Brookline, Milton, Quincy, Norwood, and Canton.

Because of the poor conditions of the valves, MWRA operations staff must frequently close several valves in order to shut down a line. This practice often results in closing more of the system than is otherwise necessary. Several of these pipelines are currently functioning at approximately 50% of their original carrying capacity due to the build up of rust deposits and other matter along the pipeline walls. In their present condition, these mains could not provide adequate service to users if the Dorchester Tunnel was taken off-line.

Scope

Sub-phase	Scope
Sections 21,43, 22 Design/CS/RI	Design, construction services, and resident inspection for Phase 1, including 48,000 linear feet of 24- to 48-inch main, and installation of 16,000 linear feet of 36- to 48-inch main. Rehabilitation to consist of cleaning and cement mortar lining of the interior pipeline walls, and replacement of the main line valves, blow-off valves, and appurtenances.
Section 22 South Construction	Rehabilitation of approximately 10,000 linear feet of existing 48-inch Section 22 North, one of four construction contracts Phase 1, and installation of 1,700 linear feet of new pipe.
Adams Street Bridge	Relocation of a pipeline made necessary by the reconstruction of this bridge by the MBTA.
Southern High Ext Study	Study to determine the feasibility of expanding water services to additional communities in the Southern High Service Area. Cost of the study and public participation was fully funded by the Commonwealth of Massachusetts.
Section 22 North Construction	Rehabilitation of 17,300 linear feet of existing 48-inch Section 22 South, one of four construction contracts Phase 1.
Sections 21 & 43 Construction	Rehabilitation of 1,000 feet of 24-inch lines and installation of 14,000 linear feet of new 36 to 48-inch pipe, one of four construction contracts Phase 1.
Contract 1 A Construction	Rehabilitation of 4,400 linear feet of Section 22 South.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$60,805	\$6,813	\$53,993	\$3,615	\$6,325	\$1,065	\$6,995	\$9,745	29,863

Project Status 11/04	18.1%	Status as % is approximation based on project budget and expenditures. The design for Phase 1 began in September 2000 and includes four construction contracts. Contract 1 has completed all piping work in the Blue Hills and Meter 334 is complete and operational. Section 22 South work (Contract 1A) has been slowed by excess water due to failure to achieve tight shutdown.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$62,805	\$60,805	(\$2,012)	Nov-14	Nov-14	-	\$24,130	\$27,745	\$3,615

Explanation of Changes

- Removed design and construction of Section 19 as part of strategy to contain rate increases.
- Revised schedule to reflect more likely pace of work.

CEB Impact

None identified at this time.

S. 714 Southern Extra High - Sections 41, 42, and 74

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To increase the hydraulic capacity of the mains that carry water to the Bellevue Tanks, which serve the Southern Extra High System. Because sections 41, 42 (80-year old cast iron mains), and 74 (45-year old pre-stressed concrete cylinder pipe) are severely limited in the pressures and flows they can convey, the Hyde Park Pump Station cannot operate efficiently. Improvements will include pipeline replacement and rehabilitation.

Project History and Background

Sections 41 and 42 were built in 1914 with unlined, cast-iron 20-inch pipe. Section 74 was built in 1951 with pre-stressed concrete cylinder pipe. These mains connect the Hyde Park Pump Station and the Newton Street Pump Station discharge pipeline (Section 77) to Bellevue Tanks 1 and 2. These pipe sections pass through the Hyde Park section of Boston and serve Norwood, Canton, Brookline, Milton, and Boston. They were installed prior to the construction of Bellevue Tank 2, which stands 25 feet higher than Bellevue Tank 1. Sections 41 and 42 and portions of Section 74 were not designed for the increased pressure caused by the higher elevation of Bellevue Tank 2. As a result, the Hyde Park Pump Station cannot be operated at full capacity unless the Tank 2 water level is extremely low. Because the Southern Extra High Service System has limited storage capacity, it is undesirable to have Tank 2 at a low level. Therefore, the pump station operates below capacity despite the fact that pressure in the system is barely sufficient to meet peak demand.

Because of the higher pressures created by Bellevue Tank 2, these pipes are susceptible to breaks. To alleviate this problem, this project will replace approximately 10,600 feet of Sections 41, 42, and 74 and rehabilitate approximately 5,700 feet of Section 74 with new valves and appurtenances. Construction was completed in September 2003.

Scope

Sub-phase	Scope
Design/CS/RI and Construction	Replacement of Sections 41 and 42 with 8,000 feet of new 24-inch diameter main, and a portion of Section 74 with about 2,700 feet of new 24-inch diameter pipe. Rehabilitation of 6,400 feet of 20-inch diameter main of Section 74.
Boston Paving	Payment to the City of Boston for paving work on city streets.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$4,486	\$3,536	\$950	\$977	\$950				

Project Status 11/04	79.4%	Status as % is approximation based on project budget and expenditures. Construction is complete with only closeout items, including resident inspection, outstanding. Overall project completion expected before end of FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$4,478	\$4,486	\$8	Oct-04	Oct-04	-	\$1,919	\$1,927	\$8

Explanation of Changes

- None

CEB Impact

None identified at this time.

S. 719 Chestnut Hill Connecting Mains

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To simplify the complex arrangement of old pipes near the Chestnut Hill pump stations for safety and operability. Also, create a connection between Shaft 7 of the City Tunnel and the Southern Distribution surface mains to provide redundancy along the Dorchester Tunnel. MWRA is restructuring the piping arrangement through a combination of constructing new pipelines, rehabilitating older pipe lines, sliplining abandoned aqueducts, replacing pressure regulating valves, replacing the emergency pumps at Chestnut Hill, and abandoning pipes and valves which are no longer needed for service.

Project History and Background

At Chestnut Hill the City Tunnel divides into two branches: the City Tunnel Extension going north to supply the Northern High System and the Northern Intermediate High System, and the Dorchester Tunnel, which goes south to supply the Southern High System and the Southern Extra High System. There are two shafts in this area: Shaft 7 on the City Tunnel, located immediately west of the Chestnut Hill Reservoir, and Shaft 7B on the Dorchester Tunnel, located immediately east of the reservoir. At each of these shafts two newer pipes extend to connect to the older pipelines of the Boston Low Service System, the Northern Low Service System, and the Southern High Service System.

The Southern High System can only be supplied from Shaft 7B. If the Dorchester Tunnel were to be out of service, it would be necessary to activate the Sudbury Reservoir System, transport water from there via the Sudbury Aqueduct (currently on standby) to the Chestnut Hill Reservoir (currently on standby) and utilize the newly constructed emergency pump station at Chestnut Hill to pump water from the reservoir to the Southern High System. This water would not be of acceptable quality and its use would require a boil order.

The older pipes in the area were originally designed to be supplied from the Cochituate and Sudbury Aqueducts, the Chestnut Hill Reservoir, or the Chestnut Hill High Service and Low Service pump stations. None of these facilities is presently in normal use, though the new underground pump station has replaced the Chestnut Hill stations. The pipe network is not only old and inordinately complex, but it is not designed to take water from the two tunnel shafts that are the present sources of potable supply. Portions of this pipe network have been rehabilitated and integrated into the present operation of the system. Considerable lengths of pipe with minimal or stagnant flow, which are a source of red water, have been abandoned. Some new pipe was added to better connect the two tunnel shafts with the surface pipe network. The interconnections between the potable water system and standby facilities, which are considered non-potable, have been rebuilt to eliminate the possibility of cross-connections during normal operation.

The High and Low Service pump station buildings at Chestnut Hill housed facilities which served four functions: emergency pumping, surge relief for the Boston Low System, level control for the Chestnut Hill Reservoir, and remote hydraulic operation of large valves on and near the site of the High Service station. Construction of a new underground pump station provides more reliable emergency pumping capacity and has enabled MWRA to abandon the pump station buildings and return them to the Commonwealth. Surge relief was provided in a new Shaft 7B pressure reduction chamber that also interconnects restructured piping. On-going preliminary design will relocate reservoir level control functions from Gate House No. 1. Gate House No. 2 has also been refurbished to provide supply to the new pump station. New valves have been constructed to replace the old hydraulic valves.

Scope

Sub-phase	Scope
Design/CA/RI and Construction – Pump Station Potable Connection	Construction of potable suction and discharge piping to the emergency pump station, restructuring piping to permit surplusing of Chestnut Hill pumping station site, elimination of potential cross connections with non-potable suction and discharge lines, reconstruction of the Shaft 7B PRV Station, upgrade of the Shaft 9A PRV station, rehabilitation of valves at Waban Hill Reservoir, and abandonment of the Ward Street Pumping Station and associated piping. Construction to provide potable low service suction to the new pump station and to restructure piping to permit surplusing of the historic pumping stations site. Completion of upgrades of facilities that also may be used during the Walnut Hill Water Treatment Plant startup at Shaft 7B, Shaft 9, and Ward Street.
Preliminary Engineering	Provide preliminary design services for the rehabilitation and upgrade of facilities so that MWRA is able to operate the water system during normal conditions and specific emergency scenarios.
Design/CS/RI and Construction – Emergency Pump Relocation	Relocation of the emergency pumping function and other minor facilities from the existing High and Low Service pump station buildings to a new 90-mgd underground pump station constructed adjacent to the Low Service building. The relocation enables MWRA to surplus these historic buildings. The new pump station has the capacity to pump 90-mgd from the Sudbury Aqueduct/Chestnut Hill Reservoir to the Southern High Distribution System.
Boston Paving	Payment(s) to the City of Boston for paving work provided.
BECo Emergency Pump Connection	Payment to Boston Edison Company for installation of electrical service to meet special requirements. Provision of the services eliminated the need to install a standby generator.
Equipment Pre-Purchase	Valve pre-purchase to support potable connection construction so that the Chestnut Hill Pump Station site could be returned to the Commonwealth of Massachusetts as surplus property.
Demolition of Garages	Demolition of garages prior to transfer of property to the Commonwealth, at request of state Department of Capital Asset Management.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$17,981	\$16,962	\$1,019	\$1,224	\$586	\$315	\$69	\$49	-

Project Status 11/04	94.6%	Status as % is approximation based on project budget and expenditures. The only remaining work for this project is the preliminary engineering for the final pipe connections. All other work is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$29,692	\$17,981	-\$11,711	Jun 09	Jun 08	-12 mos.	\$8,838	\$2,243	-\$6,595

Explanation of Changes

- Preliminary Engineering contract awarded at less than budget estimate.
- Deleted Construction–Chapter 149, Construction–Chapter 30 and Final Design/CA/RI sub-phases from the Proposed FY06 budget as part of strategy to contain annual rate increases.

CEB Impact

None identified at this time.

S. 704 Rehabilitation of Other Pump Stations

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Extends current asset life*
- ☑ *Results in a net reduction in operating costs*
- ☑ *Improves system operability and reliability*

To rehabilitate five active pump stations (Brattle Court, Reservoir Road, Hyde Park, Belmont, and Spring Street), each of which is more than 40 years old, and is overdue for renewal for safety, reliability, and efficiency reasons.

Project History and Background

MWRA's waterworks distribution system includes ten active pump stations. Extensive rehabilitation of the James L. Gillis, Newton Street, Lexington Street, and Commonwealth Avenue pump stations is complete. The Dudley Road Pump Station will not be rehabilitated because the station will be abandoned.

The Brattle Court, Reservoir Road, Hyde Park, Belmont, and Spring Street stations are between 40 and 80 years old and are overdue for major rehabilitation. The Brattle Court Pump Station serves the towns of Arlington, Lexington, Waltham, and Winchester. The Reservoir Road Pump Station serves Brookline. The Hyde Park Pump Station serves Boston, Milton, Norwood, and Canton. The Belmont Pump Station serves Belmont, Arlington, and Watertown. The Spring Street Pump Station serves Lexington, Bedford, part of Waltham, Belmont, Arlington, and Winchester. Some equipment at each pump station is inoperable, and system demand patterns have shifted during the life of the stations, requiring adjustments to pumping capacity. In addition, station improvements have not kept pace with changes in building and safety codes.

MWRA has divided construction into two contracts. The first contract (Construction - Interim Automation), based on a fast-track design and completed in February 2001, involved installation of SCADA systems at each station. Under the second construction contract, MWRA will complete rehabilitation of the five pump stations.

Scope

Sub-phase	Scope
Preliminary Design	Planning and conceptual design including inspection and evaluation of the HVAC systems, buildings, pipes, valves, and other systems at the pump stations; determination of the need for improvements; and preparation of a conceptual design report.
Design 1/CS/RI	Design for rehabilitation of five pump stations, including installation of SCADA systems.
Construction II and C	Installation of instrumentation at five pump stations to enable remote operation and monitoring.
Rehab of 5 Pump Stations	Rehabilitation of Belmont, Brattle Court, Spring Street, Hyde Park, and Reservoir Road pump stations, including installation of new mechanical, electrical and instrumentation systems, and building and site refurbishment, and SCADA installation.
Proprietary Equipment Purchases	Purchase of proprietary materials for SCADA system for Interim Instrumentation and Control.
Design 2 CS/RI	Final Design, construction services, and resident inspection for rehabilitation of five pump stations.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$22,811	\$3,819	\$18,992	\$144	\$521	\$944	\$3,527	\$7,022	\$6,978

Project Status 11/04	16.7%	Status as % is approximation based on project budget and expenditures. Design and rehabilitation of 5 pump stations (Belmont, Brattle Court, Spring Street, Hyde Park, and Reservoir Road) to begin in FY06 and FY07, respectively.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$22,136	\$22,811	\$675	Sep-10	Jan-11	4 Mos.	\$17,465	\$12,158	(\$5,307)

Explanation of Changes

- Increases due to updated inflation index applied to unawarded contracts.
- Partially offset by lower than budgeted award for Design 2 Construction Services and Resident Inspection.
- Adjusted schedule to reflect more likely pace of spending.

CEB Impact

None identified at this time.

S. 722 NIH Redundancy and Covered Storage

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

The Northern Intermediate High System lacks both pipeline redundancy and sufficient storage. The intent of this project is to identify and take measures that reduce both the risk and impacts of a pipeline failure within the Northern Intermediate High System. A new pipe will be constructed to provide adequate pressure to Melrose.

Project History and Background

This system serves Stoneham, Wakefield, Winchester and Woburn, with a total population of 200,000 and an average day demand of 8.7 million gallons. Reading and Wilmington are also considering application to MWRA for supplemental water. The current six million gallon capacity of MWRA's Bear Hill Tank in Stoneham is both insufficient to meet MWRA's 1993 Water System Master Plan goal of one day of emergency storage for the service area and is not advantageously placed within the NIH system.

Section 89 is a three mile, four foot diameter PCCP transmission main with no redundancy other than the low capacity, century old Section 29 that parallels its route for a short distance. The 10,500 foot length of Section 89 northwest of Spot Pond is constructed of Class IV wire which is of significant concern given experience with catastrophic failures elsewhere in the country. Section 29 is 96 years old and measures 6,300 feet in length and 24 inches in diameter. Because of its age and the fact that it is unlined, tuberculation has reduced the pipeline carrying capacity to approximately 45% of the original design capacity (C-value: 58). In the event of a shut down in Section 89, Section 29 may not be able to meet the minimum hydraulic needs of the area and additional chlorination to maintain water quality may be required.

Scope

Sub-phase	Scope
Preliminary Design & Environmental Review	Develop a concept level plan to evaluate options to reduce the risk and the impacts of potential failures in Sections 29 and 89. Measures may include (but are not limited to) valve improvements, pipeline redundancy, targeted emergency response plans, additional storage or other improvements that can be implemented within the NIH system.
Design/CS/RI and Construction Section 89/29 Rehab	This phase is subject to change pending completion of the Concept Plan. Staff believes that rehabilitation of Sections 89/29 may be problematic without the construction of a redundant pipeline. The Concept Plan will identify short-term measures to reduce the risk and impact of pipeline failures. This phase will cover the design and construction of short-term measures identified in the conceptual plan.
Section 29A Construction	Construction of 4,000 linear feet of 24-inch pipe from Section 29 to a new meter in Melrose. Construction may also include new main line valves, blow-off valves, and appurtenances. This project is being reevaluated as part of the Concept Plan and may change in the Final 06 CIP.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$12,126	\$0	\$12,126	\$0	\$75	\$1,004	\$1,306	\$806	\$8,957

Project Status 11/04	0.0%	Status as % is approximation based on project budget and expenditures. Project was combined with NIH Covered Storage. Concept planning will begin in 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$8,799	\$12,146	\$3,347	Nov-09	Dec-19	123 Mos.	\$2,840	\$3,191	\$351

Explanation of Changes

- Project combined with Northern High Intermediate Storage.
- Shifted schedule to reflect more likely pace of spending and to limit total MWRA spending to approved FY04-08 Spending CAP

CEB Impact

None identified at this time.

S. 689 James L. Gillis Pump Station Rehabilitation

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Fulfills a regulatory requirement*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To improve and modernize pumping facilities and equipment at the 90-year old formerly named Spot Pond Pump Station. These improvements directly benefit the Northern High and Northern Intermediate High systems, and improve MWRA's system-wide emergency response capabilities. Project components included rehabilitation of the pump station, installation of a new suction line, rehabilitation of discharge lines, construction of a sanitary sewer, and remediation of a contaminated land site. Completion of this project also enables MWRA to comply with Safe Drinking Water Act requirements.

Project History and Background

MWRA used the pump station at Spot Pond (built in 1905) to chlorinate and pump water from the pond to the Northern Intermediate High Service Area (Bear Hill Reservoir) and the Northern High Service Area (Fells Reservoir). Due to the age, condition, and critical need for the facility, rehabilitation of the pump station was a top priority for MWRA. Project work included refurbishment of the site, facility, and equipment, electrical and mechanical system upgrades, and installation of new equipment needed for improved facility operation.

In addition, MWRA has installed a new 14,500 feet, 60- to 72-inch diameter suction pipeline from the City Tunnel shaft in Malden to the rehabilitated facility, now known as the James L. Gillis Pump Station. The new suction line provides the station with water at a pressure head greater than the pond, significantly reducing pumping requirements, and eliminating the need to take water from Spot Pond, an uncovered water source, in compliance with the requirements of the Safe Drinking Water Act. As a result of completing this project, MWRA removed the open Spot Pond Reservoir from active service in 1997.

The new pipeline has improved system reliability by providing increased capacity to transfer water between the low and high service systems during emergencies and facilitates use of the new Fells Reservoir covered storage facility as the main distribution reservoir for the Northern High Service System. To provide adequate discharge capability, this project included rehabilitation of 7,525 feet of Sections 13 and 64. These 36-inch diameter mains extend from the pump station to the Fells Reservoir, and deliver water to Melrose and Stoneham. Because the structural integrity of these pipelines was determined to be sound, staff chose rehabilitation rather than replacement to improve carrying capacity, reduce friction and turbulence, and reduce the risk of water quality impairment. This project also included a major improvement to the layout of valves between the pump station and Fells Reservoir.

A 1,500-foot sanitary sewer is also being constructed to replace an existing septic system that serves the pump station and an adjacent house. Sewage from both facilities is pumped by a small ejector station to an MDC sewer on Pond Street in Stoneham. During design of the pump station rehabilitation, several environmental problems were discovered including contamination of soil, groundwater, and an adjacent brook. Under an emergency compliance order MWRA and DEP worked together to eliminate the sources of contamination at the pump station. MWRA is completing the cleanup process at the site, as required by DEP.

The Gillis Pump Station project also involved evaluation of the environmental conditions at the site and the nearby Spot Pond Brook area and the preparation and implementation of a remedial cleanup plan. This portion of the project is comprised of three phases and follows the Massachusetts Contingency Plan as specified by DEP. The first phase (study) consists of an environmental assessment to determine the type and extent of contamination. The second phase (Feasibility Study/Remedial Response Plan) includes a risk assessment to determine the level of risk to the environment and to the public, and the development of a plan of corrective actions. The third phase (Implementation of Remedial Response Plan) consists of performing the corrective action and restorative work specified in the remedial response plan.

The new pump station has been operable since the fall of 1997 and final site restoration was performed in the spring of 1999. Construction of the suction pipeline (Section 99) was completed in July 1998. The only remaining work is remediation of contamination on-site.

Scope

Sub-phase	Scope
Pump Upgrade, and Spot Pond Engine 29	Upgrade of existing units pumping to the Bear Hill Covered Reservoir. Installation of a new electric drive for Pump 29 to improve station reliability during the renovation period. Removal of a 24-inch check valve from the discharge line and replacement of a pipe spool piece.
Electrical Upgrade	Upgrade of electrical system to provide power for the 300-horse power and 500-horse power motors added for pumping to Bear Hill Reservoir. Included site preparation, masonry work, and installation of new conduits and control panels.
Construction Diesel Exhaust	Design and replacement of the exhaust systems on existing diesel pumps.
Design/CS/RI Pump Station	Design, construction services, and resident inspection for rehabilitation of the pump station including installation of new pump units and emergency generators, replacement of building systems, and building and site refurbishment.
Construction Pump Station Phase 1	Immediate rehabilitation of the pump station building including space for a new control facility, and refurbishing of five existing pumps, three diesel engines, and other ancillary equipment to maintain operations until completion of new equipment installation.
Construction Pump Station Phase 2	Installation of eight new pump units and two emergency generators, replacement of all mechanical and electrical systems, and complete building and site refurbishment.
Hydraulic Transient Analysis	Sizing and locating of air release and vacuum valves at points along distribution lines 13 and 29 to relieve potentially damaging pressures occurring during winter hammer.
Oil Control Plan	Development and implementation of an oil control plan to eliminate the sources of contamination in the floor drainage.
Drain Line Cleaning	Cleaning of floor drains to eliminate oil drainage into Spot Pond.
Study, Design/CS/RI, Construction Suction Pipe	Design and construction of a 14,500 linear feet, 60- to 72-inch diameter suction pipeline to pump water from the grade line of the City Tunnel to the Northern High Service System.
Construction Tudor Barn	Payment to the MDC for the restoration of a Tudor Barn located at the pump station site.
Woodland Road Pavement Improvements	Road stabilization along Woodland Road (north of Ravine Road), Pond Street, and South Street that were affected by the Gillis Pump Station and Fells Covered Storage projects
Pavement Highland Ave	Repaving Highland Avenue
Construction Rehab Discharge	Design and rehabilitation of 7,525 linear feet of 36-inch main for Sections 13 and 64.
Construction Sewer Pump Station	Construction of a 1,500 linear feet sanitary sewer conforming to DEP requirements to be constructed to facilitate abandonment of the septic system that serves the pump station and adjacent Botume House

Sub-phase	Scope
Environmental Assessment, Remediation Plan, and Remedial Action Plan	Determination of the nature and extent of contamination at the pump station and brook area, risk assessment to determine the level of risk to the environment and to the public, and development and implementation of a remedial action plan.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$34,147	\$33,275	\$872	\$166	\$113	\$130	\$625	\$3	

Project Status 11/04	97.5%	Status as % is approximation based on project budget and expenditures. Project is functionally complete with only environmental remediation action remaining.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$34,284	\$34,147	(\$138)	Sep-07	Sep-07	-	\$1,176	\$1,037	(\$138)

Explanation of Changes

- Paving costs for Woodland Road Improvements \$150,000 less than budgeted.

CEB Impact

No additional impacts expected at this time.

S. 713 Spot Pond Supply Mains - Rehabilitation

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To improve the condition, carrying capacity, and valve operability of the two long supply mains which extend north from Chestnut Hill to Spot Pond. These cast-iron mains, which are 100 years old, deliver water to the Northern Low Service System. Improvements involve a combination of replacement, cleaning and lining, and valve replacement depending on specific site conditions and needs. Improving these supply lines will reduce the need to take water from the City Tunnel to augment the Low Service System and improve the quality of water delivered to eight user communities. This project also includes the rehabilitation of approximately 10,000 feet of 36-inch steel, and 30-inch cast iron mains on Section 66 and Mystic Main 30.

Project History and Background

The East and West Spot Pond Supply Mains (SPSMs) serve the Northern Low Service Area, including portions of Brighton, East Boston, Charlestown, Chelsea, Malden, Medford, Somerville, and Everett. The lines are also designed to fully supply Cambridge during drought or emergency. The mains have historically supplied Spot Pond and subsequently the James L. Gillis Pump Station (formerly the Spot Pond Pump Station). With the closure of Spot Pond as a water supply source and the construction of the Spot Pond Suction Main (Section 99) as the primary supply to the Gillis Pump Station, the Spot Pond Supply Mains will serve as distribution mains to the eight communities and will provide emergency backup supply to the Gillis Pump Station. In the event Section 99 is out of service, the station would take suction directly from these mains, rather than from Spot Pond.

The East Spot Pond Supply Main consists of 61,000 linear feet of mostly 48-inch diameter pipeline which passes through Brookline, Boston, Cambridge, Somerville, Medford, Malden, Melrose, and Stoneham. The West Spot Pond Supply Main consists of 53,000 linear feet of 48-inch and 60-inch diameter pipeline that passes through Brookline, Boston, Cambridge, Somerville, Medford, and Stoneham. Portions of the SPSMs in Brookline, primarily on Beacon Street, are being rehabilitated under the Boston Low Service Pipe and Valve Rehabilitation project.

The carrying capacities of the 100-year old mains have been significantly reduced as a result of the build up of rust deposits (tubercules) and other matter along the pipeline walls, which also contributes to water quality deterioration in the Low Service System. The ability of the mains to withstand service pressures is drastically reduced in some areas due to exterior corrosion of pipes. In addition, inoperable or poorly operating valves along the line make isolation and re-routing of flow difficult to implement.

Section 67 is included in this project because it provides a connection between the East and the West Supply Mains from Section 11 at Porter Square in Cambridge to Section 4 at Union Square in Somerville. Section 67 consists of 6,900 linear feet of 48-inch diameter steel pipeline constructed in 1949. Rehabilitation of this main is needed because of the age of the pipe and the critical role of the main in providing flow to the East and West mains during shut downs for maintenance and construction.

For the same reason rehabilitation of approximately 8,100 linear feet of Section 57 has been transferred to this project. Section 57 also serves as an interconnection between the East and West mains, and is in need of replacement. In addition, work on a portion of Section 16W (Weston Aqueduct Supply Main 3) is now included with this project rather than with the Northern Low Service Pipeline Replacement project because of significant operational and geographic overlaps.

Internal lining of these mains to restore capacity and improve structural integrity, will ensure adequate peak and emergency flow to user communities, alleviate water quality deterioration, and provide emergency back-up capacity for the Northern High System via the Gillis Pump Station. MWRA's planned reconfiguration of the water distribution system provides for the Spot Pond Supply Mains to be fed from the City Tunnel Extension only during periods of peak demand, thus conserving tunnel supply for High Service use. Supply to the Low Service System

will be provided by Weston Aqueduct Supply Mains 1 and 2, which will be connected to the new Loring Road covered storage tanks in Weston that have been constructed as part of MWRA's MetroWest Water Supply Tunnel project. A portion of the supply will be from WASM 4, which connects to the East and West Spot Pond Supply Mains at Western Avenue and North Harvard Avenue and on Memorial Drive at Magazine Beach in Cambridge.

Completion of this project will facilitate consolidation of the Boston Low and Northern Low Service Areas into one service area and will improve pressures to the far reaches of the Northern High Service Area by reducing the demand burden on the City Tunnel Extension. The quality of water delivered to eight communities will improve as a result of the upgrade of 18 miles of deteriorated pipe.

Scope

Sub-phase	Scope
Preliminary Design and Design/CA/RI	Preliminary design, design, construction administration, and resident inspection of the rehabilitation or replacement of Sections 3, 4, 5, 6, 7, 9, 10, 11, 12, 67, and portions of Sections 2, 16W, and 57.
North (Medford/Melrose) Construction-CP1	Cleaning and lining of 20,300 feet of 48-inch and 60-inch pipe in Medford, Malden, Melrose, and Stoneham (Sections 7 and 12). Replacement of valves and reconfiguration of blow-off valves to eliminate cross-connections with storm drains or sewers. Elimination of connection with Spot Pond (considered a cross connection with a non-potable water source), and configuration to allow emergency reconnection if needed.
Middle (Medford/Somerville) Construction – CP2	Cleaning and lining of 24,100 feet of the East Spot Pond Main (48-inch pipe) in Somerville and Malden (Sections 4, 5, 6, and 7) including reinforcement at rail and MBTA crossings; cleaning and lining of 14,000 feet of the West Spot Pond Main (48-inch pipe) in Medford and Somerville; and some steel pipe replacement on the Mystic Valley Parkway (800 feet, 60-inch, Section 16W), and Middlesex Fells Parkway (700 feet, 48-inch, Section 5 on land). Cleaning, lining, and cathodic protection on Somerville Avenue (Section 67, 6,500 feet of 48-inch steel). Replacement of valves throughout the pipelines, including in Medford Square at the interconnections of Sections 12, 16W, and 57.
South (Cambridge/Boston) Construction – CP3	Cleaning and lining of 11,700 linear feet of the East Spot Pond Main in Charles River Crossing and Cambridge (48-inch, Sections 3 and 4) including valve replacement, and Riverside Drive (7,900 feet, 42-inch slip lining, Section 57), and cleaning and lining of 16,800 linear feet of the West Spot Pond Main in Harvard St., Franklin St., No. Harvard Avenue, and Massachusetts Avenue (48-inch, Sections 9 and 11, Brighton and Cambridge).
Early Valve Replacement Contract	Installation of nine main line valves and associated blow-off valves, as well as permanent by-pass piping to meters and air valves. Also includes removal of pipe at three locations for materials strength testing.
Construction 4 – Trusses	Section 4 Bridge Trusses spanning the Lowell Line and the New Hampshire-Maine line are in need of repair, painting and replacement, respectively.
Early Valve Equipment Purchase	Purchase Order for 12 valves that were installed from 1998-1999 as a precursor to the cleaning and lining contracts.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$60,886	\$31,386	\$29,500	\$7,298	\$8,272	\$11,896	\$4,703	\$3,735	\$894

Project Status 11/04	55.5%	Status as % is approximation based on project budget and expenditures. All the rehabilitated mains within City of Medford have been activated except for Section 16W which continues to be pressure-tested. Work installing a new 48" water main continues on Section 5 in Medford. Keyspan has completed relocation of gas lines but has not activated the line due to severe winter conditions. Work is also in process along Massachusetts Avenue in Cambridge.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$89,529	\$60,886	(\$28,643)	Jul-11	Jul-14	37 mos.	\$40,828	\$35,904	(\$4,923)

Explanation of Changes

- Removed planning, design and construction of Section 66 and OM 30 as part of strategy to contain annual rate increases.

CEB Impact

None identified at this time.

S. 723 Northern Low Service Rehabilitation - Section 8

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To improve the condition and reliability of an unlined pipeline serving a portion of the Northern Low System. This pipeline, Section 8, has reduced carrying capacity because of rust build-up, and has experienced leaks at above average rates. Improvements will consist primarily of replacement of a portion of Section 8 and cleaning, lining, and valve repairs along nearly 1.5 miles of water main. Rehabilitation of Sections 37 and 46 will improve the service to East Boston and will allow the shutdown of Section 8 for rehabilitation. The construction of Section 97A will provide needed redundancy to East Boston via the Northern High System.

Project History and Background

Section 8 was installed between 1897 and 1913 and serves Malden, Everett, Chelsea, and East Boston. The Section 8 pipeline is currently functioning at approximately 45% of its original capacity (C-value: 60) due to the build up of rust deposits and other matter along the pipeline walls. Excavations for the installation of new valves along portions of Section 8 have indicated possible severe external corrosion on the pipe wall, which could affect the structural stability of the pipeline.

Before rehabilitating Section 8, the distribution system supplying East Boston must be strengthened. The existing Sections 37 and 46, located in Chelsea, are older 36-inch cast iron mains. These two pipe sections connect between Section 57, previously rehabilitated, and the two Chelsea River crossings to East Boston at Sections 8 and 38. It is anticipated that these two pipelines will need cleaning and a cement mortar lining. Section 97A, a new 20-inch pipeline will provide redundancy to East Boston via Northern High System. The pipeline will connect to existing Meter 99 in East Boston and to the Boston low-pressure system through a new pressure-reducing valve.

Scope

Sub-phase	Scope
Survey and Construction – Section 8	Cleaning and cement mortar lining of the pipeline interior, replacement of all defective and inoperable valves, and the addition of new valves for 7,500 linear feet of 48-inch pipe on Section 8 in Malden and Everett. Replacement work consists of replacing 9,722 feet of 42-inch pipeline with new 36-inch ductile iron main and replacement of blow-off connections from Second Street in Everett to the Mystic River Bridge in Chelsea.
Rehab Sections 37, 38, and 46 Chelsea, East Boston Construction	Rehabilitation of approximately 3,550 linear feet of 36-inch cast iron main (Section 37) and approximately 2,500 linear feet of 36-inch cast iron main (Section 46). Both sections are located in Chelsea and are critical to the supply of water to East Boston. Section 38, the 36-inch pipeline under the Chelsea River is assumed to need rehabilitation.
Section 97A Construction	Installation of approximately 2,000 linear feet of 20-inch water main and a new pressure-reducing valve. This new work will be part of the Northern High System and add redundancy to East Boston, including Logan Airport.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$14,581	\$0	\$14,581	\$0	\$0	\$1	\$21	\$41	\$14,520

Project Status 11/04	0.0%	Status as % is approximation based on project budget and expenditures. Project Survey schedule to start in FY07 with first construction phase. Section 97A will start the following year.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$11,677	\$14,581	\$2,905	Nov-11	Aug-11	(3) Mos.	\$15	\$63	\$48

Explanation of Changes

- Increase due to updated inflation based on most current ENR index.
- Also added funding for Section 97A.

CEB Impact

None identified at this time.

S. 702 New Connecting Mains - Shaft 7 to WASM 3

Project Purpose and Benefits

- ☑ *Contributes to improved public health *
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To provide redundancy and improve the reliability of WASM 3; provide hydraulic looping and redundancy, enable Intermediate High Sections 59 and 60 to be taken off-line for rehabilitation, and improve water quality by reducing the length of unlined cast iron water mains in the MWRA system. Completion of this project will help provide the basis for a strong hydraulic network of piping among WASM 3, WASM 4, the City Tunnel, and the possible future Metropolitan Tunnel Loop. The future conversion of Sections 23 and 24 to the Intermediate High Service system to create a unified Intermediate High Service area connecting the Belmont and Commonwealth Avenue pump stations will also be possible. This project will involve installation of 18,750 linear feet of new pipeline, and rehabilitation of 59,740 linear feet of pipeline.

Project History and Background

WASM 3 is a 56- to 60-inch diameter steel main installed in 1926, connected to the Hultman Aqueduct at one end and the City Tunnel at its other end. It extends from Weston near Shaft 5 to Somerville at Shaft 9. Most of its flow comes from Shaft 5, with peak flow of 57 million gallons per day. A lesser amount enters the main from Shaft 9. Upon completion of the Hultman Aqueduct and its interconnection to the Weston Aqueduct Terminal Chamber in 1941, WASM 3 became part of the High Service system. There are no connecting mains along the length of this 11-mile pipeline, and no other means available to adequately supply the nine communities it serves.

WASM 3 serves communities northwest of Boston and is the sole source of supply to the Northern Extra High Service Area (Bedford, Lexington, Waltham, Arlington, and Winchester) and the Intermediate High Service Area (Belmont, Arlington, and Watertown). It also supplies a portion of the Northern High Service Area (Waltham, Watertown, Belmont, Arlington, Medford, and Somerville), and is a means of supplying the Spot Pond Reservoir. WASM 3 serves a population of about 238,000.

A break almost anywhere on this pipeline would result in severe service disruptions in Waltham, Watertown, Arlington, Lexington, Bedford, Winchester, and Belmont. Virtually no water would reach Waltham if a break were to occur at the southern end of the pipeline; water normally supplied through the Shaft 5 connection would be forced through the Shaft 9 connection, increasing flows and reducing hydraulic grade lines in both WASM 3 and the City Tunnel. The lack of redundancy also makes routine cleaning and lining of the 74-year old pipeline impossible. The need for maintenance is indicated by a significant number of leaks, particularly on the most vulnerable southern section, which are the result of corrosion pitting through the pipe wall, as well as by the reduced carrying capacity of the line.

Completion of this project will facilitate conveyance of high service water from WASM 4 to WASM 3 and improve the capability to convey water from Shaft 9 of the City Tunnel to WASM 3. This will be accomplished by rehabilitating or replacing existing dead-end mains from the City Tunnel and WASM 3, and connecting these mains by constructing new pipelines, such that transmission loops will be formed between the City Tunnel and WASM 3. The rehabilitation of WASM 4 is also closely related to this project, because WASM 4 will be interconnected to the new connecting mains of the Shaft 7 to WASM 3 project. WASM 4, which can be operated on high or low service, runs from Shaft 5 to Shaft 8, midway between the City Tunnel and WASM 3. Using WASM 4 as a supply means for the new connecting mains will result in cost savings by delaying or eliminating the need for a new pipeline south of WASM 4 to a Shaft 7 connection. This project has evolved from the Shaft 7 to WASM 3 Connecting Mains project to the WASM 3 and WASM 4 Connecting Mains project.

Scope

Sub-phase	Scope
Watertown MOU	Payment to the City of Watertown to fund a portion of its Galen Street project to replace an existing 10-inch diameter pipeline with a new 12-inch diameter water main.
Routing Study	Identification of alternatives to determine the optimum approach for providing additional strong connections to WASM 3.
Design/CS/RI-DP1	Design, construction administration and residential inspection services for CP-1.
Revised North Segment (CP1)	Installation of 13,300 linear feet of new 48-inch connecting main from WASM 4 to WASM 3.
Design/CS/RI DP2/4 Meter 120	Design, construction administration and residential inspection services for CP-2/4 Meter 120.
Construction CP2 C&L Sections 59 & 60	Cleaning and lining of 16,400 linear feet of 20-inch diameter pipe on Sections 59 and 60 from Section 25 in Watertown to Meter 121 in Arlington for Sections 23, 24, and 47 (Intermediate High Segment).
South Segment CP3	Installation of 650 linear feet of 36-inch pipe from Shaft 7 to Section 47. Cleaning and lining of 8,290 linear feet of 20-inch pipe (Section 24) from Meter 120 to WASM 4, 1,957 linear feet of 36-inch (Section 23) and 12,943 linear feet of 20-inch (Sections 24 and 47) pipe, and 2,950 linear feet of 20-inch pipe along Section 24 from WASM 4 to Meter 40.
NE Segment CP5	Rehabilitation of 17,200 linear feet of Sections 18, 50, and 51 for the Northeast Segment.
Replacement of Section 25 Design and Construction	Replacement of existing section 25 (approximately 4,800 linear feet of existing 16" pipe) with a new pipeline.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$49,267	\$3,405	\$45,862	\$355	\$551	\$2,030	\$1,209	\$10,521	\$31,551

Project Status 11/04	7.1%	Status as % is approximation based on project budget and expenditures. Watertown MOU and Routing Study are complete and design work is in progress. Construction, which includes multiple segments, begins in March 2007 (CP1-A).
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$37,842	\$49,267	\$11,426	Sep-14	Sep-14	-	\$19,452	\$14,666	(\$4,786)

Explanation of Changes

- Budget increase - Revised estimate due to more pipeline targeted for replacement. Also, updated inflation to account for more current ENR index.
- Spending – Reflects more likely pace of work and spending.

CEB Impact

None identified at this time.

S. 693 Northern High Service - Revere and Malden Pipeline Improvements

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Extends current asset life*
- ☑ *Improves system operability and reliability*

To improve the delivery capabilities of major distribution lines serving the Northern High System. The existing pipelines are inadequate and suffer from extensive corrosion and leakage. Replacement, rehabilitation, and/or reinforcement will provide a strong and reliable means to convey water from the City Tunnel Extension to communities in the northern and eastern portions of the Northern High Service Area.

Project History and Background

The southeast corner of the Northern High Service Area has experienced pressure deficiencies because of undersized pipes and extensive pipeline corrosion. The corrosion problems have led to numerous leaks and the pressure deficiencies cause fire-fighting difficulties. These deficiencies particularly affect Malden, Revere, Lynn, Winthrop, Deer Island, East Boston, Saugus, Nahant, Peabody, Marblehead, and Swampscott. To correct these problems, MWRA is implementing a series of pipeline improvements.

This project includes installation of pipeline on Sections 97, 97A, 53A, and 68 in Revere and Section 53 in Malden; rehabilitation of Sections 26, 53, and 55 in Revere; and installation of control valves to improve water pressure. All the work for this project, with the exception of the design and construction of Section 53, Revere Section 53A, Section 68 and the Shaft 9A-D Extension is complete. Completion of this construction will improve the pressure and flow of water conveyed to the Northern High Service Area.

A hydraulic study of the distribution system recommended that MWRA install a new pipeline in Revere, beginning at the Everett/Chelsea/Revere border and extending through Revere to the East Boston border. This new pipeline runs parallel with existing pipelines and carries a large portion of the flow formerly carried by the existing system, thereby increasing water pressure and flow to Revere, East Boston, Winthrop, and Deer Island, particularly during periods of high demand. Installation of new control valves was required to regulate water pressure and fill the Winthrop standpipe. The original control valves between Winthrop pipelines and MWRA transmission mains were inadequate. Fluctuations in pressure threatened to rupture the town's pipelines. More efficient valves were required to eliminate the danger. Flow tests performed on Sections 32 and 55 of the existing Revere and Winthrop pipeline revealed that these sections had severe flow problems. The pipeline was only able to carry a fraction of its designed capacity because of internal corrosion. Cleaning and lining the pipeline restored flow capacity.

Section 53 in Malden and Revere was an 18,900-foot long, 30-inch steel pipeline, exceeding 60 years of age. Workers dug four test pits to determine the condition of this pipeline and uncovered 18 holes in the pipe. Investigations into recent failures revealed severe corrosion through the pipe wall in several locations. Replacement of the Malden portion of Section 53 with a new 48-inch main has been completed. The Revere portion of Section 53 will be rehabilitated and/or replaced as necessary. Work will also include a study to determine the feasibility of abandoning or rehabilitating portions of Section 26. In addition to feeding into the new 48-inch Saugus/Lynn pipeline, this pipeline will play an important role in the supply network for Deer Island. Section 53A, an old 24-inch pipeline, is used to connect Section 53 to Shaft 9A of the City Tunnel. It is undersized for this purpose and is a severe restriction. A new 3,000-foot, 60-inch diameter pipeline is needed to reinforce Section 53A. An 850-foot portion of Section 68 interconnects Section 53 with the new Saugus/Lynn pipeline. This section needs to be reinforced with 850 feet of 48-inch pipeline. The Shaft 9A-D Extension will provide a more reliable connector to the Section 99 pipeline that serves as the suction line to the Gillis Pump Station.

Construction of the Malden Section 53 and Revere Beach pipelines was substantially completed in September and October 1994 respectively.

Scope

Sub-phase	Scope
Design/CS/RI – Revere/Malden	Design, construction services, and resident inspection for Section 53 in Malden and Sections 97 and 97A in Revere.
Construction Revere Beach	Installation of 5,491 linear feet of 36-inch pipeline and 10,111 linear feet of 30-inch pipeline on Section 97, as well as 3,872 linear feet of 24-inch pipeline, and 1,350 linear feet of 20-inch pipeline on Section 97A in the vicinity of Revere Beach Parkway.
Construction Malden Section 53	Installation of 11,907 feet of 48-inch diameter pipeline in Malden on Section 53.
Construction Linden Square	Construction and construction administration of a 1,000 linear feet segment of Section 53 in the Linden Square area of Malden. The Massachusetts Highway Dept constructed this section as part of its roadway reconstruction project around Linden Square.
Construction Revere Section 53	Rehabilitation of 4,500 linear feet of 30-inch pipe in Revere on Section 53 and replacement of 1,500 linear feet under Route 1 in Revere. Also rehabilitate 5,825 linear feet of Section 26.
Construction Road Restoration	Design, construction administration, and construction of the full road restoration to ensure a stable road surface without cracking on Eastern Avenue in Malden in compliance with the requirements of the Massachusetts Architectural Access Board. The City of Malden will do this work.
Construction Control Valves	Installation of control valves needed to regulate water pressure and fill the Winthrop standpipe.
Construction DI Pipeline Cleaning & Lining (C&L)	Design and cleaning and lining of the 2,000 linear feet, 8-inch diameter water supply main to Deer Island.
Construction – Winthrop C&L	Rehabilitation of 7,900 linear feet of 16-inch diameter pipe on Section 32 and 20-inch diameter pipe on Section 55 in Revere and Winthrop.
Construction 68 & 53A	Construction of 850 linear feet of new 48-inch pipe (Section 68) and 3,000 linear feet of new 60-inch pipe (Section 53A) in Malden.
Shaft 9A-D Extension Construction	Construction of approximately 2,000 linear feet of new pipeline in Malden connecting the Shaft 9A-D line to Section 99.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$32,916	\$23,854	\$9,063	\$0	\$14	\$14	\$2,771	\$833	\$5,430

Project Status 11/04	72.5%	Status as % is approximation based on project budget and expenditures. Revere Beach, Malden Section 53 and Linden Square construction complete. Revere Section 53 and Sections 68 and 53A to be completed in FY08 and FY15, respectively.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$32,561	\$32,916	\$355	Nov-10	Nov-15	61 Mos.	\$3,279	\$3,632	\$353

Explanation of Changes

- Increases due to inflation adjustment reflecting more current ENR index.
- Schedule – Project shifted to contain spending within FY04-08 period to comply with spending cap.

CEB Impact

None identified at this time.

S. 731 Lynnfield Pipeline

Project Purpose and Benefits

- Contributes to improved public health*
- Improves system operability and reliability*

To meet high demands in Lynnfield by installing approximately 7,000 linear feet of 8-inch main. The Lynnfield Water District serves a portion of the Town of Lynnfield. The community meter is served by an 8-inch main, approximately 7,000 feet long. The main is undersized and its capacity is inadequate to meet high water demands. Rehabilitation of the main will not increase the capacity sufficiently.

Project History and Background

MWRA supplies Lynnfield Water District via Meter 169 located adjacent to Route 1 at the Saugus/Lynnfield line. An eight-inch cast iron main, approximately 7,000 feet long, connects Meter 169 to Section 70 in Saugus. This main does not have the hydraulic capacity to serve the meter during high demand periods. This project includes construction of a supplemental main from Section 70 to the meter, possibly parallel to the existing main which, for much of its length, is located along Route 1. The scope of work will include an analysis of pipeline alternatives to minimize work in heavily traveled Route 1.

Scope

Sub-phase	Change/Explanation
Design and Construction	Replacement of approximately 7,000 linear feet of 8-inch main.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$4,000	\$0	\$4,000	\$0	0	\$150	\$1,750	\$1,450	\$650

Project Status 11/04	0.0%	Status as % is approximation based on project budget and expenditures. Expect in-house design to commence in April 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$4,000	\$4,000	\$0	Jul 08	Jul 09	12 Mos.	\$3,850	\$3,350	(\$500)

Explanation of Changes

- Schedule – Shifted 12 months to comply with FY04-08 Spending Limits.

CEB Impact

None identified at this time.

S. 708 Northern Extra High Service - New Pipelines

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To improve hydraulic service and reliability for major portions of the Northern Extra High System. Existing lines are undersized and frequently experience pressure problems. Improvements will include construction of two new pipe segments and rehabilitation of an existing main.

Project History and Background

Sections 34, 36, and 45 provide service to the Northern Extra High (NEH) communities of Belmont and Arlington. The existing pipelines are not large enough to meet maximum day plus fire flow service goals. Construction of a new larger pipeline will improve reliability, pressure, and flows, which will result in better fire protection and reduced pumping costs. Section 34, which is an undersized 1,532 linear feet 12-inch diameter cast iron main installed in 1911, may be the source of water quality problems. The pipe is a key component of the NEH Service System and provides service between Brattle Court Pump Station and the distribution system. Section 36 is an undersized 5,136 linear feet 16-inch cast iron main installed in 1911 that serves as a critical portion of the discharge pipe system from the Brattle Court Pump Station. Section 45 is a 16-inch cast iron main 3,374 linear feet long that was installed in 1920. A portion of Section 45 was rehabilitated in an earlier phase of this project. The current phase includes rehabilitation of the remaining portion of the pipeline.

Scope

Sub-phase	Scope
Construction Sections 34, 36, 45	Construction of approximately 6,700 linear feet of new 20-inch pipe (Sections 34 & 36) and rehabilitation of approximately 3,400 linear feet of existing 16-inch cast iron main.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$8,458	\$3,632	\$4,825	\$69	\$13	\$12	\$11	\$11	\$4,778

Project Status 11/04	42.9%	Status as % is approximation based on project budget and expenditures. Construction of a portion of Section 45 was rehabilitated in September 2001. In-house design of Sections 34, 36 and 45 followed by construction scheduled to start in January 2010.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$8,036	\$8,458	\$422	Nov-10	Nov-11	12 Mos.	\$129	\$116	(\$2)

Explanation of Changes

- Increases due to inflation adjustment on unawarded contracts to reflect more current ENR index.
- Shifted schedule to comply with spending limitations in FY04-FY08.

CEB Impact

None identified at this time.

S. 725 Hydraulic Model Update

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Provides environmental benefits*
- ☑ *Extends current asset life*

To bring MWRA hydraulic and water quality modeling capabilities up to modern standards, and to integrate the water quality model with MWRA's GIS, SCADA, and Telog systems. Completion of the project will also improve the use of the existing hydraulic model to manage system operations by making screen displays geographically accurate, standardizing model facility naming to coordinate with GIS, and allowing simulations to be conducted to predict changes to disinfection residual levels in the water as it moves through the MWRA system. The project builds on the foundation of the existing model and incorporates improvements already implemented in the GIS system.

Project History and Background

The MWRA Water System Model Study completed in 1991 by Camp, Dresser and McKee included the development of a computer based hydraulic model of the MWRA water system. Transmission and distribution system piping, pump stations, storage facilities, revenue meters, pressure reducing valves, and other system appurtenances were incorporated into the model. The model was developed using software written by Stoner Associates, Inc.

In working towards an updated model, staff have incorporated capital improvements to the waterworks system, updated community demand information using data from the telog data collection system, and updated the model operating environment. The operating system platform was changed from a VAX/VMS environment to a desktop PC Windows operating system to make the interface more user friendly and to make the model more accessible to staff. In addition to hardware and software improvements, current model data files need to be updated and enhanced. Some of these enhancements include improving geographic accuracy, adding the ability to separate the entire water system into smaller subset models (e.g., by pressure zone), implementing changes to the system water quality model, and efficiently updating the system by creating links to other databases. This project also includes development and implementation of field tests to collect system data used to calibrate the computer model and verify its accuracy.

Scope

Sub-phase	Scope
Hydraulic Model Update	Revisions and upgrades to the computer based model of MWRA's water system.
Model Enhancement Support Services	Purchase of software to support MWRA's water quality modeling requirements per discussions with American Waterworks Association Research Foundation and other large utilities performing similar work.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$686	\$598	\$88	\$0	\$88	\$0	\$0	\$0	\$0

Project Status 11/04	87.2%	Status as % is approximation based on project budget and expenditures. Hydraulic Model Update complete with only model enhancements remaining active with completion expected by end of FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$688	\$686	(\$2)	Jun 05	Jun 05	None	\$90	\$88	(\$2)

Explanation of Changes

N/A

CEB Impact

None identified at this time.

S. 753 Central Monitoring System

Project Purpose and Benefits

- ☑ *Contributes to improved public health*
- ☑ *Improves system operability and reliability*
- ☑ *Extends current asset life*
- ☑ *Results in a net reduction in operating costs*

To provide a modern centralized system for monitoring, coordinating, and controlling critical waterworks functions. Many existing MWRA facilities are monitored and operated using obsolete methods and equipment, which can hinder emergency response capabilities and prevent coordinated system operation. Two operations control centers are already operational, and various field facilities have been equipped with telemetry and communications equipment as part of this project.

Project History and Background

MWRA has been converting to system-wide remote monitoring and control of essentially all hydraulic and hydroelectric operations. The original instrumentation used to measure operating parameters was incomplete, old, and in poor condition. In many cases necessary instrumentation did not exist. The system also lacked telemetry to provide centralized and immediate information on system performance, and the ability to remotely intervene when malfunctions occurred. Without telemetry, operating decisions had to be delayed until field personnel were dispatched to collect measurements. This was a cumbersome and undesirable mode of operation, particularly in emergency situations.

The lack of flow measurement within the water delivery system also impeded identification of sources of unmetered water. When fully implemented, the central monitoring system will generate instantaneous data on water flow and pressure in 18 subsystems beginning with the supply sources and ending at the delivery points to user communities. The data will assist operations staff in detecting and pinpointing leaks in the system. The response time for leak repair work can then be lessened, resulting in significant savings of water and reduction in potential MWRA liability for public safety and property damage.

The central monitoring project has grown from the initial automation of the Reservoir Road Pump Station to include eight other pump stations. Monitoring and control of water treatment facilities has expanded to include the Interim Corrosion Control Facility in Marlborough, the Cosgrove Disinfection Facility, the Norumbega Temporary Disinfection Facility and the Ware Disinfection Facility. In addition, water quality is monitored at seven locations from two Operations Control Centers. Real time SCADA monitoring of Telog data is being established with 150 sites currently active. Operation control centers (OCCs) at the MWRA Chelsea and Clinton facilities provide remote monitoring and control of all the SCADA facilities. Also, as part of its Integrated Water Supply Improvement Program, MWRA is building several new and upgraded facilities. These include the Nash Hill Covered Storage facility and the Loring Road Covered Storage facility, which are complete, and the Walnut Hill Water Treatment Plant, the MetroWest Water Supply Tunnel, , and the Norumbega Covered Storage facility, which are under construction. The existing system-wide backbone microwave communications network has been improved to connect these new facilities to the waterworks communications system.

Scope

Sub-phase	Scope
Study	Study to determine the implementation phases.
Design	Design of the replacement and rehabilitation of 34 existing master meter sites, 22 new master meter sites, 15 western revenue meter sites, 28 reservoir level instrumentation sites, ten pumping stations, eight pressure regulator control sites, four major throttle valve sites, six chemical feed sites, four hydroelectric sites, five weather stations, five sluice gate control sites, one stream gauging station, and other facilities.

Sub-phase	Scope
Communications Structures	Installation of two radio towers, five antennas, one satellite dish, and an equipment shelter.
CS/Start-Up Services	Construction and startup services for the metropolitan Operations Control Center, as well as metering and monitoring construction.
Equipment Pre-Purchase	Purchase of instrumentation equipment, mechanical equipment, and new master meters.
Construction 1 – Reservoir Road and Cosgrove Pilots	Purchase and installation of equipment to automate the Reservoir Road Pump Station and an aqueduct monitoring system for use by the Cosgrove Intake and Shaft 4 operators. MWRA staff installed the equipment.
SCADA Implementation	Purchase of Supervisory Control and Data Acquisition System (SCADA) equipment for monitoring and metering sites and pressure reducing valve sites. MWRA staff will install most of this equipment. Connections of SCADA equipment to local utilities.
Microwave Equipment	Purchase of services and equipment necessary to allow MWRA to convert from analog to digital communications to continue to utilize the Commonwealth’s Interagency Microwave System.
Construction – Operations Center	Construction of a 5,000 square feet center including an environmentally controlled computer room, a printer room, a control room, office space, and sanitary facilities in Chestnut Hill.
System Wide Backbone C.P. Construction–Monitoring & Control Communications Network	Improvement of the existing Waterworks system wide backbone including upgrades of microwave antennas at MDC Hill and Bellevue water tank and provision of new microwave antennas at five facilities.
Study and Design –Waterworks Monitoring & Control Communications Network	Provision of microwave antennas and radio equipment at twelve facilities.
Microwave Communication for Waterworks Facilities	Furnish and install seventeen microwave antennas (dishes), three 3-legged, 90- to 100-foot towers, one unpowered 80-foot steel monopole, and two prefabricated concrete shelters to house radio equipment with associated racks, cabinets and wiring.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$16,139	\$15,456	\$683	\$598	\$180	\$100	\$98	\$145	\$160

Project Status 11/04	96.3%	Status as % is approximation based on project budget and expenditures. All contracts are complete except for SCADA Implementation work, which is scheduled for completion in June 2009.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$16,246	\$16,139	\$(107)	June 09	June 09	-	\$1,210	\$1,121	(\$88)

Explanation of Changes

- Project Cost – Elimination of *Permits Monitoring & Control Communication Network* sub-phase from the Proposed FY06 CIP since it was no longer needed.

CEB Impact

No additional impacts identified at this time.

S. 763 Distribution Systems Facilities Mapping

Project Purpose and Benefits

- Contributes to improved public health*
- Improves system operability and reliability*

To produce a complete, up-to-date set of appropriate scale maps of all underground waterworks facilities, along with a comprehensive database inventory. Existing maps were outdated and unreliable, complicating emergency response, field repairs, and planning.

Project History and Background

In 1995 MWRA did not have an adequate, updated set of maps of all of its underground waterworks facilities. Existing maps did not consistently show current conditions and were often incompatible or contradictory with MWRA databases. Engineering, operations, and emergency response were all affected by this inadequacy. Outdated maps hampered engineering because maps needed to be re-created. Field operations crews could not predict with certainty the results of valve shut-offs during repair efforts. The planning process was impaired because management did not have authoritative, consolidated data to evaluate pipe condition, age, C-Values, materials, and soil conditions. Additionally, the lack of a comprehensive understanding of the relationships between MWRA and local community pipe systems could result in service delays. The former mapping system created the possibility of incorrect actions, and in critical instances could have resulted in exacerbated property damage.

Reliable engineering records do not exist for certain sections of the distribution system. The Records Development sub-phase will create record drawings and detail records for high priority areas.

Scope

Sub-phase	Scope
Planning/Design	Creation of a complete set of 200 to 400 scale maps of the distribution system with an associated verified inventory of size, material, age, and condition of pipes.
Data Purchase	Purchase of project related data from Boston Edison.
Records Development	Automation of MWRA record drawings.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$2,226	\$1,030	\$1,196	\$0	\$0	\$0	\$434	\$434	\$328

Project Status 11/04	46.3%	Status as % is approximation based on project budget and expenditures. Records Development is the one outstanding sub-phase and has been delayed due to staffing constraints and competing project priorities. Expect NTP in July 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$2,116	\$2,226	\$110	Dec 08	Dec 08	-	\$868	\$868	-

Explanation of Changes

- Project Cost – Inflation adjustment due to new ENR index for Records Development sub-phase.

CEB Impact

None identified at this time.

S. 765 Local Water Pipeline Assistance Program

Project Purpose and Benefit

- Contributes to improved public health*
- Provides environmental benefits.*

To provide loans to facilitate the rehabilitation or replacement of unlined water pipelines in MWRA communities.

Project History and Background

The Local Pipeline Assistance Program is a critical piece of MWRA's Integrated Water Supply Improvement Program.

In November 1999, the Board of Directors approved an MWRA-administered program, supported for ten years through a Tax Exempt Commercial Paper (TECP) program, to make \$25 million available annually in loans to MWRA communities for pipeline relining and replacement in proportion to each community's share of total unlined pipe miles. Communities are required to pay back principal for each year's loan during a ten-year time period beginning one year after the project funding is approved. MWRA recently increased the existing total program budget of \$250,320,000 by \$4.48 million to provide funding for Stoughton, a new water system community.

To qualify for funding communities must demonstrate appropriate distribution system management practices including maintenance of a unidirectional flushing program, distribution system improvements, water quality testing improvements, and cross connection control program development. MWRA assists communities that need help in accomplishing this work through the Community Technical Assistance Program. Communities utilize professional services on a task-order basis and reimburse MWRA in the following fiscal year.

Scope

Sub-phase	Scope
Community Loans	Loans for MWRA water communities to replace and rehabilitate local water pipelines allocated based on each community's share of total unlined pipe miles.
Community Repayments	Principal repayment over a ten-year period beginning one year after origination of the loans.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$0	\$58,698	(\$58,698)	\$13,153	\$13,249	\$9,886	\$8,461	\$6,541	(\$96,834)

Project Status 11/04	32 %	Status as % is approximation based on project budget and expenditures. Through November 2004 \$81.1 million in loans was distributed to member communities.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$0	\$0	\$0	Jun-24	Jun-23	(12)	\$51,205	\$51,290	\$80

Explanation of Changes

- On December 15, 2004 the Board of Directors approved distribution of loans through FY13 (an extension of three years). The Board also adopted a policy for funding new water communities. The FY06 CIP includes \$4.48 million in loan funds for Stoughton, a new water community.
- Schedule based on ten-year repayment.

CEB Impact

None.

S. 766 Waterworks Facility Asset and Pumping Facility Asset Protection

Project Purpose and Benefits

- Contributes to improved public health*
- Extends current asset life*
- Improves system operability and reliability*

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems.

Project History and Background

This project was developed to ensure that MWRA maintains ongoing service while optimizing operations in its water facilities. This project in its current form addresses immediate critical facility and equipment issues. This project will eventually include five areas:

1. Equipment replacement (pumps, HVAC equipment, blowers, etc.).
2. Architectural projects (concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, electrical wiring, heating system, etc.).
4. Support Projects (process control system upgrades, etc.).
5. Specialty Projects (instrumentation upgrades, fuel storage tanks, etc.).

While the current schedule indicates a completion date of 2017 for construction, the Waterworks Facility Asset Protection project will be ongoing throughout the useful life of the facilities.

Scope

Sub-phase	Scope
Meter Vault Manhole Retrofits	Retrofit approximately 195 meter manholes.
Design and Construction Walnut Hill Tank	Full structural analysis of the Walnut Hill Elevated Tank based on corrosion discovered. Rehab of the tank based on the structural analysis.
Waltham Pipe Bridge Replacement	Replacement of approximately 100 feet of 30-inch steel pipe over commuter rail tracks in Waltham including a bridge crossing.
Design and Construction Cosgrove Valve Seat Replacement	Replacement of isolation sluice gates at Cosgrove Intake to improve reliability for emergency shut down of Cosgrove facility and to isolate new sliding sleeve valves to facilitate preventive maintenance and any future corrective maintenance. Installation of vent structures in draft of new sliding sleeve valves to relieve vacuum conditions when valves are operating and to prevent damage to floor plates and to eliminate an unsafe and unsanitary condition.
Design of Cosgrove Turbine Isolation	Modification of means of downstream isolation of Cosgrove turbines to allow for preventive and corrective maintenance against new tailwater elevation which was increased to allow flow to Walnut Hill water treatment plant.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$4,004	\$0	\$4,004	\$0	\$281	\$4	\$0	\$76	\$3,642

Project Status 11/04	5.5%	Status as % is approximation based on project budget and expenditures. Waltham Pipe/Bridge Replacement project was substantially complete in September 2004. Expect Valve Seat Replacement Design in July 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$2,780	\$4,004	\$1,224	Mar 11	June 17	76 mos.	\$700	\$361	(\$339)

Explanation of Changes

- Added new subphases for Cosgrove Turbine Isolation Design, and Cosgrove Valve Seat Replacement Design and Construction.

CEB Impact

None identified at this time.

S. 933 Capital Maintenance Planning/Development

Project Purpose

To optimize the efficiency and effectiveness of MWRA maintenance practices by developing and implementing a strategic maintenance plan for MWRA assets.

Project History and Background

MWRA is responsible for rehabilitating, repairing, and maintaining the regional water and sewerage system infrastructure. Since its assumption of the ownership and operations of the water and sewer systems in 1985, MWRA has undertaken an ambitious program of capital improvements to the systems, with estimated expenditures of more than \$7 billion for fiscal years 1986 through 2013.

Given the significant value and critical nature of these assets, system maintenance is of paramount importance. This project helps MWRA optimize maintenance practices by evaluating alternative approaches to equipment, infrastructure and facility maintenance, recommending a maintenance strategy, implementing a pilot program to test the recommended strategy, and developing a plan to implement the recommended strategy throughout MWRA.

In the FY01-03 CIP the Capital Maintenance Planning/Development project was part of the first phase of the Wastewater Facilities Asset Management Program (FAMP). This initial phase of FAMP consisted of evaluating maintenance strategies for equipment and systems at Deer Island, and led to the adoption of Reliability Centered Maintenance (RCM) as the maintenance strategy for Deer Island and subsequently the rest of MWRA. As a result of the decision to implement RCM throughout MWRA, the Capital Maintenance Planning/Development project was created. The remaining FAMP components, which address equipment system monitoring, Maximo improvements, and improved business practices at Deer Island, have been renamed Deer Island Treatment Plant Asset Protection.

Scope

Sub-phase	Scope
Inventory & Evaluation Phases 1 & 2	Development of a comprehensive, strategic maintenance plan for MWRA.
As-Needed Design	Contracts for professional design and/or technical assistance services for either wastewater or waterworks system improvement projects to supplement existing engineering resources for specialized and/or complex engineering issues.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$8,928	\$2,380	\$6,549	\$206	\$522	\$777	\$750	\$750	\$3,750

Project Status 11/04	27.6%	Status as % is approximation based on project budget and expenditures. Remaining work on <i>Inventory & Evaluation Phases 1 & 2</i> contract consists mainly of REI/ESDC services on the <i>Equipment Condition Monitoring</i> contract, No. 6594, under the <i>Deer Island Treatment Plant Asset Protection</i> project. Use of the first two As-Needed Design contracts is scheduled to commence in March 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$4,866	\$8,928	\$4,062	Jul 07	June 13	72 mos.	\$2,693	\$3,005	\$312

Explanation of Changes

- Project Cost – Addition of Long-Term As-Needed Design sub-phase. Slightly offset by deletion of Facilities Asset Management Phase 3 sub-phase during the Proposed FY06 CIP process as part of MWRA strategy to contain rate increases.
- Schedule - Addition of Long-Term As-Needed Design sub-phase results in extension of overall project’s schedule.

CEB Impact

None identified at this time.

S. 881 Equipment Purchase

Project Purpose

To provide critical equipment for improved maintenance and operations at MWRA facilities.

Project History and Background

This project includes the purchase of large vehicles, purchase and installation of security equipment at various MWRA facilities, and purchase of an Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) for MWRA's Central Laboratory. The security equipment and installation component of the project includes the design and installation of security systems at MWRA facilities. MWRA is ranking facilities and locations with respect to the critical nature of service delivery, with an emphasis on the waterworks system. This ranking will frame the extent and scheduling of the security improvements for each specific site.

Scope

Sub-phase	Scope
Security Equipment & Installation	Design and installation of security systems at various MWRA facilities and sites.
ICP-MS Lab Testing Equipment	Purchase of Inductively Coupled Plasma – Mass Spectrometer to replace a 14-year-old instrument and expand the laboratory's high sensitivity metals testing capacity.
<i>Vehicles:</i>	
TV Inspection Truck	Purchase of a replacement TV inspection vehicle (WRA36) in June 2001.
Backhoe (Excavator)	Purchase in June 2003 of excavator (WRA310) to support maintenance staff.
Vactor Truck	Purchase in June 2003 of vactor truck (WRA479) used to clean out and jet sewer lines at the site by Field Operations Department personnel.
Water Service Truck	Purchase in June 2004 of water service truck (WRA777) for Field Operations Department.
Bucket Machine	Purchase of bucket machine (will replace WRA272 & 273) to support Field Operations Department maintenance staff.
Excavator	Purchase of equipment (replace WRA532) to support maintenance staff in water pipeline unit of Field Operations Department.
Grove Crane	Purchase of crane (replaces WRA14 and 046) to support maintenance staff in Field Operations Department.
Landfill Loader	Purchase landfill loader (WRA124) to support Clinton Wastewater Treatment Plant staff in landfill operations.
Power Sweeper/Catch Basin	Purchase of equipment (WRA210) in September 2004 to support maintenance staff at Chelsea in Field Operations Department. Will be used agency-wide.
Backhoe	Purchase in January 2005 of equipment (WRA817; replaced WRA 385) to support maintenance staff in Water Pipeline Unit of Field Operations Department.
Closed Circuit TV Inspection Truck	Purchase of TV Inspection Truck (WRA700) to support Wastewater Pipeline Unit of Field Operations Department.
Front-End Loader	Two phases to purchase front-end loaders to support maintenance staff primarily in the Water Pipeline Unit of the Field Operations Department and at Deer Island.

Sub-phase	Scope
Dump Truck	Two phases to replace dump trucks (WRA192 and WRA522) to support the Water Pipeline Unit in the Field Operations Department.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$8,996	\$1,351	\$7,645	\$593	\$2,293	\$4,250	\$1,102	\$0	\$0

Project Status 11/04	22%	Status as % is approximation based on project budget and expenditures. Expect to purchase several vehicles in FY05 and FY06 and the ICP-MS lab equipment in FY05. Purchase and installation of security equipment is in process and will continue through FY07.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$10,045	\$8,996	(\$1,049)	June 06	June 06	-	\$9,287	\$8,238	(\$1,049)

Explanation of Changes

- Reduced budget for security equipment as part of MWRA initiative to contain rate increases.
- Added phases to replace several large vehicles in FY06.

CEB Impact

None identified at this time.

S. 930 MWRA Chelsea Facility

Project Purpose

To improve MWRA operations by consolidating maintenance, operations, administrative, and equipment storage functions into a single facility. This will relieve current overcrowding and adverse traffic impacts on neighborhoods abutting existing facilities.

Project History and Background

When MWRA was created in 1986, 80 employees and 22 vehicles were transferred from MDC to MWRA to support maintenance of the metropolitan waterworks system and the northern sewerage system. During the past 18 years, MWRA has invested in improved maintenance and repair of the systems.

While maintenance programs were updated, the inadequacy of MWRA's maintenance support facilities became a serious constraint. In addition to being inefficiently located, virtually all of the maintenance and support facilities were already decades old when inherited from MDC, in disrepair, and too small to house necessary workforce and equipment. To accommodate the maintenance program, a number of temporary measures were taken to provide support facilities, including creation of temporary quarters in rented trailers, leasing of space, and reuse of space in "retired" buildings like the East Boston Pump Station.

MWRA also designed and constructed facilities to meet some specific maintenance program needs. These facilities included the South Maintenance Yard (1990) created at Fore River to serve the sewerage system maintenance needs south of Boston and the Transmission Maintenance Facility in Southborough (1993) to serve waterworks transmission system needs in central and western Massachusetts. In addition, the Deer Island Maintenance Building opened in 1995 to support the new plant.

The most pressing remaining need was for a maintenance facility to serve sewerage facilities north of Boston and waterworks facilities not efficiently served from Southborough. MWRA's new Chelsea facility consists of two buildings, a 124,000 square feet administration building and a 92,000 square feet maintenance building. There are nearly three acres for outside material and equipment storage, parking for more than 650 MWRA and employee vehicles, an on-site fueling station, and a radio communications tower and 400 square feet radio equipment building. Upon completion of the administration building in June 2001 MWRA relocated staff from the Charlestown Navy Yard and Linden Street. Relocation of staff to the Maintenance building from the Chestnut Hill Pump Station, the East Boston Steam Station, Glenwood Yard, Mystic Shops, Nay Street, Winchester Yard, FRSA, and Charlestown Pump Station began in December and was completed by the end of January 2002. A total of 513 staff work out of the Chelsea facility.

Scope

Sub-phase	Scope
Planning	Planning for the new MWRA Chelsea facility.
Conceptual Design	Conceptual and schematic architectural programming and design services for development of a Request for Proposals.
Negotiating Support	Real estate consultant to assist with lease negotiations.
Legal Services	Contract for a real estate attorney to assist with lease negotiations and review of lease documents.
Design Review	Architectural review of proposals and verification of specifications.
Fit out/Office Furnishing/ Equipment	Purchase of furnishings and equipment for the new facility.

Sub-phase	Scope
Information/ Telecommunication Consultant	Consultant to implement plan for information and telecommunications systems at the new facility.
Fit out – All other items	Purchase of equipment, furnishings, and specialized items for the Operations Control Center, Emergency Operations Center, water quality laboratory, maintenance shops, data center, warehouse, vehicle maintenance facilities, training rooms, library, TRAC sampling area, and muster room.
Existing Facility Button Up	Closeout of existing facilities and sites that vacated by MWRA and declared surplus.
Moving Expense	Costs associated with moving staff to the Chelsea facility.
Moving Expense- CNY	Costs associated with moving staff from Building 36 to Buildings 39 and 34 in the Charlestown Navy Yard.
CNY Retrofit	Construction and materials to reconfigure Buildings 34 and 39 to accommodate staff vacating Building 36.
MIS Network and Minicomputer Architecture, Performance, and Implementation	Network, minicomputer, and server performance upgrades, and equipment to provide adequate speed and performance to the new data center. This equipment is designed to accommodate future technology requirements.
Communications Tower	Erection of a communications tower at Deer Island to link Deer Island and the Chelsea facility.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$10,226	\$9,130	\$1,096	\$578	\$1,096	\$0	\$0	\$0	\$0

Project Status 11/04	90.2%	Status as % is approximation based on project budget and expenditures. This project is substantially complete. Expect remaining balances to be paid in FY05.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$10,224	\$10,226	\$3	June 06	June 06	-	\$1,672	\$1,674	\$2

Explanation of Changes

- N/A.

CEB Impact

No additional impacts identified at this time.

S. 925 Technical Assistance

Project Purpose

To ensure ready access on an as needed basis, to professional and technical services not available or not cost-effectively provided by in-house staff.

Project History and Background

Efficient implementation of MWRA's Capital Improvement Program and other projects often requires specialized skills and technical assistance that are not available from in-house staff. This project ensures ready access to a variety of services through a series of task order contracts with pre-set limits. Task orders are used when immediate expertise on projects is required. When a task order is complete, the expense is transferred to the appropriate capital project or Current Expense Budget cost center.

Scope

Sub-phase	Scope
Technical Assistance	MWRA technical assistance contracts include the following: sanitary engineering, electrical/HVAC, mechanical, structural, materials testing, geotechnical, surveying, hazardous materials assessment, asbestos assessment, odor control, architectural, instrumentation control, wetland/environmental, civil engineering, land appraisal, energy, soil boring, and subsurface utility design.

Status MWRA uses technical assistance contracts in support of various CIP and CEB projects.

Expenditure Forecast (in \$000s)

Total Budget	Payments thru FY04	Remaining Balance	FY 04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$ 1,650	\$0	\$1,650	\$0	\$0	\$550	\$550	\$550	\$0

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$1,650	\$1,650	\$0	June 07	June 08	12	\$1,650	\$1,650	-

Explanation of Changes

- Schedule shift to reflect continuation of some contracts for an additional year.

CEB Impact

When Technical Assistance contracts are used to support a project in the operating budget, the costs are charged to the CEB.

S. 931 Business Systems Plan

Project Purpose

To develop, improve, and procure management information systems (MIS) to adapt to the changing business needs associated with managing the waterworks and sewerage systems.

Project History and Background

During the process of developing the FY94-96 Capital Improvement Program, it became evident that MWRA needed to invest in the upgrade, enhancement, and expansion of its management information systems (MIS) to adapt to the changing business needs of the waterworks and sewerage systems, and to respond to new regulatory requirements. To address these needs, MWRA initiated and implemented a business system planning effort to determine future MIS support requirements.

The initial business systems plan focused primarily on FY95-97 (Phase 1). Annual plan updates have assisted staff, external constituencies, and the Board of Directors in understanding the critical role of information systems in carrying out MWRA's environmental and economic mission. In addition, the plan provides comprehensive documentation for future resource requirements. Implementation of Phase I improvements was completed in June 1997.

Phase II (FY97-99) built on the progress made during Phase I and continued the development of economies of scale through optimization of existing assets, technology conversion promoting database integration, and infrastructure improvement. Except for improvements to the TRAC Information System, Phase II is complete. The TRAC I/S is scheduled for competitive bid in FY05 and the project is expected to be completed in FY08.

Phase III (FY99-01) focused on implementing a new integrated financial and procurement system (Lawson). This project was substantially completed in May 2000 and met schedule and budgetary targets. Implementation of a Treasury workstation and integration with MAXIMO was completed by the close of FY01. The system reduces duplication of databases, streamlines several business processes, and improves staff ability to perform trend analysis.

Phase IV of the Business Systems Plan supported MWRA's effort in anticipation of the year 2000 to assess systems and applications and implement corrective actions to avoid systems failures. This phase was completed in February 2000, and MWRA did not experience any major system failures or sensitive disruptions. In addition, approximately 65% of Phase IV spending was for items that would have been purchased anyway and have useful lives well beyond 2000.

Phase V (FY01-09) supports MWRA's ongoing program of information system improvements. The focus is on development of a Waterworks Operations Management system similar to the one used to support Deer Island management, implementation of MAXIMO for the Field Operations Department, and improvements to the laboratory information system to keep pace with changing business needs and technology standards. In addition, Phase V includes replacement of obsolete minicomputers and improvements to GIS and TV Inspection systems based on benchmarking results.

Phase VI (FY03-07) supports the replacement of obsolete PBXes at major sites, re-licensing of Microsoft Office products, storage/server improvements for Computer Center operations and the conversion of Lawson portfolio to a current supported operating system.

Scope

Sub-phase	Scope
Phase I (FY95-97)	<p><u>Hardware:</u> Upgrade of BHP technical minicomputers; purchase of a Unix-based minicomputer for GIS integration and consolidation and work stations for high-end modeling (SAMS) and mapping functions; upgrade or replacement of PCs; improvements to storage capabilities for TRAC Information Systems (IS) and wastewater flow data; and leasing of three replacement minicomputers for administration and finance systems to address capacity and performance issues.</p> <p><u>Software:</u> Implementation and enhancement of the Sewerage Analysis and Management System (SAMS) to incorporate improved hydraulic modeling capabilities, condition information, mapping, and GIS data so that CSO Master Plan and Transport data requirements are met.</p>
	<p>Upgrades and enhancements to the TRAC/IS to support improved enforcement, monitoring, permitting, and integration of information with other systems.</p> <p>Upgrade of the GIS application to industry standards to allow more integration and analysis of data.</p> <p>Implementation of CADD software and related tools including the establishment of a document management system to index thousands of engineering documents maintained by the Records Management Center and technical information centers at CNY and Deer Island.</p> <p><u>Network:</u> Replacement of obsolete software used for access to administration, finance, and technical minicomputer applications.</p> <p>Development of a network plan for Business Systems Plan updates to address industry changes, maintenance/replacement concerns, and functionality needs.</p>
Phase II (FY97-09)	<p>Eight elements key to MWRA staff productivity: (1) server consolidation, (2) network scalability program, (3) database integration program, (4) PBX replacement, (5) electronic records program, (6) procurement replacement, (7) maintenance management, and (8) waterworks programming services.</p> <p><u>Server consolidation:</u> Improvements to storage capacity, availability, and manageability of the servers used by MWRA staff. Included consolidation of 30 individual, independent file servers to approximately five, while avoiding the cost of hiring several server administrative staff to manage the resources.</p> <p><u>Network scalability program:</u> Improvement of the data network by increasing data access and retrieval capabilities to meet current and projected demand.</p> <p><u>Database integration program:</u> Standardization of the programming/database environment between portfolios by converting to Oracle-based systems (the standard for water and sewer systems) and consolidating/integrating data across MWRA.</p> <p><u>PBX replacement:</u> Replacement of the Siemens Private Branch Exchange (PBX) switches at the Charlestown Navy Yard with equipment that has a projected useful life of ten years.</p> <p><u>Electronic records program:</u> Establishment of computing resources, procedures, and training necessary to satisfy audit and good practice requirements for security and file management, and expected federal/state regulations regarding electronic public records.</p> <p><u>Maintenance management:</u> Installation of automated maintenance software and corresponding hardware to replace obsolete Hewlett Packard maintenance software, and to provide systems support for areas using manual tracking methods.</p>

Sub-phase	Scope
	<u>Waterworks programming services</u> : Programming services to meet the requirements of water quality testing as a result of the water quality work process improvements implemented as part of the business planning process.
Phase III (FY99-01)	Procurement of new integrated financial and procurement system. Network project support. Procurement of replacement Human Resources/Payroll system. Complete Purchase and installation of a back-up generator for Building 36 in the Charlestown Navy Yard.
Phase IV	Year 2000 assessment and improvements. Complete.
Phase V (FY01-09)	<u>Waterworks Operations Management System (OMS)</u> : Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. In FY01, the scope was expanded to include replacement of obsolete Open-VMS minicomputers at Deer Island with current servers running Microsoft-NT and also updating OMS software to run on the new platform. <u>Laboratory Information Management System</u> : Implementation of software improvements to stay current with industry standards and meet ongoing business needs. <u>Geographical Information Management System (GIS)</u> : Conversion of GIS from UNIX to NT based on vendor software changes. Also, in anticipation of recommendations from a TV Inspection Benchmarking Project currently underway, purchase of new software to improve data and operational efficiencies.
Phase VI (FY04 – 09)	Replacement of the Deer Island PBX with a Mitel PBX (completed in FY04). Purchase of a backup UNIX minicomputer to be used for Lawson processing, storage improvements for all MWRA's minicomputer and server resources. Storage and server improvements to address growing data requirements. Re-licensing Microsoft Office products for PC users. The replacement of InfoStar, the MWRA Document Management System was originally part of this phase but it was eliminated in December 2004. MIS staff will do the development. The net savings is \$500k.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$25,340	\$18,240	\$7,100	\$261	\$842	\$3,161	\$2,843	\$47	\$207

Project Status 11/04	72.9%	Status as % is approximation based on project budget and expenditures. Phases V and VI are in process. Also, currently in process of procuring the TRAC IS system.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$25,873	\$25,340	(\$533)	June 09	June 09	-	\$7,687	\$7,154	(\$533)

Explanation of Changes

- Reduced budget as part of MWRA initiative to contain rate increases.

CEB Impact

Any identifiable impacts will be included in future operating budgets.

S. 932 Environmental Remediation

Project Purpose

To implement remedial programs necessary to protect the environment and to ensure compliance with the Clean State Initiative.

Project History and Background

Fuel tank replacements at Prison Point CSO, Cottage Farm CSO, and Chelsea Creek Headworks will enable MWRA to meet all current regulatory requirements and provide enhanced spill prevention and leak detection capabilities.

In accordance with the Massachusetts Contingency Plan, MWRA installed an oil recovery system to clean up oil contamination at Prison Point in conjunction with the tank replacement. Removed contaminated soil in conjunction with the tank replacement at the Chelsea Creek Headworks.

Many MWRA underground storage tanks (USTs) have been upgraded or replaced to meet current regulations. Two USTs at the Prison Point CSO were replaced in spring 1999, with remediation work remaining to be completed. Chelsea Creek Headworks and Cottage Farm UST replacement construction was completed in December 2002. The Commercial Point CSO and Hingham Pump Station UST Upgrades construction contract began in February 2003 and was completed in March 2003.

Scope

Sub-phase	Scope
Technical Assistance – Environmental Remediation	Design, construction oversight, and waste site clean-up services for Prison Point, Cottage Farm, and Chelsea Creek tank replacements.
Prison Point Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Prison Point CSO facility. Operation of oil recovery system. Assessment, design and installation of system upgrades.
Cottage Farm Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Cottage Farm CSO facility.
Cosgrove Power Station – Design/CS and Construction	Design and construction of stormwater collection and surface water discharge system.
Oakdale Power Station – Design and Construction	Design and construction of non-contact cooling water disposal system. Design includes resolution of MCP issues associated with ground water conditions.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$1,860	\$1,261	\$600	\$122	\$95	\$95	\$189	\$52	\$168

Project Status 11/04	69.5%	Status as % is approximation based on project budget and expenditures. The Prison Point Tank removal project is in process.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$1,764	\$1,860	\$96	Dec 04	Jun 07	30 mos.	\$509	\$553	\$44

Explanation of Changes

- Modified schedule to reflect more likely pace of work.

CEB Impact

None identified at this time.

S. 934 MWRA Facilities Management and Planning

Project Purpose

To improve MWRA operations by consolidating projects and providing a central point of review and decision making for space planning decisions.

Project History and Background

This project consolidates existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions. This project will cover work to rehabilitate or demolish the old Administration Building on Deer Island as the building has deteriorated and certain structures need to be upgraded to current standards if it is to remain occupied. Project also includes the installation of the sandblast booth and the paint booth, purchased from the Chelsea Facility developer, in the Maintenance Building at Chelsea for a full functional shop, and funds to construct a washdown area to sanitize tools, equipment, and parts before working on them in the shop area at Chelsea. Of the \$4 million project budget, \$2.4 million is a transfer of existing phases from DI for maintenance facilities and the remainder is for new work proposed to complete the work in Chelsea.

Scope

Sub-phase	Scope
Design & Engineering Services	Design and engineering services to support space plan.
Facilities Construction	Construction of modifications to MWRA facilities in accordance with space plan.
Facilities Fit-out	Purchase of furniture and other items to fit-out new and/or modified facilities.

Expenditure Forecast (in \$000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
\$3,931	\$0	\$3,931	\$0	\$343	\$1,109	\$1,330	\$500	\$650

Project Status 11/04	%	Status as % is approximation based on project budget and expenditures. Design services to commence in March 2005.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
\$3,931	\$3,931	\$0	June 09	June 09	\$0	\$3,931	\$3,931	\$0

Explanation of Changes

- None

CEB Impact

- CEB impacts have not yet been identified for this project.

APPENDIX 2

Fiscal Year 2004 – 2015 Expenditure Forecast Report with Planned NTP and SC dates

Understanding the Expenditure Forecasts

Capital expenditure forecasts, sometimes referred to as project cashflows, are presented in this section of the Proposed FY06 Capital Improvement Program document. Expenditure forecasts are accrual based, i.e., projected expenditures are estimated based on when services are expected to be rendered. Projects appear in this report in the same order they appear on-line, organized by capital program area. Grant and loan receipts for various projects and programs appear in the section following the expenditure forecasts.

The following presents a description of each column in the expenditure forecast tables:

Project and Subphase Names	The first column of the expenditure forecast identifies the organizational hierarchy of the CIP: capital program area (e.g., Wastewater System Improvements), program category (e.g., Interception and Pumping), project (e.g., Quincy Pump Facilities), phase (for BHP only), and sub-phases (e.g., Facilities Plan/EIR). Sub-phases represent awarded and unawarded contracts.
The Five Digit (FMS) and Four Digit (PSI) Numbers	<p>To the left of each project name is a string of nine numbers preceded by an S. These numbers are assigned by the Rates and Budget Department, and are the number reference for the sub-phase in MWRA's capital budgeting database, CAPSTAN.</p> <p>Following the "S" is a five-digit number representing the MWRA Lawson Activity Management System sub-phase number. Project budgets and expenditures are tracked by this account number.</p> <p>Following the five-digit sub-phase number is a four-digit number representing the contract reference number in MWRA's contract management system. This reference number is used to access contract information such as the award amount, change order activity, and processed invoices.</p>
Project Participant	The project participant is the consultant, designer, or contractor who has been awarded the contract for the project phase. Non-awarded contracts are identified by "TBS" (to be selected).
Notice to Proceed and Substantial Completion	Project schedules are tracked by two key milestones: Notice to Proceed and Substantial Completion. These milestones indicate the expected start and end dates for contract activity.
Total Contract Amount	The Total Contract Amount represents the budget amount for the program, program category, project, or sub-phase. For unawarded contracts, the contract amount is based on a cost estimate. For awarded contracts, this amount includes the award amount plus any change orders, amendments, and purchase orders accounted for prior to completing the budget.
Projected Payments through FY04	Projected Payments through FY04 includes actual and accrued expenditures since the inception of the contract through the end of FY04
Remaining Balance 6/30/04	Remaining Balance 6/30/04 is calculated by subtracting Projected Payments through FY04 from the Total Contract Amount. This amount is then spread in the columns to the right, from FY05 to Beyond FY14.
Expenditure Forecasts	The remaining columns in the spreadsheet contain projections for capital spending by sub-phase across fiscal years 2005 through 2015. Forecasts are presented quarterly for fiscal year 2005 and annually for fiscal years 2006 through 2015.

MWRA CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM EXPENDITURE FORECAST FY2004-2008 (\$000)													
	Total Contract Amount	Projected Pmts. Thr. FY04	Remaining Balance 6/30/04	FY2004	FY2005	Q1 FY06	Q2 FY06	Q3 FY06	Q4 FY06	FY2006	FY2007	FY2008	5-Year Total FY04-08
Wastewater System Improvements	1,522,898	756,510	766,388	92,163	107,212	36,902	30,257	30,098	28,867	126,124	139,982	157,544	623,025
Waterworks System Improvements	1,866,692	1,375,723	490,969	100,093	89,105	18,529	16,263	19,440	20,776	75,010	65,290	91,558	421,056
Business & Operations Support	60,932	32,362	28,570	1,761	5,193	1,963	2,939	1,921	3,118	9,941	6,764	1,899	25,558
Contingency	121,184	0	121,184	0	0	4,206	3,657	3,829	4,935	16,627	19,751	26,776	63,154
Total MWRA	\$3,571,706	\$2,164,595	\$1,407,111	\$194,016	\$201,510	\$61,600	\$53,116	\$55,288	\$57,696	\$227,702	\$231,787	\$277,777	\$1,132,792

TEN-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM EXPENDITURE FORECAST FY2006-2015 (\$000)													
	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	10-Year Total FY06-15
Wastewater System Improvements			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			75,010	65,290	91,558	92,706	73,724	51,271	30,892	10,746	-11,570	-11,491	468,136
Business & Operations Support			9,941	6,764	1,899	1,659	790	779	797	750	0	0	23,379
Contingency			16,627	19,751	26,776	20,127	10,879	7,013	4,825	2,586	7,500	5,100	121,184
Total MWRA			\$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	\$194,016	\$201,510	\$227,702	\$231,787	\$277,777	\$1,132,792							
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

Massachusetts Water Resources Authority
Wastewater System Improvements
Capital Expenditure Forecast: FY2006-2015
(000's)

	Notice to Proceed	Substantial Completion	Total Contract Amount	Projected Pmts Thr. FY04	Remaining Balance 6/30/04	Q1 FY05	Q2 FY05	Q3 FY05	Q4 FY05	FY05	Projected Pmts. Thr. FY05	Remaining Balance 6/30/05	Q1 FY06	Q2 FY06	Q3 FY06	Q4 FY06	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	Beyond FY15
S.136 West Roxbury Tunn			8,880	8,880	0						8,880	0															
S.10299.6230 Inspection	Jul-98	Sep-99	344	344	0						344	0															
S.10333.6570 Design/CS/RI	Apr-00	Jun-03	1,412	1,412	0						1,412	0															
S.10332.6569 Construction	Jun-01	Jun-02	6,674	6,674	0						6,674	0															
S.10330.6567 Legal	Apr-00	Mar-10	2	2	0						2	0															
S.10331.6568 Land Acquisition	Apr-00	Mar-10	440	440	0						440	0															
S.10366.6709 Technical Assistance	Nov-99	Mar-10	8	8	0						8	0															
S.10377.6789 Planning/EIR																											
S.137 Wastewater Central Monitoring			15,475	1,928	13,548	150	224	280	726	1,380	3,308	12,167	1,628	1,628	2,422	2,422	8,101	4,044	11	11							
S.10301.6232 Planning	Jan-98	Jul-99	563	563	0						563	0															
S.10319.6532 Design and Integration Services	Jun-02	Nov-08	5,594	1,364	4,230	150	224	280	259	913	2,278	3,317	414	414	414	414	1,656	1,638	11	11							
S.10320.6533 Construction 1 (CP1)	Apr-05	Aug-06	5,711	0	5,711				457	457	457	5,254	1,199	1,199	1,199	1,199	4,797	457									
S.10321.6534 Construction 2 (CP2)	Nov-05	Nov-06	3,176	0	3,176						0	3,176			794	794	1,588	1,588									
S.10357.6657 Construction 3 (CP3)	Jul-06	Jan-07	351	0	351						0	351						351									
S.10322.6535 Technical Assistance	Sep-02	Aug-08		0	0						0	0															
S.10358.6658 Professional Services 1(Data Integration)				0	0						0	0															
S.10359.6659 Professional Services (Hydraulic Model)				0	0						0	0															
S.10355.6655 Professional Services 3 (Transport)				0	0						0	0															
S.10356.6656 Design & Integration Services				0	0						0	0															
S.10398.6861 Equipment Prepurchase	Apr-05	Jun-07	80		80				10	10	10	70	15	15	15	15	60	10									
S.139 South System Relief Project			5,021	3,440	1,581	6	6	6	7	26	3,466	1,555	7	7	7	7	27	26	814	687							
S.10309.6419 CS/RI-Archdale	Nov-98	Aug-99	6	6	0						6	0															
S.10310.6420 Construction-Archdale	May-99	Aug-99	211	211	0						211	0															
S.10318.6519 Sec 70&71 HLS Eval.	Sep-98	Oct-99	216	215	0						215	0															
S.10349.6611 Sec 70 & 71 HLS Construction	Jun-99	Oct-99	417	417	0						417	0															
S.10345.6595 Design Outfall 023	Jun-99	Sep-99	1	1	0						1	0															
S.10346.6596 Cleaning Outfall 023	Apr-00	Nov-00	1,098	1,098	0						1,098	0															
S.10347.6605 Land Acquisition/Easements	Apr-99	Jun-07	80	5	75	6	6	6	6	25	30	50	6	6	6	6	25	25									
S.10350.6616 Milton Financial Assistance	Oct-99	Jun-00	1,488	1,488	0						1,488	0															
S.10362.6680 Legal/Permits	Jul-99	Jun-07	5	0	5				1	1	1	4	1	1	1	1	2	1	1								
S.10386.6801 Outfall 023 Str Improvements	Jul-07	Dec-08	1,500		1,500							1,500								813	687						
S.141 Wastewater Process Optimization			2,187	865	1,322	47	42			89	954	1,233								54	76	380	698	25			
S.10367.6733 Planning	Aug-01	Aug-04	954	865	89	47	42			89	954	0															
S.10412.6930 Somerville Sewer-Planning																											
S.10413.6931 Somerville Sewer-Design	Oct-08	Aug-11	200		200							200								54	76	60	10				
S.10414.6932 Somerville Sewer-Construction	Mar-11	Aug-11	883		883							883										320	563				
S.10415.6933 Siphon- Planning	Nov-11	Jun-12	150		150							150											125	25			
S.142 Wastewater Meter Sys-Equip Replace			6,578	859	5,720	988	2,912	281	238	4,420	5,278	1,300								100					83	442	675
S.10371.6739 Planning/Study	Dec-07	Apr-08	100	0	100						0	100								100							
S.10379.6793 Equipment Purchase/Installation	Nov-03	Mar-08	5,278	859	4,420	988	2,912	281	238	4,420	5,278	0															
S.10410.6928 Design	Jul-13	Jan-16	200		200							200													83	73	44
S.10411.6929 Construction	Jan-15	Jan-16	1,000		1,000							1,000														369	631
S.143 Regional I/I Management Planning			169	169	0						169	0															
S.10372.6740 Cmom/Planning	Jan-01	Jun-03	169	169	0						169	0															
S.10390.6819 I/I and SSO Reduction	Apr-02																										
S.145 I&P Facility Asset Protection			20,455	1,550	18,906	20	-2	23	624	664	2,213	18,242	814	906	452	1,861	4,032	6,687	4,428	1,895	1,199						
S.1400 Interceptors			8,159	1,550	6,609	20	-2	23	624	664	2,213	5,946	14	54	157	1,266	1,490	3,352	1,103								
S.10383.6798 Rehab of Section 93A Lexington	Jul-03	Apr-04	1,566	1,548	17	20	-2				17	1,566															
S.10392.6829 Technical Assistance	Jul-02	Nov-07	40		40				1	1	1	39	7	7	7	7	28	8	3								
S.10394.6842 Sections 80&83	Mar-06	May-07	715		715							715				123	123	592									
S.10395.6843 Section 160	Jan-06	Jan-08	4,683		4,683							4,683				985	985	2,600	1,098								
S.10396.6857 Survey	Nov-04	May-05	52		52			23	23	45	45	7	7				7										
S.10397.6858 Permits	May-03	Nov-07	6	1	5						1	5				1	1	2	2								
S.10423.6987 93 A Force Main Replacement	Sep-05	Jun-06	497		497							497															
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	Jun-04	Jun-05	600		600				600	600	600	0				47	150	150	347	150							
S.10420.6938 Des-Prison Pt HVAC Upgrades	Jul-07	Feb-10	150		150							150															
S.1410 Facilities			12,296		12,296						12,296	800	852	295	595	2,542	3,335	3,325	1,895	1,199							
S.10380.6795 Prison Point HVAC Upgrades	Mar-09	Feb-10	694		694							694															

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S.19280.6969 Fuel Transfer Pipe Repl Des	Nov-05	Apr-08	345		345							345				47	47	94	93	158								
S.19281.6970 Fuel Transfer Pipe Repl Const	Mar-07	Mar-08	1,213		1,213							1,213						100	1,113									
S.19282.6971 NMPS Motor Ctrl Ctr Des	Sep-06	Jul-09	575		575							575						230	118	182	45							
S.19283.6972 NMPS Motor Ctrl Ctr Constr	Oct-07	May-09	2,891		2,891							2,891							913	1,826	152							
S.19278.6967 Second Deaerator Design	Apr-08	Mar-09	86		86							86								86								
S.19279.6968 Second Deaerator Constr	Jun-09	Jun-10	243		243							243									202	40						
S.1830 Support			603	125	478				31	31	156	447	12	41	25	51	129	95	87	50	50	36						
S.19162.6241 DISC Application	Jun-96	Dec-07	250	125	125				21	21	146	104		21		21	42	30	32									
S.19241.6791 Document Format Conversion	Jun-05	Dec-10	353		353				10	10	10	343	12	20	25	30	87	65	55	50	50	36						
S.1840 Specialties			3,098	3,098	266	399	133		86	884	884	2,214	259	173		26	457	265	204	1,288								
S.19237.6764 Sodium Hypo Tank Repair 1	Apr-05	Oct-05	518		518				86	86	86	431	259	173			431											
S.19249.6848 Metals Lab Fume Hood Repl	May-06	Nov-06	126		126							126						126										
S.19251.6850 Metals Lab Modification Constr	May-05	Nov-05	798		798	266	399	133		798	798	0																
S.19261.6878 Lab Sample Area Mod-Des	Nov-06	Oct-08	87		87							87						71	16									
S.19262.6879 Lab Sample Area Mod-Const	Oct-07	Oct-08	377		377							377							188	189								
S.19276.6965 Gravity Thickener Improv Des	Feb-06	Apr-09	188		188							188				26	26	68			94							
S.19277.6966 Gravity Thickener Imp Constr	Apr-08	Apr-09	1,006		1,006							1,006									1,006							
S.12 Residuals			67,654	65,549	2,105	339	570	220	272	1,401	66,949	704	29				29									338	337	
S.25941.5667 Design/RI/CS-Pelletizing 1	Dec-94	Dec-03	9,098	9,098	0						9,098	0																
S.25948.5669 Fast-Track Equip. Prepurchase	Aug-94	Jul-95	301	301	0						301	0																
S.26055.6009 Fast-Track Equip. Installation	Oct-94	Apr-96	1,450	1,450	0						1,450	0																
S.26056.6010 Phase 2 Outside Construction	Jan-96	Aug-98	13,019	13,019	0						13,019	0																
S.26057.6011 Phase 3 Equip. Prepurchase	Feb-95	Jul-98	4,777	4,746	31				31	31	4,777	0																
S.26058.6012 Phase 3 Inside Construction	Mar-97	Dec-01	32,378	32,378	0						32,378	0																
S.26065.6612 Fire Related Costs	May-99	Oct-99	1,694	1,694	0						1,694	0																
S.25961.5643 Res. Research	Aug-90	Apr-97	419	419	0						419	0																
S.26059.6083 License Fee	Jan-15	Jan-17	675	675	0						675	0														338	337	
S.25968.5831 Royalty Payment	Feb-96	Sep-97	575	575	0						575	0																
S.26066.6615 Legal Services for Sludge Processing	Apr-99	Apr-05	3,268	1,869	1,400	339	570	220	241	1,370	3,239	29	29				29											
S.13 CSO			747,035	251,207	495,828	20,682	7,555	22,831	8,759	59,827	311,034	436,001	22,544	15,256	14,949	12,939	65,688	90,176	124,272	75,973	24,567	11,136	11,253	7,195	5,826	5,826	14,089	
S.3520 MWRA Managed			404,453	96,664	307,789	4,397	7,275	5,043	7,756	24,470	121,134	283,319	7,658	6,895	4,528	11,641	30,723	68,437	104,581	62,646	16,243	688						
S.339 North Dorch Bay & Reserve Channe			223,692	14,928	208,764	92	2,347	1,261	1,088	4,788	19,716	203,976	1,528	2,621	1,722	8,617	14,488	44,718	76,604	51,258	16,219	688						
S.32660.6220 Design ESDC/Tunnel	Sep-04	Apr-11	24,619	14,928	9,690	92	2,347	1,261	898	4,588	19,526	5,092	624	523	220	187	1,554	747	747	747	747	550						
S.32661.6244 Tunnel Construction (Ch30)	Apr-06	Dec-09	151,959	0	151,959						0	151,959						6,838	6,838	37,610	68,382	34,697	4,432					
S.32662.6245 Dewater/Odor Control Constr	Sep-08	Mar-10	19,127	0	19,127						0	19,127									10,627	8,500						
S.32726.6993 Tunnel & Facilities CM Services	Jun-05	Mar-11	20,965	0	20,965				190	190	190	20,775	309	309	309	1,590	2,517	6,260	6,260	3,972	1,628	138						
S.32732.7012 Pleasure Bay Construction	Aug-05	Feb-06	3,579	0	3,579						3,579	595	1,789	1,193	2	3,579												
S.32733.7013 Design ESDC/Facilities	May-07	Mar-10	3,443	0	3,443						3,443							101	1,215	1,215	912							
S.354 Hydraulic Relief Projects			2,295	2,295	0						2,295	0																
S.32692.6250 Design/CS/RI	Aug-97	Aug-01	558	558	0						558	0																
S.32669.6252 Construction	Jul-99	Aug-00	1,737	1,737	0						1,737	0																
S.347 East Boston Branch Sewer Relief			68,058	8,338	59,720	12	156	221	273	662	9,000	59,059	273	273	273	273	1,091	18,709	27,854	11,381	24							
S.32673.6256 Design	Mar-00	Nov-09	9,577	3,151	6,426	12	3	91	273	378	3,530	6,047	273	273	273	273	1,091	2,242	1,777	913	24							
S.32674.6257 East Boston Branch Relief Sewer	Oct-06	Dec-08	44,818	0	44,818						44,818	0							14,939	19,919	9,960							
S.32716.6790 Boston Paving	Jun-07	Dec-08	50	0	50						50	0								50								
S.32719.6840 East Boston Branch Sewer Rehab	Apr-03	May-04	5,470	5,187	283		153	130			283	5,470	0															
S.32720.6841 Sections 38 & 207 Replacement	Apr-07	Jul-08	8,143	0	8,143						8,143	0						1,527	6,107	509								

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S.348 BOS019 Storage Conduit			10,626	1,605	9,021	223	94	48	269	634	2,238	8,387	948	1,093	1,646	2,032	5,719	2,663	5									
S.32675.6258 Design	Jul-02	Nov-04	2,104	1,605	500	223	94	48	20	385	1,989	115	20	20	20	20	80	35										
S.32677.6260 BOS019 Storage Conduit Constr	Mar-05	Mar-07	7,403		7,403				81	81	81	7,322	805	939	1,492	1,878	5,114	2,208										
S.32728.7008 Construction Management Services	Mar-05	Sep-07	1,118		1,118				168	168	168	950	123	134	134	134	525	420	5									
S.349 Chelsea Trunk Sewer			29,765	29,757	8	8				8	29,765	0																
S.32659.6198 Design/CS/RI	Jun-97	Aug-03	8,392	3,629	8	8				8	3,637	0																
S.32679.6262 Chelsea Trunk Relief	Sep-99	Aug-00	3,577	3,577	0						3,577	0																
S.32680.6263 Chelsea Branch Sewer	Dec-99	Jul-01	19,141	19,141	0						19,141	0																
S.32689.6370 Rehab/Chelsea Brnch/Revere Ext	Aug-01	Jun-02	3,125	3,125	0						3,125	0																
S.32690.6371 Modify Chelsea Screen House	Aug-00	Dec-00	284	284	0						284	0																
S.350 Union Park Detention Treatment Fac			44,959	17,405	27,554	4,062	4,628	3,513	6,101	18,303	35,708	9,251	4,796	2,828	840	640	9,104	146										
S.32681.6264 Design	Dec-99	Apr-06	8,392	4,839	3,554	364	433	430	470	1,697	6,536	1,856	500	510	460	240	1,710	146										
S.32682.6265 Construction	Mar-03	Apr-06	41,828	13,859	27,970	4,284	4,824	3,750	6,425	19,283	33,142	8,686	5,107	2,819	680	80	8,686											
S.32718.6826 Construction - Park	Apr-03	May-06	500	75	425				105	105	180	320				320	320											
S.32721.6909 BWSC Construction ...	Mar-03	Jan-06	-5,762	-1,368	-4,394	-586	-630	-772	-794	-2,782	-4,150	-1,612	-811	-501	-300	0	-1,612											
S.353 Upgrade Existing CSO Facilities			22,388	22,337	51		51			51	22,388	0																
S.32647.6123 Design	Jun-96	Oct-02	6,501	6,451	51		51			51	6,501	0																
S.32685.6268 Cottage Farm CSO Facility	Mar-98	Jan-00	4,377	4,377	0						4,377	0																
S.32686.6269 Prison Point CSO Facility	May-99	Feb-01	3,339	3,339	0						3,339	0																
S.32693.6496 Comm/Fox Point, Som. Marginal	Nov-99	Aug-01	8,029	8,029	0						8,029	0																
S.32687.6270 Non-Treated Floatable (Beacon)	Mar-99	Dec-99	124	124	0						124	0																
S.32717.6803 Cottage Farm Programing	Dec-00	Dec-01	17	17	0						17	0																
S.355 MWR003 Gate & Siphon			1,848	1,848					25	25	25	1,823	31	31	31	31	123	1,600	93	7								
S.32722.6952 Design	Apr-05	Feb-08	308	308					25	25	25	283	31	31	31	31	123	137	16	7								
S.32723.6953 Construction	Nov-06	Feb-08	1,540	1,540							1,540							1,463	77									
S.357 Charles River CSO Controls			824		824							824	83	49	17	48	197	601	26									
S.32729.7009 Study																												
S.32730.7010 Design CS/RI	Jul-05	Jun-07	383	383							383		83	49	17	48	197	160	26									
S.32731.7011 Construction	Sep-06	Jun-07	441	441							441							441										
S.3521 Community Managec			291,248	116,287	174,961	16,169		17,668	828	34,665	150,953	140,295	14,686	833	10,053	935	26,507	20,642	17,146	13,220	8,144	10,448	11,253	7,195	5,826	5,826	14,089	
S.340 S. Dorch Bay Sew Separ (Fox Pt.)			54,521	34,095	20,426	5,150		6,744		11,894	45,989	8,532	2,690		2,341		5,031	1,338	1,282	876	5							
S.32651.6155 Design	Jun-96	Aug-09	11,211	10,086	1,125	311			333		644	10,729	482	103		80	183	137	81	76	5							
S.32664.6247 Construction	Apr-99	Nov-06	43,310	24,010	19,300	4,839			6,411		11,250	35,260	8,050	2,587		2,261	4,848	1,201	1,201	800								
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)			62,993	33,595	29,398	3,410		4,623		8,033	41,628	21,365	5,066		3,653		8,719	8,083	3,740	821	2							
S.32650.6154 Design	Jun-96	Aug-09	13,279	11,897	1,382	197			238		435	12,332	947	151		82	233	455	198	59	2							
S.32665.6248 Construction	Apr-99	Nov-07	49,714	21,699	28,015	3,213			4,385		7,598	29,296	20,418	4,915		3,571	8,486	7,628	3,542	762								
S.344 Stony Brook Sewer Separation			43,711	24,767	18,944	5,457		5,642		11,099	35,866	7,845	4,800		2,166		6,966	879										
S.32667.6395 Design/CS/RI	Jul-98	Apr-07	9,182	7,869	1,313	390			408		798	8,667	515	275		123	398	117										
S.32668.6251 Construction	Jul-00	Sep-06	34,529	16,898	17,631	5,067			5,234		10,301	27,198	7,331	4,525		2,043	6,568	763										
S.342 Neponset River Sewer Separation			2,681	2,444	237						2,444	237	237				237											
S.32652.6156 Design/CS/RI	Apr-96	Dec-03	480	470	10						470	10	10				10											
S.32653.6160 Construction	Aug-96	Oct-02	2,201	1,975	226						1,975	226	226				226											
S.343 Constitution Beach Sewer Separator			3,769	3,769	0						3,769	0																
S.32649.6153 Design/CS/RI	Oct-96	Dec-02	673	673	0						673	0																
S.32666.6249 Construction	May-98	Apr-02	3,096	3,096	0						3,096	0																
S.346 Cambridge CAM002-004 Sew.Separation			39,467	16,306	23,161	1,111			828	1,939	18,245	21,222		833		614	1,447	2,274	1,950	1,867	2,266	4,622	5,427	1,369				
S.32654.6161 Design/CS/RI	Jan-97	Jun-13	10,980	6,695	4,285	1,016			347	1,363	8,058	2,922		455		207	662	234	277	194	593	439	407	116				
S.32672.6255 Construction	Jul-98	Dec-12	28,487	9,611	18,876	95			481	576	10,187	18,300		378		407	785	2,040	1,673	1,673	1,673	4,183	5,020	1,253				
S.351 BWSC Floatables Controls			933	933	0						933	0																
S.32657.6168 Design	Dec-98	Dec-02	555	555	0						555	0																
S.32683.6266 Construction	Aug-00	Mar-02	378	378	0						378	0																
S.352 Cambridge Floatables Controls			2,660	377	2,283	545				545	922	1,																

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S.356 Fort Point Channel Sewer Separator			5,258		5,258	497			614	1,111	1,111	4,147	1,178		1,178		2,356	1,778	13									
S.32725.6992 Construction	Mar-05	Mar-07	4,178		4,178			522		522	522	3,656	1,045		1,045		2,090	1,566										
S.32724.6991 Design	May-04	Mar-08	1,080		1,080	497		92		589	589	491	133		133		266	212	13									
S.358 Morrissey Boulevard Drain			20,883	0	20,883				45	45	45	20,838	655		655		1,310	4,340	7,572	7,571	45							
S.32735.7015 Design	Jun-05	Dec-09	3,909		3,909			45		45	45	3,864	655		655		1,310	945	782	782	45							
S.32713.6696 Construction	Dec-06	Jun-09	16,974	0	16,974						0	16,974						3,395	6,790	6,789								
S.359 Reserved Channel Sewer Separator			54,372		54,372							54,372	60		60		120	1,081	2,041	2,085	5,826	5,826	5,826	5,826	5,826	5,826	14,089	
S.32734.7014 Design	Jan-07	Jun-18	11,105		11,105							11,105	60		60		120	1,081	2,041	1,253	834	834	834	834	834	834	1,606	
S.32727.6994 Construction	May-09	Dec-17	43,267		43,267							43,267							832	4,992	4,992	4,992	4,992	4,992	4,992	4,992	12,483	
S.324 CSO Support			51,334	38,256	13,078	116	280	120	175	691	38,947	12,387	201	7,527	368	362	8,458	1,097	2,545	107	180							
S.32400.5790 Technical Assistance	Feb-94	Dec-95	228		228	0					228	0																
S.32407.5970 Tech. Assistance-Geotech			61		61	0					61	0																
S.32401.5791 Planning/EIR	Mar-88	Sep-90	10,769		10,769	0					10,769	0																
S.32403.5716 Master Planning	Mar-92	Sep-04	22,007		21,872	135	1	134		135	22,007	0																
S.32645.6036 Watershed Planning	Dec-94	Apr-01	877		877	0					877	0																
S.32409.5795 Modeling	May-92	Mar-95	300		300	0					300	0																
S.32411.5767 SOP Program	Jan-94	May-01	1,957		1,957	0		0		0	1,957	0																
S.32691.6372 System Assessment	May-97	Dec-08	476		27	449			25	25	50	77	399	25	178	30	25	258	43	43	43	12						
S.32648.6150 Technical Review	Jul-96	Dec-09	717		449	267			96	18	78	191	641	76	10	10	10	40	31	5								
S.32658.6169 Land/Easement	Jul-96	Jul-08	13,943		1,716	12,227	115	51	77	72	315	2,031	11,912	166	7,340	327	327	8,160	1,023	2,497	64	168						
S.14 Other			68,877	51,280	17,597	1,680	1,570	1,250	2,950	7,450	58,730	10,147	1,176	1,506	1,063	1,322	5,067	948	1,497	2,567	3,130	3,176	4,345	2,620	-4,451	-3,571	-5,180	
S.128 I/I Local Financial Assistance			68,593	51,002	17,592	1,677	1,568	1,250	2,950	7,444	58,446	10,147	1,176	1,506	1,063	1,322	5,067	948	1,497	2,567	3,130	3,176	4,345	2,620	-4,451	-3,571	-5,180	
S.10232.5300 Community I/I Grants					5,783	-5,783				-5,783	-5,783	0	0															
S.10233.5393 Community I/I Loans					17,226	-17,226				-17,226	-17,226	0	0															
S.10234.5394 Community I/I Loan Repayment					-17,181	17,181				17,181	17,181	0	0															
S.10273.6084 Grants - Phase I					9,480	6,457	77	125	125	6,130	6,457	15,937	0															
S.10274.6085 Loans - Phase II	May-93	May-06	47,664		28,439	19,225	231	375	375	18,244	19,225	47,664	0															
S.10282.6170 Repayment - Phase II	May-94	May-11	-47,664		-23,744	-23,920	-290	-374	-907	-17,168	-18,737	-42,481	-5,183	-237	-191	-916	-357	-1,701	-1,508	-1,098	-476	-400						
S.10316.6505 Grants-Phase III					11,507	-11,507	-194			-11,313	-11,507	0	0															
S.10316.6506 Loans-Phase III					14,064	-14,064	-237			-13,828	-14,064	0	0															
S.10317.6507 Repayment-Phase III					-6,910	6,910	511			6,399	6,910	0	0															
S.10368.6736 Grants - Phase IV	Nov-99	May-13	34,650		6,203	28,447	433	506	731	12,238	13,909	20,111	14,539	720	720	945	926	3,311	1,800	1,800	1,800	2,025	1,350	1,710	742			
S.10369.6737 Loans - Phase IV	Nov-99	May-13	42,350		7,581	34,769	529	619	894	14,958	16,999	24,580	17,770	880	880	1,155	1,132	4,047	2,200	2,200	2,200	2,475	1,650	2,090	907			
S.10370.6738 Repayment - Phase IV	Nov-00	May-18	-42,350		-1,452	-40,898	-871	-684	-969	-7,883	-10,406	-11,859	-30,491	-1,024	-793	-1,011	-1,269	-4,097	-4,610	-4,032	-3,144	-2,717	-2,624	-2,145	-2,123	-1,864	-1,424	-1,710
S.10348.6609 Public Participation	Feb-99	Jun-02	6		6	0					6	0																
S.10407.6925 Grants-Phase V	Aug-04	May-13	18,000		18,000	669	450	450	450	2,019	2,019	15,981	450	450	450	450	1,800	1,800	1,800	1,800	1,800	2,250	2,250	2,481				
S.10408.6926 Loans-Phase V	Aug-04	May-13	22,000		22,000	818	550	550	550	2,468	2,468	19,532	550	550	550	550	2,200	2,200	2,200	2,200	2,200	2,750	2,750	3,032				
S.10409.6927 Repayments-Phase V	Aug-05	May-18	-22,000		-22,000							-22,000	-164	-110	-110	-110	-494	-934	-1,374	-1,814	-2,254	-2,200	-2,310	-2,420	-2,586	-2,146	-3,469	
S.138 Sewerage System Mapping Upgrade			284	278	6	3	3			6	284	0																
S.10307.6417 Contract 1-Base Maps	Mar-99	Feb-01	67		67	0					67	0																
S.10308.6418 Contract 2-Existing Data	Jun-99	Apr-04	177		171	6	3	3		6	177	0																
S.10360.6666 Quincy Data Sharing	Jan-00	Dec-02	20		20	0					20	0																
S.10361.6667 Weymouth Data Sharing	Jan-00	Jun-01	20		20	0					20	0																

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S.2 Waterworks System Improvements			1,866,692	1,375,723	490,969	25,045	25,392	19,173	19,496	89,105	1,464,828	401,864	18,529	16,263	19,440	20,776	75,010	65,290	91,558	92,706	73,724	51,271	30,892	10,746	-11,570	-11,491	-66,272			
S.16 Drinking Water Quality Improvements			578,642	441,960	136,682	8,000	9,105	7,850	7,856	32,811	474,771	103,871	4,062	2,007	3,161	4,551	13,781	16,380	18,378	12,446	8,555	20,287	13,274	770	0	0	0			
S.542 Walnut Hill Water Treatment Plant			419,525	329,874	89,651	6,510	7,883	7,050	6,489	27,933	357,807	61,718	3,854	1,609	1,529	1,004	7,997	5,196	7,027	2,748	5,913	18,793	13,274	770						
S.53293.5023 Study 1	Jan-88	Feb-89	444	444	0						444	0																		
S.53294.5024 Study 2	Jul-90	Mar-94	2,368	2,368	0						2,368	0																		
S.53375.6182 AWWARF Study	Dec-96	Sep-03	692	624	68	26	20			68	692	0																		
S.53376.6206 Emerg Dis Res Water Mgmt Study	Nov-98	Sep-02	1,454	1,454	0						1,454	0																		
S.53367.6118 Crypto. Inactivation Study	Feb-97	May-00	150	150	0						150	0																		
S.53390.6365 Cosgrove Disinfection Ph II	Apr-98	May-99	2,169	2,169	0						2,169	0																		
S.53391.6397 Cosgrove Disinfection Ph I	Jul-97	Oct-97	150	150	0						150	0																		
S.53393.6406 Immediate Disinf. MECO	Jul-97	Jul-97	10	10	0						10	0																		
S.53392.6401 Distribution Water Consultant	Jul-97	Jun-98	3	3	0						3	0																		
S.53304.5157 Permit Fees	Jul-93	Dec-05	59	46	13	1	2	3	3	9	54	5	5				5													
S.53300.5997 Technical Assistance	Jan-88	Jun-00	72	72	0						72	0																		
S.53296.5042 EIR/Conceptual Design	Nov-93	Jul-95	5,808	5,800	8		8			8	5,808	0																		
S.53301.5017 Design/CS/RI - Wachusett WTP	Oct-96	Jun-06	49,159	44,199	4,959	752	925	925	925	3,527	47,727	1,432	358	358	358	350	1,424	8												
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	Jun-00	Jun-03	15,391	15,378	13	13				13	15,391	0																		
S.53412.6522 WHCP2 Interim Rehab. Wach. Aque.	Dec-00	Oct-02	23,400	23,400	0						23,400	0																		
S.53413.6488 WHCP3 Sitework & Storage Tanks	Mar-99	Nov-02	67,369	67,369	0						67,369	0																		
S.53414.6489 WHCP4 Treatment Facility	Dec-00	Jun-05	135,365	120,029	15,336	3,893	3,911	3,452	2,533	13,789	133,818	1,547	1,547										1,547							
S.53416.6491 WHCP6 Late Sitework	Jul-04	Nov-05	3,678	40	3,638	276	1,049	584	933	2,842	2,882	797	583	158	27	28	797													
S.53426.6650 WHCP7 Existing Facilities Mods	Jun-06	Jun-08	5,000	0	5,000	0					5,000	0							2,391	2,509	100									
S.53371.6134 Design Management Support	Apr-97	Apr-00	1,730	1,730	0						1,730	0																		
S.53378.6208 Construction Management/RI	Aug-98	Jun-06	31,831	23,729	8,102	1,260	1,432	1,425	1,425	5,542	29,271	2,559	980	730	650	190	2,550	9												
S.53395.6433 Corrosion Control-Norumbega																														
S.53396.6434 Corrosion Control Norumb. Construction																														
S.53409.6431 Booster Disinfection Design																														
S.53394.6432 Booster Disinfection Construction																														
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	Jan-98	Jun-98	217	217	0						217	0																		
S.53410.6485 Community Chlorine Analyzers	Apr-98	Jun-98	49	49	0						49	0																		
S.53418.6494 OCIP	Mar-99	Dec-04	5,802	5,847	-45	-10	-35			-45	5,802	0																		
S.53419.6495 Professional Services	Sep-98	Jun-03	2,762	2,622	140	7	25	25	25	82	2,704	58	38	20			58													
S.53420.6497 Marlboro MOA	Sep-98	Jun-05	5,859	5,859	0						5,859	0																		
S.53421.6520 WHWTP- MECO	Sep-98	Mar-05	310	128	182			60	122	182	310	0																		
S.53425.6613 Site Security Services	May-99	Mar-05	1,266	1,023	243	81	81	81	81	243	1,266	0																		
S.53427.6670 CSX Crossing	Aug-01	Dec-01	65	65	0						65	0																		
S.53428.6671 Wachusett's Algae Design CS/RI	Nov-05	Feb-09	450	0	450						450	0			48	48	96	129	135	90										
S.53448.6889 Wachusett's Algae ...	May-07	Feb-09	1,800		1,800						1,800									1,080	720									
S.53432.6691 Public Health Research	Jul-00	Jun-07	2,800	987	1,813	8	175	125	125	433	1,420	1,380	125	125	125	125	500	600	280											
S.53435.6756 Security Equipment	Jun-00	Jun-00	571	571	0						571	0																		
S.53436.6772 WHCP8 Cosgrove Screens Des	Feb-02	Mar-04																												
S.53437.6773 WHCP8 Cosgrove Screens Con	Aug-03	Aug-04	3,246	3,026	219	183	36			219	3,246	0																		
S.53438.6774 Wachusett UV Treatment Facility Study	May-02	Mar-05																												
S.53443.6815 AWWARF-Evaluation Ozone & UV	Jul-01	Jan-04	303	302	1		1			1	303	0																		
S.53444.6817 ComGas Pipeline																														
S.53445.6827 Fitout/Construction	Oct-03	Jul-07	1,350	13	1,337	20	253	253	253	779	792	558	50	50	50	50	200	250	108											
S.53449.6922 WH Ultra Violet Disinfect Study																														
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	Jan-07	Jun-12	9,500		9,500						9,500								730	2,192	1,828	713	2,280	1,615	142					
S.53451.6924 WH Ultra Violet Disinfect Cons	Jan-10	Jun-12	34,000		34,000						34,000										5,200	16,513	11,659	628						
S.53452.6939 As needed Tech Assistance #1	Jan-06	Dec-07	750		750						750				93	94	187	375	188											
S.53453.6951 Des WH CP7 Existing Fac Mods	Dec-04	Jun-08	1,373		1,373			96	145	241	241	1,132	168	168	85	25	446	329	347	10										
S.53455.6989 As needed Tech Assistance ...	Jan-06	Dec-07	750		750						750				93	94	187	375	188											
S.543 Quabbin Water Treatment Plant			15,456	9,832	5,624	87	50	104	183	425	10,256	5,199	25				25	134	358	640	2,549	1,494								

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S.544 Norumbega Covered Storage			107,472	100,575	6,897	1,365	1,122	633	1,122	4,241	104,815	2,657	126	166			1,915	2,206	58	117	182	93							
S.53297.5041 Conceptual Design/EIR	Sep-92	Oct-99	2,873	2,861	12				12	12	2,873	0																	
S.53364.6057 Owners Representative	Apr-98	Jun-05	4,636	3,917	719	108	120	120	120	468	4,385	251	126	126					251										
S.53383.6213 Design/Build	Nov-99	Jun-05	96,647	90,760	5,886	1,257	1,002	501	1,002	3,761	94,522	2,125		40		1,900	1,940		40	40	105								
S.53372.6145 Land	Mar-97	Dec-97	3,000	3,000	0						3,000	0																	
S.53365.6115 Appraisal	Nov-95	Dec-97	17	17	0						17	0																	
S.53403.6466 Permits	Jun-99	Dec-09	5	1	4						1	4							1	1	1	1							
S.53424.6606 Professional Services	Sep-98	Jun-07	51	19	32						19	32				15	15		17										
S.53422.6529 Booster Disinfection Design	Jul-07	Jan-10	244	0	244						0	244								76	76	92							
S.53423.6530 Booster Disinfection Construction					0						0	0																	
S.53430.6677 Water Quality Protection Fence																													
S.53431.6678 Communications Pilot Installation																													
S.53446.6837 Emergency Disinfection Constr																													
S.545 Blue Hills Covered Storage			35,956	1,446	34,510	38	50	63	63	213	1,659	34,297	57	232	1,632	1,632	3,553	10,992	10,876	8,876									
S.68025.6139 EIR/Preliminary Design/OR	May-97	Sep-08	2,357	1,446	911	38	50	50	50	188	1,634	723	50	50	50	50	200	238	200	85									
S.53384.6214 DB Field Oversight	Nov-05	Sep-08	2,189		2,189						2,189			175	175	525	724	655	285										
S.53386.6216 Design Build	Nov-05	Jun-08	31,305		31,305						31,305				1,400	1,400	2,800	10,000	10,000	8,505									
S.53385.6215 Tech Support/Permit Comp	Apr-02	Dec-07	104		104				13	13	25	25	7	7	7	7	28	30	21										
S.550 Low Service Storage Near Spot Pond			233	233	0						233	0																	
S.53400.6455 Env Rev	Apr-02	Feb-03	233	233	0						233	0																	
S.17 Transmission			752,089	628,661	123,427	2,007	4,565	3,774	4,226	14,571	643,232	108,856	6,233	6,378	7,666	6,759	27,036	7,416	24,869	29,786	15,802	3,675	272	0	0	0	0		
S.604 MetroWest Tunnel			703,384	621,293	82,091	345	3,827	437	604	5,212	626,505	76,879	1,508	2,444	2,396	2,187	8,535	2,885	20,889	25,038	15,584	3,675	272						
S.59794.5043 Study	Jun-84	Oct-89	415	415	0						415	0																	
S.59796.5048 Construction-Sudbury Pipe Bridge	Nov-91	Jun-92	296	296	0						296	0																	
S.59795.5044 Design/EIR - Tunnel/ESDC	Apr-92	Mar-07	37,981	37,388	593	48	55	161	245	509	37,897	84	49	15	8	8	80	4											
S.59798.6054 West Tunnel Segment - CP1	Apr-97	Apr-03	147,787	144,937	2,850		2,850			2,850	147,787	0																	
S.60013.6055 Midd Tunnel Segment - CP2	Jun-96	Apr-03	245,770	245,819	-50	-10	-40			-50	245,770	0																	
S.60015.6059 Shaft 5A - CP3	Aug-97	Aug-98	5,872	5,872	0						5,872	0																	
S.60040.6374 East Tunnel Segment-CP3A	Nov-98	Sep-02	56,055	56,054	0						56,054	0																	
S.60014.6056 MHD Salt Sheds - CP5	Sep-96	Jun-97	1,314	1,314	0						1,314	0																	
S.60030.6204 Testing & Disinfection-CP7	Jan-03	Oct-03	3,612	3,612	0		0			0	3,612	0																	
S.60029.6203 Loring Road Storage Tanks CP-8	Sep-97	Nov-00	41,368	41,368	0						41,368	0																	
S.59799.5284 Const. Mgmt/Resident Inspect	May-95	Apr-04	39,510	39,121	389	184	100	100	5	389	39,510	0																	
S.59806.5141 Hultman Study	Apr-95	Mar-05	2,095	1,864	231		40	50	50	140	2,004	91	50	41			91												
S.60022.6128 Hultman Leak Repair	Aug-96	May-97	307	307	0						307	0																	
S.60026.6140 Hultman Repair Band	Aug-96	Dec-96	28	28	0						28	0																	
S.60042.6430 Hultman Investigation and Repair	Jun-99	Nov-00	1,604	1,604	0						1,604	0																	
S.60043.6492 Hultman Repair Bands 98-99	Apr-99	Jun-99	116	116	0						116	0																	
S.59805.5139 Land Acquisition	Oct-95	Mar-08	6,259	6,259	0				0	0	6,259	0																	
S.59804.5976 Technical Assistance	Jun-84	Jun-98	131	131	0						131	0																	
S.60012.6037 DEP Permit Fees	Oct-94	Jun-02	50	45	5		1	2	2	5	50	0																	
S.60020.6117 Prof. Services	Nov-95	Dec-03	814	724	90	1	10	10	18	39	764	50	10	10	10	20	50												
S.60023.6129 Framingham MOU	May-96	Dec-03	2,539	2,539	0						2,539	0																	
S.60039.6367 Weston MOA	Apr-96	Oct-04	1,018	1,018	0						1,018	0																	
S.60038.6366 Southboro MOA	May-97	Jun-03	322	322	0						322	0																	
S.60053.6762 Wayland MOA	Jun-00	Dec-02	107	35	72				72	72	107	0																	
S.60017.6063 Local Sup Cont Des/CA/RI	May-96	Oct-99	859	859	0						859	0																	
S.60024.6130 Loc. Support Cont. Constr	Jun-97	Dec-03	4,258	4,251	6	2	2	1	1	6	4,258	0																	
S.60025.6131 Loc. Sup Cont. Legal/Easement	Apr-97	Jun-02	82	9	73				10	10	29	53	10	10	10	10	40	5	5	3									
S.60018.6067 Community Technical Assistance	Jun-95	Apr-99	297	297	0						297	0																	
S.60021.6122 OCIP	Jun-96	Jun-05	24,515	23,523	992	109	800	83		992	24,515	0																	
S.60054.6777 Equipment Prepurchase	Apr-05	Sep-05	500		500						500	300	300				300												
S.60058.6856 Hultman Rehab CP9	Jul-05	Jun-06	4,100		4,100					200	200	200	4,100	410	1,230	1,230	1,010	3,880	220										
S.60059.6872 Interim Disinfection	Jan-03	Apr-05	1,202	1,163	39	11	8	20		39	1,202	0																	
S.60066.6911 Design CA/RI CP6	Jul-05	Jul-11																											

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S.601 Sluice Gate Rehabilitation																														
S.59757.5255 Design/CS/RI	Aug-88	Jun-93	9,787	6,191	3,596	1,640	552	402	427	3,021	9,212	574	370	51	50	50	521	53												
S.59758.5256 Construction 1	Apr-91	Jul-93	1,529	1,529	0						1,529	0																		
S.60034.6272 Design CS/RI 2	Apr-98	Sep-06	1,298	841	457		28	50	50	75	203	1,045	253	50	50	50	200	53												
S.59760.5258 Construction 2	Sep-03	Sep-05	4,928	1,799	3,129	1,612	500	350	350	2,812	4,611	317	317				317													
S.59761.5259 Constr-Stop Planks	Dec-88	Jun-89	444	444	0						444	0																		
S.60027.6158 Const-Sudbury Toe Drain Repair	Sep-96	Jun-97	1,400	1,400	0						1,400	0																		
S.60049.6681 Public Participation	Jul-99	Sep-05	5	0	5		1	1	1	3	3	2	2	1			2													
S.60047.6564 Legal	Jul-99	Sep-05	5	0	5	0	1	1	1	3	3	2	2	0			2													
INHSE.PLKS Design-Stop Planks																														
S.615 Chicopee Valley Aqued. Redundancy																														
S.60048.6597 Pipeline Redundancy Planning	Sep-98	May-99	10,556	876	9,680	20	30	115	515	680	1,555	9,000	1,765	1,665	1,665	1,655	6,750	2,250												
S.60045.6527 Pipeline Redundancy Des/CA/RI	Apr-00	Dec-06	2,110	874	1,236	20	25	50	250	345	1,219	891	250	150	150	150	700	191												
S.60046.6528 Pipeline Redundancy Construction	Mar-07	Mar-07	8,345	0	8,345			50	250	300	300	8,045	1,500	1,500	1,500	1,500	6,000	2,045												
S.60065.6908 Construction Easements	Apr-03	Oct-06	50	2	49	0	5	5	5	15	17	34	5	5	5	5	20	14												
S.60074.7002 Permits	May-04	Jan-06	50		50	0	0	10	10	20	20	30	10	10	10		30													
S.597 Winsor Dam Hydroelectric																														
S.60032.6276 Preliminary Permit Study & Licensing	Nov-97		83	38	45		45			45	83	0																		
S.616 Quabbin Transmission System																														
S.60055.6828 Facilities Inspection	Jun-05	Feb-06	1,250		1,250				100	100	100	1,150	500	400	250		1,150													
S.75496.6831 Ph 1 Oakdale Valves Study/Des	Apr-04	Nov-06	1,475		1,475	0	100	100	150	350	350	1,125	250	250	250	250	1,000	125												
S.75491.6690 Phase 1 Oakdale Valves Const.	Oct-05	Nov-06	2,000	0	2,000						0	2,000		300	500	500	1,300	700												
S.60075.7007 Equipment Pre-purchase	Feb-05	Jun-10	1,006		1,006			100	100	200	200	806	100	100	50	50	300	150	100	100										
S.617 Sudbury / Weston Aqueduct Repairs																														
S.75486.6617 Haz Material Sudbury Aqueduct	Apr-99	May-05	300	263	37	2	2	5	5	13	276	24	5	5	5	9	24													
S.60056.6838 Sudbury Aqueduct Inspection	Jan-05	May-05	754		754			100	300	400	400	354	200	154			354													
S.60057.6839 Weston Aqueduct Inspection	Jul-04	Jun-05	50		50	0	10	15	25	50	50	0																		
S.60076.7016 Sudbury Short-Term Repairs	Jul-05	Dec-05	2,544		2,544							2,544	1,535	1,009			2,544													
S.619 Winsor Dam Repair																														
S.60077.7017 Design CA/RI	Apr-06	Jun-08	1,200		1,200						1,200						12	12	198	880	110									
S.60078.7018 Construction	Mar-07	Jun-08	1,000		1,000						1,000						12	12	98	80	10									
S.620 Wachusett Reservoir Spillway Improvement																														
S.60079.7019 Design	Apr-06	May-09	1,200		1,200						1,200						46	46	554	2,950	4,538	112								
S.60080.7020 Construction	Oct-07	May-09	7,000		7,000						7,000						46	46	554	228	360	12								
S.621 Watershed Land																														
S.60081.7069 Land Acquisition	Apr-04	Jun-06	9,000		9,000			2,500	2,000	4,500	4,500	4,500				2,500	2,000	4,500												
S.622 Cosgrove/Wachusett Redundancy																														
S.60082.7071 Cosgrove Tunnel Alternative Study	Jun-06	May-07	500		500						500																			
S.18 Distribution And Pumping																														
			506,105	222,430	283,675	6,305	7,238	7,593	6,876	28,013	250,443	255,662	7,132	5,036	5,675	6,358	24,202	32,501	41,115	41,990	44,046	23,659	14,507	8,992	8,920	6,729	9,001			
S.677 Valve Replacement																														
S.67559.5126 Construction 1	Nov-95	Nov-96	718	718	0						718	0																		
S.68012.6105 Construction 2	Nov-97	Jul-99	1,385	1,385	0						1,385	0																		
S.68039.6278 Construction 3	Feb-00	Aug-01	1,338	1,338	0						1,338	0																		
S.68079.6345 Construction 4	May-02	Oct-03	1,540	1,540	0						1,540	0																		
S.68080.6346 Construction 5	Mar-04	Jul-05	1,336	360	975	108	480	295	60	943	1,303	32	32				32													
S.68126.6435 Construction 6	Dec-05	May-07	1,965		1,965						1,965				150	450	600	1,365												
S.68127.6436 Construction 7	Oct-08	May-10	2,069		2,069						2,069										550	1,519								
S.68005.6088 Equip. Purchase	Oct-95	Jun-09	4,036	698	3,338		166	150	150	466	1,164	2,873	150	150	150	250	700	1,000	650	523										
S.67560.5124 Technical Assistance	Oct-95	May-09	106	106	0						106	0																		
INHSE.DES1 Design/Phase 1																														
S.68239.6859 Permits	Jan-02	May-09	5	0	5	0	0	0	0	1	1	4	0	0	0	0	1	1	1	1										
S.68240.6860 Easements	Jan-02	May-09	5	5	0						5	0																		
S.712 Catholic Protection Of Distr.Mains																														
S.68002.6058 Planning Phase I	Apr-95	Dec-97	108	108	0	0	0			0	108	0																		
S.68128.6437 Test Station Installation 1	Mar-05	Mar-06	399		399	0		50	50	100	100	299	100	100	99		299													
S.68129.6438 Test Station Installation 2	May-13	May-14	419		419	0				0	0	419							0	0										
S.68130.6439 Test Station Installation 3	May-14	May-15	419		419	0				0	0	419									50	369								
S.68131.6440 Test Station Installation 4	May-15	May-16	419		419	0				0	0	419																		
S.68216.6751 Technical Assistance	Jan-00	May-09	33	33	0	0				0	33	0																		

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S.678 Boston Low Serv.-Pipe & Valve Rehab			23,840	23,616	224	14	107	70	32	224	23,840	0															
S.67570.5120 Study - Pipe	Sep-84	Feb-91	297	297	0						297	0															
S.67571.5122 Design/CS	Jul-92	Nov-04	1,753	1,556	197	14	80	70	32	197	1,753	0															
S.67572.5123 Ph 1 Equip Prepurchase	Feb-95	Dec-95	892	892	0						892	0															
S.68000.6045 Const Clinton Rd & Boylston St	Jul-99	Apr-98	7,933	7,933	0						7,933	0															
S.67999.6044 Construction Beacon Street	Jun-00	Sep-03	12,964	12,937	27	0	27			27	12,964	0															
INHSE.PITS Test Pits																											
INHSE.BEAC Design/CS - Beacon St.																											
S.68217.6769 Technical Assistance	Jun-00	Aug-03	1	1	0						1	0															
S.730 Weston Aqueduct Supply Mains (WASMs)			113,627	51,566	62,061	2,765	2,191	1,788	1,875	8,619	60,186	53,442	1,209	165	240	456	2,070	928	2,585	4,510	10,563	5,310	5,926	7,540	2,528	2,860	8,622
S.68027.6142 Design/CA/RI-PhA/W1&2	Jun-97	Jul-06	5,374	4,500	875	82	100	100	75	357	4,856	518	100	100	100	400	118										
S.67865.5147 Design/CA/RI - W4	Mar-95	Jun-05	6,149	5,673	476	13	100	100	100	313	5,986	163	163			163											
S.68041.6280 Newton WASM 1&2	Mar-00	Jun-02	9,219	9,219	0						9,219	0															
S.68042.6281 Boston WASM 1&2	Feb-03	Jun-05	7,531	3,638	3,893	818	750	750	750	3,068	6,705	825	825			825											
S.68166.6539 Design/CA/RI WASM3	Jan-06	Jan-17	9,250	0	9,250						9,250	0			75	300	375	750	1,175	1,700	1,250	750	750	500	500	500	1,000
S.68170.6543 Waltham WASM 3-CP2	Jan-10	Mar-12	15,616	0	15,616						15,616	0								8,000	4,500	3,116					
S.68171.6544 Belmont WASM 3 - CP3	Apr-12	Sep-14	11,860	0	11,860						11,860	0									2,000	7,000	2,000		860		
S.68172.6545 Arlington WASM 3 - CP4	Oct-14	Dec-16	9,122	0	9,122						9,122	0														1,500	7,622
S.68173.6546 Section 28, Arlington-CP1	Jan-08	Dec-09	3,853	0	3,853						3,853	0						800	1,900	1,153							
S.68031.6175 Auburndale WASM 1,2&4	Jun-97	Nov-98	4,001	4,001	0						4,001	0															
S.68069.6312 Newton WASM 2&4	Apr-98	Mar-01	8,282	8,282	0						8,282	0															
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	Feb-02	Dec-04	17,617	15,097	2,520	1,842	678			2,520	17,617	0															
S.68032.6176 Construction Meter 103	Oct-96	Jul-98	61	61	0						61	0															
S.59774.5034 Construction Newton Water Mains	Apr-95	Oct-96	669	669	0						669	0															
S.59776.5975 Technical Assistance	Mar-95	Dec-96	153	174	-21	4	-25			-21	153	0															
S.68030.6174 Appraisal/Easement	Mar-95	Jan-14	708	174	533	0	15	15	15	45	219	488	15	15	15	15	60	60	60	60	60	60	60	40	28		
INHSE.DES2 Design 2																											
S.68245.6870 Survey	Dec-01	Jul-05	210	79	131		25	25	25	75	154	56	56				56										
S.68269.6996 Temporary Water Supply Plan	Jan-08	Jul-09	1,500		1,500						1,500	0							550	850	100						
S.68272.7000 Section PCCP W-12 ...	Sep-04	Apr-05	2,104		2,104		500	750	854	2,104	2,104	0															
S.68273.7001 WASM3 SPL12 PCCP Des	May-04	May-06	349		349	6	48	48	56	158	158	191	50	50	50	41	191										
S.720 Warren Cottage Line Rehab			1,205	1,205	0	0	0	0	0	1,205	0																
S.68081.6285 Construction	Sep-01	Dec-02	1,158	1,158	0						1,158	0															
S.68082.6286 Easements	Oct-99	Jan-03	3	3	0		0	0	0	0	3	0															
S.68195.6618 Technical Assistance	Mar-99	Jan-03	43	43	0						43	0															
INHSE.DESN Design																											
S.732 Walnut St. & Fisher Hill Pipeline Rehab.			3,141	1	3,141	1	2	2	3	8	9	3,133	3	4	4	4	15	2,260	843	8	6	1					
S.68189.6586 Construction Phs. 1	Jul-06	Jan-08	3,083	0	3,083						0	3,083						2,250	833								
S.68220.6779 Technical Assistance	Jan-04	Jul-08	18	1	17	1	1	1	2	4	5	13	2	2	2	2	6	3	3	1							
S.68221.6780 Survey	May-04	May-11	35		35	0	1	1	1	3	3	32	1	2	2	2	7	6	6	6	6	1					
S.68270.6998 Permits	Jul-04	Jul-09	5		5	0	0	0	0	1	1	4	0	0	1	1	2	1	1	1							
S.683 Heath Hill Road Pipe Replacement			19,926	10,007	9,919	35	25	27	54	141	10,148	9,777	254	205	807	1,657	2,923	3,959	2,821	74							
S.67639.5192 Design/CS/RI-Sec 52 Ph 1	May-89	Apr-92	218	218	0						218	0															
S.68047.6288 Design Sec 52 Ph 2	Sep-02	Oct-08	2,408	1,056	1,352	28	25	25	50	128	1,184	1,224	250	200	150	150	750	200	200	74							
S.67645.6042 Const-Sect 52 New	Apr-96	Jun-97	745	745	0						745	0															
S.67642.5194 Construction Section 52 Rehab	Jan-06	Oct-07	8,516		8,516							8,516			650	1,500	2,150	3,750	2,616								
S.67640.5206 Design/CS/RI - Sec 58,20	Jan-91	Jan-01	1,595	1,587	7	7				7	1,595	0															
S.67643.5102 Construction Sect 58,20,19	Jun-97	Nov-99	6,362	6,362	0						6,362	0															
S.67644.5985 Technical Assistance	May-89	Jun-08	19	19	0						19	0															
S.68008.6100 Legal/Easements-New	Jan-95	Dec-95	17	17	0	0	0			0	17	0															
S.68048.6289 Legal/Easements Rehab	Mar-02	Oct-07	23	2	21	0		1	3	4	6	17	3	3	5	5	16	1									
S.68201.6648 Public Participation	Mar-02	Oct-07	5	0	5	0	0	1	1	1	1	4	1	1	1	1	2	1	1								
S.68202.6649 Legal	Mar-02	Oct-07	5	0	5				1	1	1	4	1	1	1	1	2	1	1								
S.68241.6862 Boston Paving	Dec-05	Oct-08	12	0	12						0	12			1	1	1	3	6	3							

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S.721 Southern Spine Distribution Mains			60,805	6,813	53,993	1,945	2,212	1,512	656	6,325	13,138	47,668	385	160	260	260	1,065	6,995	9,745	11,041	12,893	5,577	303	30	19	0		
S.68083.6290 Sec 21.43.22 Design	Sep-00	Mar-12	8,076	3,436	4,640	203	150	150	150	653	4,089	3,987	150	150	250	250	800	1,000	750	650	400	250	137					
S.68084.6291 Sec 21.43.22 Easements	Mar-02	Feb-09	160	68	92	0	5	5	5	15	83	77	5	5	5	5	20	20	20	17								
S.68085.6292 Section 22 South Construction	Jul-03	Feb-05	5,586	2,217	3,369	924	1,250	1,000	196	3,369	5,586	0																
S.68089.6296 Sec 20 & 58 Design	Jan-07	May-12	1,986		1,986							1,986						450	450	450	350	150	136					
S.68090.6297 Sec 20 & 58 Easements	Sep-08	Aug-03	43		43							43								25	18	0						
S.68091.6298 Sec 20 & 58 Construction	Sep-09	May-11	9,346		9,346							9,346									5,600	3,746						
S.68122.6396 Adams Street Bridge	Jul-98	Dec-99	154	154	0						154	0																
S.68193.6601 Southern High Public Part	Oct-98	May-99	15	15	0						15	0																
S.68194.6602 Southern High Ext Study	Sep-98	May-99	242	242	0						242	0																
S.68228.6787 Boston Paving	Jul-03	Nov-13	242	3	239	0	5	5	5	15	18	224	5	5	5	5	20	25	25	25	25	25	30	30	19			
S.68235.6844 Section 22 North Construction	Feb-09	Mar-11	11,406		11,406							11,406									3,500	6,500	1,406					
S.68236.6845 Sections 21&43 Construction	Jul-06	Dec-08	20,374		20,374							20,374						5,500	8,500	6,374								
S.68237.6846 Legal			5	0	5	0	2	2	1	5	5	0																
S.68238.6847 Technical Assistance				0	0	0				0	0	0																
S.68247.6885 Contract 1A Construction	Nov-03	Jun-05	3,170	677	2,493	818	800	350	300	2,268	2,945	225	225				225											
S.714 South, Extra High Sects 41,42 & 74			4,486	3,536	950	15	511	424		950	4,486	0																
S.68014.6107 Design/CA/RI	Apr-97	Oct-04	1,591	722	869	15	450	404		869	1,591	0																
S.68049.6299 Easements	Apr-97	Jun-03	85	46	39	0	39			39	85	0																
S.68050.6300 Construction	Dec-00	Sep-03	2,345	2,345	0						2,345	0																
S.68183.6561 Boston Paving	Sep-98	Oct-02	455	423	32		16	16		32	455	0																
S.68184.6562 Public Participation	Jul-99	Oct-02	5	0	5	0	3	2		5	5	0																
S.68185.6563 Legal	Jul-99	Oct-02	5	0	5	0	3	2		5	5	0																
S.719 Chestnut Hill Connecting Mains			17,981	16,962	1,019	42	128	158	258	586	17,548	432	166	119	16	16	315	69	49									
S.68026.6141 Des/CA/RI PS Potable Connection	Mar-00	Dec-04	1,403	1,299	104	35	69			104	1,403	0																
S.68051.6301 Preliminary Engineering	Dec-04	Nov-05	613		613		50	155	155	360	360	253	150	103			253											
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	May-98	May-01	1,120	1,121	-1						1,121	-1																
S.68155.6501 Const - Emer. Pump Relocation	Feb-99	Mar-01	6,502	6,502	0						6,502	0																
S.68053.6303 Easements	Apr-03	Dec-07	131	81	50		3	3	3	9	90	41	3	3	3	3	12	15	14									
S.68180.6558 Boston Paving	Jul-99	Dec-07	313	133	180				50	50	183	130	13	13	13	13	50	50	30									
S.68181.6559 Public Participation	Jul-99	Jun-08	5	0	5						5	0								3	3							
S.68182.6560 Legal	Jul-99	Jun-08	5	1	4						1	4							2	2								
S.68199.6623 BECO Emergency Pump Construction	Sep-99	Jun-00	431	431	0						431	0																
S.68203.6651 Const.- Pump Station Potable Connection	Apr-02	Dec-03	7,139	7,125	13	7	6			13	7,139	0																
S.68218.6770 Shaft 7 & Meter 120 Des/CA/RI	Dec-01	Dec-03																										
S.68230.6814 Equipment pre-purchase	Apr-01	Oct-01	178	154	24				24	24	178	0																
S.68231.6820 Demolition of Garages	Feb-02	May-02	72	72	0						72	0																
S.68244.6869 Utilities	Jun-02	Aug-02	70	44	26				26	26	70	0																
S.704 Rehab of Other Pumping Stations			22,811	3,819	18,992	0	0	260	261	521	4,340	18,471	211	211	261	261	944	3,527	7,022	4,366	2,314	298						
S.67885.5153 Preliminary Design	Aug-94	Mar-96	351	351	0						351	0																
S.68017.6110 Design/CS/RI	May-97	Nov-04	2,671	2,671	0						2,671	0																
S.68072.6304 Construction II&C	Jan-00	Feb-01	639	639	0						639	0																
S.68102.6375 Rehab of 5 Pump Stations	Nov-06	Jan-10	14,956		14,956							14,956						2,500	6,500	4,000	1,956							
S.68178.6556 Public Participation	Jul-99	Jan-10	5	0	5	0	0	0	0	1	1	5	1	1	1	1	2	1	1	1	1	0						
S.68179.6557 Legal	Jul-99	Jan-10	5	0	5				1	1	5	1	1	1	1	1	2	1	1	1	1	0						
S.68204.6676 Proprietary Equipment Purchases	Jun-99	Jan-10	285	158	127	0	0	10	10	20	178	107	10	10	10	10	40	25	20	15	7							
S.68266.6980 Design 2 CS/RI	Nov-04	Jan-11	3,898		3,898	0	0	250	250	500	500	3,398	200	200	250	250	900	1,000	500	350	350	298						
S.722 NIH Redundancy & Covered Storage			12,146		12,146	0	0	0	75	75	75	12,071	250	250	252	252	1,004	1,306	806	1,749	1,473	3,317	2,312	106	0	0		
S.53454.6954 Con PI Pre Des/Env Rev Sec 89 F/D CA/	May-05	May-10	3,882		3,882	0	0	0	75	75	75	3,807	250	250	250	250	1,000	1,250	750	500	307							
S.68277.7045 Design CA/RI Sec 89/29 Rehab	Dec-08	May-12	1,006		1,006							1,006							150	250	250	106	0					
S.68276.7026 Sec 89 & Sec 29 Rehab Constr	Jun-10	May-12	5,029		5,029							5,029									3,017	2,012	0	0				
INHSE.DSCS Design/CS/RI Sec 29A																												
S.68252.6906 Section 29A Construction	Mar-09	Nov-09	1,907		1,907							1,907									1,044	863						
S.68093.6306 Easements	Nov-06	Jul-11	300		300						300							50	50	50	50	50	50					
S.68278.7047 Permits	Jan-06	Nov-09	5		5						5				1	1	1	2	2	1								
S.68279.7048 Technical Assistance	Jan-06	Nov-09	18		18						18				2													

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	Notice to Proceed	Substantial Completion	Total Contract Amount	Projected Pmts Thru FY04	Remaining Balance 6/30/04	Q1 FY05	Q2 FY05	Q3 FY05	Q4 FY05	FY05	Projected Pmts. Thru FY05	Remaining Balance 6/30/05	Q1 FY06	Q2 FY06	Q3 FY06	Q4 FY06	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	Beyond FY15
S.689 James L. Gillis Pump Station Rehab.			34,147	33,275	872	18	30	33	33	113	33,388	759	33	33	33	33	130	625	3								
S.67701.5249 Pump	Aug-86	Aug-86	70	70	0						70	0															
S.67702.5076 Electrical Upgrade	May-84	Sep-87	200	200	0						200	0															
S.67709.5074 Construction Diesel Exhaust	Apr-88	Dec-88	60	60	0						60	0															
S.67703.5077 Design/CS-Pump Station	Feb-88	Jun-99	2,308	2,308	0						2,308	0															
S.67707.5078 Construction-PS-Phase 1	May-90	Jul-91	630	630	0						630	0															
S.67708.5051 Const-P.S.-Ph2	May-95	Dec-98	12,890	12,890	0						12,890	0															
S.67998.6038 Hydraulic Transient Analysis	Apr-95	Sep-95	61	61	0						61	0															
S.67716.5047 Oil Control Plan	Aug-92	Dec-92	171	171	0						171	0															
S.67717.5050 Drain Line Cleaning	Nov-92	Jan-93	268	268	0						268	0															
S.67704.5072 Design/CS/RI-Suction Pipe	Jul-90	Apr-01	1,379	1,364	16	16				16	1,379	0															
S.67705.5071 Study-Suction Pipe	Nov-89	Nov-90	603	603	0						603	0															
S.67706.5073 Construction-Suction Pipe	Oct-95	Nov-97	11,265	11,265	0						11,265	0															
S.68054.6307 Construction-Tudor Barn	Oct-98	Dec-99	88	88	0						88	0															
S.68105.6378 Woodland Road Pavement Improvements	Aug-99	Jun-04	396	396	0	0	0	0		0	396	0															
S.67994.6030 Pavement Highland Ave	Oct-94	Nov-94	86	86	0						86	0															
S.67720.5219 Constr-Rehab Discharge	May-02	Nov-03	2,041	2,041	0						2,041	0															
S.67719.5144 Construction Sewer P.S.	May-96	Dec-96	203	203	0						203	0															
S.67714.5983 Technical Assistance	May-84	Dec-95	163	163	0						163	0															
S.67718.5053 Environ Assess & Remedial Plan	Oct-94	Sep-07	634	401	233	3	30	30	30	93	494	140	30	30	30	30	120	20									
S.68055.6308 Remedial Action Plan	Feb-07	Apr-07	600	0	600						600	0						600									
S.67991.6027 DEP Review Fees	Jul-94	Sep-07	30	7	23	0	0	3	3	5	12	18	3	3	3	3	10	5	3								
INHSE.DIES Design-Diesel Exhaust																											
INHSE.DISC Design-Rehabilitation Discharg																											
INHSE.SEWR Design-Sewer																											
S.713 Spot Pond Supply Mains - Rehab			60,886	31,386	29,500	1,410	1,372	2,470	3,020	8,272	39,658	21,228	4,030	3,030	2,785	2,051	11,896	4,703	3,735	665	229	0	0	0	0	0	0
S.68038.6223 Prelim Design & Design/CA/RI	Sep-98	Apr-08	10,874	9,093	1,781	285	100	100	100	585	9,678	1,196	100	100	100	100	400	350	200	150	96						
S.68059.6316 Easements/Paving CP1	May-00	Mar-02	143	143	0						143	0															
S.68106.6379 Easements CP2	May-02	Jun-06	141	49	91	0	10	10	10	30	79	61	15	15	15	16	61										
S.68107.6380 Easements CP3	Apr-04	Nov-07	243	1	242	0	10	10	10	30	31	212	15	15	15	30	75	75	62								
S.68151.6476 Easements CP4	Sep-06	May-09	1	1	0						1	0															
S.68060.6317 North (Medford/Melrose)	May-00	Jan-02	6,599	6,597	2		2			2	6,599	0															
S.68108.6381 Middle (Medford/Somerville)	May-02	Jun-06	21,335	12,952	8,383	1,125	250	750	1,250	3,375	16,327	5,008	1,250	1,250	1,000	1,000	4,500	508									
S.68109.6382 South (Cambridge/Boston)	Oct-04	Apr-08	16,777		16,777	0	1,000	1,500	1,500	4,000	4,000	12,777	2,500	1,500	1,500	750	6,250	3,500	3,027								
S.68150.6475 Early Valve Replacement Contract	Sep-98	Jan-00	2,387	2,387	0						2,387	0															
S.68209.6697 Construction 4-Trusses	Apr-08	Dec-09	876	0	876						876	0						250	500	126							
S.68153.6483 Early Valve Equip. Purchase	May-98	Nov-01	161	161	0						161	0															
S.68274.7003 CA/RI CP3	Sep-04	Sep-04	1,276		1,276	0	0	100	150	250	250	1,026	150	150	150	150	600	250	176								
S.68225.6784 Easements CP-5	Jan-06	Dec-09	72		72						72				5	5	10	20	20	15	7						
S.723 Nor Low Service Rehab Sects. 8			14,581		14,581					0	0	0	14,581	0	0	0	0	1	21	41	1,221	3,301	6,421	3,577			
S.68094.6321 Sec 8 Survey	Nov-06	Aug-08	80		80						80							20	40	20	0						
S.68095.6322 Sec 8 Construction	Aug-09	Aug-11	9,296		9,296						9,296								0	0	2,500	4,500	2,296				
INHSE.DES8 Design Section 8																											
INHSE.SC57 Design Section 57																											
S.68262.6962 Rehab Sects 37.38 Chel/EB Con	Aug-08	Aug-09	3,200		3,200						3,200																
S.68275.7021 Section 97A Construction	Aug-07	Aug-08	2,000		2,000						2,000							0	0	1,200	800			1,920	1,280		
S.68263.6977 Permits	Jul-05	Aug-11	5		5					0	0	5	0	0	0	0	1	1	1	1	1	1	1	1	1		
S.68264.6979 Technical Assistance	Jul-05	Aug-11																									
S.702 New Connecting Mains - Shaft 7 to ...			49,267	3,405	45,862	-49	0	300	300	551	3,956	45,311	300	600	615	515	2,030	1,209	10,521	16,573	9,573	115	1,615	1,261	1,500	914	
S.68035.6199 Watertown MOU	Jun-94	Sep-97	167	167	0						167	0															
S.67846.5163 Routing Study	Aug-94	Nov-96	397	397	0						397	0															
S.68110.6383 Design/CA/RI DP1	Sep-98	Dec-09	5,310	2,331	2,980	0	0	150	150	300	2,631	2,680	150	250	250	150	800	600	600	400	280						
S.68118.6391 Revised N. Segment (CP1A) New 48"	Mar-07	Dec-09	24,076		24,076						24,076																
S.68114.6387 Easements CP1 A&B	Jan-06	Oct-06	90	17	73						17	73	0	0	15	15	30	43	5,250	10,340	8,486						
S.68111.6384 Des/CA/RI DP2/4 Meter 120	Aug-02	Jun-08	2,943	493	2,450	-49	0	150	150	251	744	2,198	150	350	350	350	1,200	500	450	49							
S.68174.6548 Constr CP2 C&L Sec 59&60	Nov-12	Sep-14	2,964	0	2,964						2,964														550	1,500	914
S.68175.6547 Easements CP2	May-11	Nov-12	41	0	41						41																
S.68119.6392 South Segment (CP3)																											

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S.706 NHS - Con. Mains from Sec. 91			2,342	2,342	0		0			0	2,342	0															
S.67930.5165 Design/CA/RI	Jun-95	Oct-01	711	711	0						711	0															
S.68076.6331 Easements	Sep-99	Oct-01					0			0	0	0															
S.68077.6332 Construction	Nov-00	Jun-02	1,631	1,631	0						1,631	0															
S.692 NHS - Section 27 Improvements			2,554	124	2,430	0	0	0	0	0	124	2,430	0	0	0	0	1	1	1	1	1	1	11	5	1,755	655	
S.67769.6333 Construction Sect 27	Sep-13	Mar-15	2,429	27	2,403						27	2,403															
S.68192.6589 Easements	Apr-12	Mar-15	23	0	23						0	23								0	0	0	10	5	5	3	
S.68211.6712 Technical Assistance	Oct-99	Mar-12	64	60	5	0	0	0	0	0	60	4	0	0	0	0	1	1	1	1	1	1	1				
S.68229.6809 Surveying	Jun-01	Dec-01	37	37	0						37	0															
S.693 NHS - Revere & Malden Pipeline Impr			32,916	23,854	9,063	0	3	3	8	14	23,868	9,048	7	7	0	0	14	2,771	833	1	0	0		2,750	2,300	379	
S.67780.5185 Design/CS/RI-Revere/Malden	May-88	Sep-94	1,786	1,786	0						1,786	0															
S.67781.5186 Constr-Revere Beach	Aug-92	Oct-94	6,314	6,314	0						6,314	0															
S.67782.5176 Constr-Malden Sect 53	Apr-92	Sep-94	10,026	10,026	0						10,026	0															
S.68020.6113 Landscaping Malden Section 53	Apr-96	Jun-96	20	20	0						20	0															
S.67792.5238 Construction - Linden Square	Apr-91	Nov-91	1,849	1,849	0						1,849	0															
S.67793.5239 Construction Admin.-Linden Squar	Apr-91	Nov-91	125	125	0						125	0															
S.67784.5177 Const-Revere Sect 53	Jul-06	Sep-07	3,572		3,572							3,572						2,750	822								
S.68078.6334 Easements Revere 53	Sep-02	Dec-06	27		27	0	3	3	8	14	14	13	7	7			13										
S.67996.6033 Des/CA/RI-Rd Restoration	Nov-94	Dec-95	77	77	0						77	0															
S.67997.6034 Construction Road Restoration	Jul-95	Jun-96	1,714	1,714	0						1,714	0															
S.68033.6183 Sidewalk Restoration	Sep-96	Oct-96	54	54	0						54	0															
S.67785.5191 Constr-Control Valves	Jun-88	Aug-89	949	949	0						949	0															
S.67786.5179 Const.-DI Pipeline C&L	Jun-90	Sep-90	158	158	0						158	0															
S.67787.5178 Constr-Win C&L	Jun-90	Aug-90	575	575	0						575	0															
S.67790.6335 Constr 68 & 53A	Jul-13	Nov-14	4,229		4,229							4,229													2,500	1,500	229
S.67791.5986 Technical Assistance	Jul-06	Apr-08	206	206	0						206	0															
INHSE.SC53 Design-Revere Section 53																											
INHSE.VALV Design-Control Valves																											
INHSE.PIPE Design-DI Pipe Cleaning and Li																											
INHSE.DE53 Design/CS/RI -53A & 68																											
INHSE.WINT Design-Winthrop Cleaning and L																											
S.68258.6958 Shaft 9A-D Ext Construction	Apr-14	Nov-15	1,200		1,200							1,200													250	800	150
S.68280.7049 Permits	Apr-05	Nov-10	5		5				0	0	0	5	0	0	0	0	1	1	1	1	0	0					
S.68265.6978 Survey	Jul-06	Apr-08	30		30							30						20	10								
S.731 Lynnfield Pipeline			4,000	0	4,000				0	0	0	4,000	0	0	0	150	150	1,750	1,450	650							
INHSE.DELP Design				0	0						0	0															
S.68187.6584 Construction	Sep-07	Nov-08	3,000	0	3,000						3,000			0	0	0	0	1,200	1,250	550							
S.68196.6619 Easem/Legal/License/Permits	Apr-06	Apr-07	200	0	200				0	0	0	200	0	0	0	50	50	150									
S.68251.6905 Design CA/RI	Apr-06	Jul-09	800		800				0	0	0	800	0	0	0	100	100	400	200	100							
S.708 Nor Extra High Serv - New Pipelines			8,458	3,632	4,825	0	10	2	2	13	3,646	4,812	3	3	3	3	12	11	11	8	1,756	2,250	764				
S.67970.5242 Design/CA/RI	Sep-94	Jun-01	588	588	0						588	0															
S.67972.6340 Construction	Aug-99	Sep-01	3,032	3,032	0						3,032	0															
INHSE.SC34 Design Sec 34-36-45																											
S.68162.6522 Construction-Sections 34,36,45	Jan-10	Nov-11	4,764	0	4,764							4,764								0	1,750	2,250	764				
S.68176.6554 Public Participation	Jul-99	Dec-00	5	0	5						5	0															
S.68177.6555 Legal	Jul-99	Dec-00	5	0	5						5	0															
S.68281.7050 Permits	Nov-05	Nov-10	5		5	0	0	0	0	0	0	5	0	1	1	1	2	1	1	0	0						
S.68210.6707 Technical Assistance	Mar-04	Nov-10	54	8	46	0	0	0	2	3	11	43	3	3	3	3	10	10	10	8	6						
S.68215.6749 PLC Equipment Purchases	Dec-99	Dec-00	4	4	0						4	0															
S.725 Hydraulic Model Update			686	598	88	0	0	50	38	88	686	0															
S.68101.6342 Hydraulic Model Update	Jun-99	Dec-02	563	563	0						563	0															
S.68165.6531 Model Enhancement Support Services	Jul-00	Jun-05	123	35	88	0	0	50	38	88	123	0															

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S.19 Other			29,857	82,671	-52,815	8,733	4,484	-44	538	13,710	96,382	-66,525	1,102	2,842	2,938	3,108	9,990	8,993	7,196	8,485	5,321	3,650	2,839	984	-20,491	-18,219	-75,273
S.753 Central Monitoring System			16,139	15,456	683	51	44	44	41	180	15,636	503	25	25	25	25	100	98	145	160							
S.75300.5025 Study	Mar-84	Sep-86	190	190	0						190	0															
S.75301.5026 Design	Oct-87	Jan-92	2,651	2,651	0						2,651	0															
S.75304.5160 Communications Structures	Nov-92	May-93	161	161	0						161	0															
S.75305.5173 CS/Start Up Services	Jul-92	Aug-98	352	352	0						352	0															
S.75302.5027 Equipment Prepurchase	Oct-87	Dec-93	2,162	2,162	0						2,162	0															
S.75306.5171 Construction 1	Nov-97	Nov-98	209	209	0						209	0															
S.75303.5028 SCADA Implementation	Aug-96	Jun-09	2,201	1,613	588	13	24	24	24	85	1,698	503	25	25	25	25	100	98	145	160							
S.75474.6125 Microwave Equipment	Mar-96	Dec-01	782	782	0						782	0															
S.75308.5849 Operations Center Construction	Sep-92	Jun-94	1,499	1,499	0						1,499	0															
S.75309.5987 Technical Assistance	Jul-92	Dec-97	386	386	0						386	0															
S.75310.5218 Utility Installation																											
S.75488.6653 Microwave Comm System-Wide Backbone	Sep-01	Jun-02	1,694	1,694	0						1,694	0															
S.75489.6654 Study & Design Monitoring & Control	Dec-99	Sep-04	1,858	1,778	80	23	20	20	17	80	1,858	0															
INHSE OPER Design - Operations Center																											
S.75494.6816 Microwave Comm for Waterworks Facil	Sep-02	Jul-04	1,954	1,939	15	15				15	1,954	0															
S.75495.6825 Ludlow Communications	Sep-01	Oct-01	41	41							41	0															
S.763 Distribution Systems Facs. Mapping			2,226	1,030	1,196						1,030	1,196						434	434	328							
S.75458.5162 Planning Design	Feb-95	Dec-98	930	930	0						930	0															
S.75476.6152 Data Purchase	Nov-95	Aug-96	100	100	0						100	0															
S.75484.6525 Records Development	Jul-06	Dec-08	1,196	0	1,196						0	1,196						434	434	328							
S.764 Local Water Infrastr Rehab Ast Progr			7,488	7,488	0						7,488	0															
S.75477.6343 Loans	Aug-97	Jun-99	22,304	22,304	0						22,304	0															
S.75478.6344 Loan Repayment	Aug-98	Jun-04	-22,304	-22,304	0						-22,304	0															
S.75479.6408 Grants	Aug-97	Jun-99	7,488	7,488	0						7,488	0															
S.75485.6608 Community Loans	Aug-00	Jun-13	254,800	68,538	186,262	10,917	5,673	1,500	2,013	20,103	88,641	166,159	4,650	4,650	4,650	4,800	18,750	19,200	19,200	22,000	22,000	22,000	22,000	21,009			
S.75493.6759 Community Repayment	Aug-01	Jun-23	-254,800	-9,840	-244,960	-2,482	-1,266	-1,588	-1,517	-6,854	-16,694	-238,106	-3,574	-1,834	-1,738	-1,718	-8,864	-10,739	-12,659	-14,579	-16,779	-18,979	-19,682	-20,025	-20,491	-18,626	-76,682
S.766 Waterworks Facility Asset Protection			4,004	0	4,004	247	33		1	281	281	3,723	1	1	1	1	4		76	576	100	629	521		407	1,409	
S.75490.6689 Meter Vault Manhole Retrofits	Sep-14	Jun-17	1,336	0	1,336						0	1,336														407	929
S.75497.6832 Design-Walnut Hill Tank	Sep-08	Oct-10	300		300							300								50	100	104	46				
S.75498.6833 Construction-Walnut Hill Tank	Oct-10	Mar-12	1,000		1,000							1,000									525	475					
S.75501.6910 Waltham Pipe/Bridge Repl	Mar-04	Sep-04	272		272	239	33			272	272	0															
S.75506.7023 Design Cosgrove Turbine Isolation	Jul-15	Dec-17	480		480							480															480
S.75510.7065 Des Cosgrove Valve Seat Repl	Jul-07	Dec-08	100		100							100							75	25							
S.75509.7064 Cosgrove Valve Seat Repl	Jul-08	Dec-08	500		500							500									500						
S.75502.6920 Permits/Legal Fees	Mar-04	Mar-12	15		15	8			1	9	9	6	1	1	1	1	4		1	1							
S.75503.6921 Technical Assistance																											
S.75504.6943 As Needed Design																											

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S.3 Business & Operations Support			60,932	32,362	28,570	686	1,201	1,270	2,036	5,193	37,554	23,378	1,963	2,939	1,921	3,118	9,941	6,764	1,899	1,659	790	779	797	750				
S.933 Capital Maintenance Planning/Development			8,928	2,380	6,549	53	50	177	243	522	2,902	6,026	214	188	188	188	777	750	750	750	750	750	750	750				
S.19175.6421 Inventory & Evaluation-1&2	Apr-00	Jul-05	2,616	2,380	237	53	50	52	55	210	2,590	27	27															
S.92387.6976 As-needed Design Contract 1	Feb-05	Feb-07	750		750			63	94	156	156	594	94	94	94	94	375	219										
S.92393.6988 As Needed Des/TA Contract	Feb-05	Feb-07	750		750			63	94	156	156	594	94	94	94	94	375	219										
S.92399.7070 Long-Term As-Needed Design	Jan-07	Jun-13	4,812		4,812							4,812						312	750	750	750	750	750	750				
S.881 Equipment Purchase			8,996	1,351	7,645	375	992	333	593	2,293	3,644	5,352	1,185	825	1,165	1,075	4,250	1,102										
S.92367.6732 TV Inspection Truck	Jul-00	Mar-01	175	175	0						175	0																
S.92374.6760 Security Equip & Installation	Jan-01	Dec-02	712		5,400	220	112	333	333	998	1,710	4,402	825	825	825	825	3,300	1,102										
S.92379.6808 ICP-MS Lab Testing Equip	Jan-02	Mar-02	150		150				150	150	150	0																
S.92381.6866 Back Hoe	Apr-03	Jun-04	130	130	0						130	0																
S.92382.6867 Vactor Truck	Apr-03	Jun-03	220	220	0						220	0																
S.92383.6907 Water Service Truck	Apr-04	Jun-04	114	114	0						114	0																
S.92384.6944 Bucket Machine	Oct-04	Dec-04	200		200		200			200	200	0																
S.92385.6945 Excavator	Apr-06	Jun-06	250		250						250	250			250	250												
S.92386.6946 Grove Crane	Oct-04	Dec-04	250		250		250			250	250	0																
S.92388.6981 Land Fill Loader	Oct-04	Dec-04	280		280		280			280	280	0																
S.92392.6986 PowerSweeper/Catch Basin ...	Apr-04	Jun-04	155		155	155				155	155	0																
S.92394.6990 Back Hoe (WRA385)	Oct-04	Dec-04	150		150		150			150	150	0																
S.92395.7027 Closed Circuit TV Insp Truck	Jan-06	Mar-06	200		200							200			200													
S.92396.7028 Front-End Loader	Jul-05	Mar-06	390		390						390	250			140		390											
S.92397.7029 Dump Truck (WRA 192)	Apr-05	Jun-05	110		110				110	110	110	0																
S.92398.7030 Dump Truck (WRA 522)	Jul-05	Sep-05	110		110							110	110				110											
S.930 MWRA Facility - Chelsea			10,226	9,130	1,096	64	140	298	594	1,096	10,226	0																
S.92321.5052 Planning	Jan-95	Jun-97	30	30	0						30	0																
S.92320.5886 Conceptual Design	Sep-97	Dec-98	49	49	0						49	0																
S.92360.6603 Negotiating Support	Jul-98	Dec-98	0	0	0						0	0																
S.92354.6510 Design Review	Sep-99	Mar-05	379	341	38	24	14			38	379	0																
S.92355.6511 Fitout - Office Furnish/Equip	Feb-01	Jun-04	644	644	0						644	0																
S.92356.6512 Inform./Telecom. Consultant	Aug-00	Jun-01	382	382	0						382	0																
S.92357.6513 Existing Facility "Button Up"	Dec-01	Jun-05	380	376	4	3	1			4	380	0																
S.92358.6514 Moving Expense	Dec-01	Jun-04	362	362	0						362	0																
S.92362.6624 Legal	Mar-99	Dec-99	14	14	0						14	0																
S.92363.6713 Moving Expenses CNY	Mar-01	Jun-01	237	237	0						237	0																
S.92364.6714 CNY Retrofit	Jul-00	Jun-01	1,577	1,566	11				11	11	1,577	0																
S.92365.6715 MIS Network	Mar-01	Jun-06	1,506	1,411	95			50	45	95	1,506	0																
S.92366.6716 Fitout - All Other	Feb-01	Jun-06	4,640	3,717	923	37	125	248	513	923	4,640	0																
S.92375.6757 Communication Tower	Jul-01	Dec-01	25		25				25	25	25	0																
S.925 Technical Assistance			1,650	1,650	0						1,650	138	138	138	138	550	550	550										
S.30000.MECH Mechanical			150		150						150	13	13	13	13	50	50	50										
S.50000.MATT Material Testing			150		150						150	13	13	13	13	50	50	50										
S.80000.SURV Surveying			150		150						150	13	13	13	13	50	50	50										
S.90000.HAZM Hazardous Material			900		900						900	75	75	75	75	300	300	300										
S.33000.INST Instrument Control			150		150						150	13	13	13	13	50	50	50										
S.44000.WETP Wetland/Permitting			150		150						150	13	13	13	13	50	50	50										
S.931 Business Systems Plan			25,340	18,240	7,100	185		349	309	842	19,083	6,257		1,407	100	1,655	3,161	2,843	47	207								
S.92338.6014 Phase I (FY95-97)	Jul-94	Mar-03	1,146	1,146	0						1,146	0																
S.92339.6013 Hardware-Phase I	Jul-94	Dec-96	441	441	0						441	0																
S.92322.6015 Network-Phase I	Jul-94	Dec-96	142	142	0						142	0																
S.92343.6177 Phase II FY97-99	Jul-96	Jun-07	4,274	2,156	2,118						4,274	2,118		530		530	1,059	1,059										
S.92347.6362 Phase III (FY99-01)	Dec-97	Jun-04	10,807	10,806	0	0				0	10,807	0																
S.92352.6508 Phase IV / Year 2000 Imp.	Jul-98	Jan-00	3,051	3,051	0						3,051	0																
S.92353.6509 Phase V	Jul-01	Jun-09	2,688	131	2,557				250	250	381	2,307		877	100	100	1,077	977	47	207								
S.92380.6865 Phase VI	Jan-03	Jun-07	2,791	367	2,424	185		349	59	592	959	1,832				1,025	1,025	807										
S.932 Environmental Remediation			1,860	1,261	600	8	20	23	45	95	1,356	504	17	8	8	64	95	189	52	52	40	29	47					
S.92369.6745 Tech Ass't/ Env. Remediation	Feb-99	Jun-07	469	465	4	4				4	469	0																
S.92370.6746 Prison Point Tank Removal - Const.	Feb																											

Massachusetts Water Resources Authority
Business and Operations Support
Capital Expenditure Forecast: FY2006-2015

	Notice to Proceed	Substantial Completion	Total Contract Amount	Projected Pmts Thr. FY04	Remaining Balance 6/30/04	(000's)																				
						Q1 FY05	Q2 FY05	Q3 FY05	Q4 FY05	FY05	Projected Pmts. Thr. FY05	Remaining Balance 6/30/05	Q1 FY06	Q2 FY06	Q3 FY06	Q4 FY06	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
S.934 MWRA Facilities Management & Planning			3,931		3,931																					
S.92389.6983 Design/Engineering Services	Mar-05	Jun-08	763		763			90	253	343	343	420	90					90	330							
S.92390.6984 Facilities Construction	Apr-05	Jun-09	3,168		3,168							3,168	320	375	323			1,018	1,000	500	650					
S.92391.6985 Facilities Fitout																										

**MASSACHUSETTS WATER RESOURCES AUTHORITY
CONTINGENCY FUND FORECAST FY2006 - 2015
(\$000)**

	Total Contingency Budget FY06-15	Q1 FY2006	Q2 FY2006	Q3 FY2006	Q4 FY2006	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Wastewater System Improvements															
FY2006	9,369	2,325	2,062	2,049	2,933	9,369									
FY2007	13,919						13,919								
FY2008	18,098							18,098							
FY2009	11,417								11,417						
FY2010	3,559									3,559					
FY2011	1,316										1,316				
FY2012	1,351											1,351			
FY2013	1,515												1,515		
FY2014	4,095													4,095	
FY2015	2,861														2,861
Total Wastewater System Improvements	\$67,500	\$2,325	\$2,062	\$2,049	\$2,933	\$9,369	\$13,919	\$18,098	\$11,417	\$3,559	\$1,316	\$1,351	\$1,515	\$4,095	\$2,861
Waterworks System Improvements															
FY2006	6,356	1,708	1,324	1,611	1,713	6,356									
FY2007	5,232						5,232								
FY2008	8,543							8,543							
FY2009	8,544								8,544						
FY2010	7,241									7,241					
FY2011	5,618										5,618				
FY2012	3,394											3,394			
FY2013	996												996		
FY2014	3,405													3,405	
FY2015	2,239														2,239
Total Waterworks System Improvements	\$51,568	\$1,708	\$1,324	\$1,611	\$1,713	\$6,356	\$5,232	\$8,543	\$8,544	\$7,241	\$5,618	\$3,394	\$996	\$3,405	\$2,239
Business & Operations Support	\$2,113	\$173	\$271	\$169	\$289	\$902	\$600	\$135	\$166	\$79	\$78	\$80	\$75	\$0	\$0
Total MWRA	\$121,182	\$4,206	\$3,657	\$3,829	\$4,935	\$16,627	\$19,751	\$26,776	\$20,127	\$10,879	\$7,012	\$4,825	\$2,586	\$7,500	\$5,100

APPENDIX 3

Project Status Overview

**Appendix 3
Project Status Overview**

The following information presented below provides an approximation of status for design and construction phases in the current capital budget. Planned end dates are provided for ongoing phases. Planned start dates are provided future phases. These dates are anticipated Notice-to-Proceed dates after the bid period. All dates are subject to change.

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.102 Quincy Pump Facilities	26,152	26,152	Complete		
S.10024.5400 Facilities Plan/EIR	526	526	Complete		
S.10025.5402 Design/CS Rehab	110	110	Complete		
S.10026.5403 Construction-Rehab	328	328	Complete		
S.10027.5404 Design/CS/RI1	5,089	5,089	Complete		
S.10028.5405 Squantum P.S. Construction	4,447	4,447	Complete		
S.10029.5407 Quincy P.S. Construction	7,103	7,103	Complete		
S.10030.5408 Hough's Neck P.S. Construction	1,720	1,720	Complete		
S.10031.5409 Early Rehab Squantum F.M.	2,042	2,042	Complete		
S.10276.6102 Squantum Force Main Rehab	2,061	2,061	Complete		
S.10277.6103 Quincy Force Main Rehab	1,489	1,489	Complete		
S.10388.6810 Const Corrosion Mitigation	1,079	1,079	Complete		
S.104 Braintree-Weymouth Relief Facilities	219,289	197,076	90%		
S.10045.5311 Facilities Planning Phase 1	331	331	Complete		
S.10046.5312 EIR Phase 1	514	514	Complete		
S.10057.5324 Final EIR/Fac.Plan	1,111	1,111	Complete		
S.10001.5333 Geotechnical - Marine	443	443	Complete		
S.10047.5313 Design 1/CS/RI	18,991	18,783	Complete		
S.10058.5331 Design 2/CS/RI	15,272	10,917	71%		Apr-08
S.10048.5314 Land Acquisition	3,630	3,630	Complete		
S.10049.5315 Tunnel Construction/Rescue	84,613	84,613	Complete		
S.10050.5316 Intermediate P.S. Construction	47,093	47,093	Complete		
S.10051.5303 No. Weymouth Relief Interceptor	4,705	4,705	Complete		
S.10052.5373 HDD Siphon Construction	16,757	16,157	96%		Dec-06
S.10054.5375 B-W Replacement Pump Station	19,876	3,000	15%		Apr-07
S.10302.6368 Mill Cove Siphon Construction	2,749	2,749	Complete		
S.10056.5309 Construction - Rehab	255	255	Complete		
S.10061.5951 Technical Assistance	144	144	Complete		
S.10278.6119 Design - Marine Pipeline	1,100	1,100	Complete		
S.10354.6631 Community Technical Assistance	1,111	1,111	Complete		
S.10378.6792 IPS/RPS Communication System	300	166	55%		Apr-07
S.105 New Neponset Valley Relief Sewer	30,334	30,334	Complete		
S.10062.5380 Facilities Plan	594	594	Complete		
S.10063.5381 EIR/Supp. Fac. Plan	626	626	Complete		
S.10064.5382 Design/CS/RI	4,055	4,055	Complete		
S.10065.5383 Land Acquisition	531	531	Complete		
S.10076.5377 Consultant-Canton	162	162	Complete		
S.10067.5385 Construction 1	5,203	5,203	Complete		
S.10068.5390 Construction 2	2,549	2,549	Complete		
S.10069.5834 Construction 3	3,265	3,265	Complete		
S.10070.5835 Construction 4	2,960	2,960	Complete		
S.10071.5389 Construction 5	9,599	9,599	Complete		
S.10072.5386 Study Dedham Street	537	537	Complete		

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.131 Upper Neponset Valley Sewer System	40,028	4,571	11%		
S.10256.6031 Design/CS/RI	5,834	3,127	54%		Nov-08
S.10290.6191 Replace Sewer Sections 685-686	26,874	375	1%		Nov-07
S.10352.6629 Replacement Sewer Section 687	5,889	0	Future	May-06	
S.10311.6450 Land Acquisition	1,040	1,038	Complete		
S.10393.6830 Boston Paving	376	25	7%		Nov-07
S.107 Framingham Extension Relief Sewer	48,010	48,010	Complete		
S.10099.5318 Fac Plan Update/EIR	1,397	1,397	Complete		
S.10100.5321 Land Acquisition	1,833	1,833	Complete		
S.10101.5319 Design/CS/RI	5,889	5,889	Complete		
S.10102.5320 Install Force Main	7,256	7,256	Complete		
S.10103.5322 Install Gravity Sewer	6,147	6,147	Complete		
S.10104.5323 Pump Station Construction	7,803	7,803	Complete		
S.10106.5825 Early Sewer Rehabilitation	4,803	4,803	Complete		
S.10107.5342 Late Sewer Rehabilitation	12,680	12,680	Complete		
S.127 Cummingsville Replacement Sewer	8,200	1,821	22%		
S.10217.5826 Facilities Plan/EIR	602	602	Complete		
S.10275.6092 Design/CS/RI	2,300	1,176	51%		Sep-07
S.10285.6186 Cummingsville Branch Sew Const	4,311	0	Future	Jun-05	
S.10403.6916 Siphon Modifications	875	0	Future	Nov-05	
S.132 Corrosion & Odor Control	3,514	2,914	83%		
S.10279.6137 Planning/Study	587	587	Complete		
S.10327.6553 Design/CS/RI	2,300	1,700	74%		Jul-09
S.10373.6743 Interim Corrosion Control	622	622	Complete		
S.137 Wastewater Central Monitoring	15,475	3,308	21%		
S.10301.6232 Planning	563	563	Complete		
S.10319.6532 Design and Integration Services	5,594	2,278	41%		Nov-08
S.10320.6533 Construction 1 (CP1)	5,711	457	8%		Aug-06
S.10321.6534 Construction 2 (CP2)	3,176	0	Future	Nov-05	
S.10357.6657 Construction 3 (CP3)	351	0	Future	Jul-06	
S.139 South System Relief Project	5,022	3,467	69%		
S.10310.6420 Construction-Archdale	211	211	Complete		
S.10318.6519 Sec 70&71 HLS Eval.	216	215	Complete		
S.10349.6611 Sec 70 & 71 HLS Construction	417	417	Complete		
S.10346.6596 Cleaning Outfall 023	1,098	1,098	Complete		
S.10350.6616 Milton Financial Assistance	1,488	1,488	Complete		
S.10386.6801 Outfall 023 Str Improvements	1,500	0	Future	Jul-07	
S.141 Wastewater Process Optimization	2,187	954	44%		
S.10367.6733 Planning	954	954	Complete		
S.10413.6931 Somerville Sewer-Design	200	0	Future	Oct-08	
S.10414.6932 Somerville Sewer-Construction	883	0	Future	Mar-11	
S.10415.6933 Siphon- Planning	150	0	Future	Nov-11	
S.142 Wastewater Meter Sys-Equip Replace	6,578	5,278	80%		
S.10371.6739 Planning/Study	100	0	Future	Dec-07	
S.10379.6793 Equipment Purchase/Installation	5,278	5,278	Complete		
S.10410.6928 Design	200	0	Future	Jul-13	
S.10411.6929 Construction	1,000	0	Future	Jan-15	

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.143 Regional I/I Management Planning	169	169	Complete		
S.10372.6740 Cmom/Planning	169	169	Complete		
S.145 I&P Asset Protection	20,455	2,213	11%		
S.10383.6798 Rehab of Section 93A Lexington	1,566	1,566	Complete		
S.10394.6842 Sections 80&83	715	0	Future	Mar-06	
S.10395.6843 Section 160	4,683	0	Future	Jan-06	
S.10423.6987 93 A Force Main Replacement	497	0	Future	Sep-05	
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	600	600	Complete		
S.10380.6795 Prison Point HVAC Upgrades	694	0	Future	Mar-09	
S.10381.6796 Remote Headworks Heating Sys Upgrade	1,577	0	Future	Apr-05	
S.10382.6797 Alewife Brook Pump Repl	450	0	Future	Mar-09	
S.10387.6802 Hdwks Screen Replacement	5,000	0	Future	Nov-06	
S.10399.6886 Hdwks Cond Assess/Facilities Plan	2,000	0	Future	Jan-06	
S.10419.6937 Alewife Brook Pump Repl Design	150	0	Future	Jul-07	
S.10420.6938 Des-Prison Pt HVAC Upgrades	150	0	Future	Jul-07	
S.10427.7033 Hingham P.S. Isolation Gate Cononstr	350	0	Future	Jul-06	
S.10428.7034 Alewife Brook P.S. Screen Des	100	0	Future	Jan-07	
S.10429.7035 Alewife Brook P.S. Screen Const	400	0	Future	Jul-07	
S.10431.7037 Caruso PS Replace Generator	250	0	Future	Jul-09	
S.10432.7038 Chelsea Sluice Gate Engnr Study	50	0	Future	Jul-05	
S.10433.7039 Prison Pt/Cottage Farm Pipe Des	150	0	Future	Jul-07	
S.10434.7040 Prison Pt/Cottage Farm Pipe Constr	500	0	Future	Mar-08	
S.10436.7042 Fram PS Sluice Gates Cond Assess	50	0	Future	Jul-05	
S.10438.7044 Caruso PS Shaft Replac Const	425	0	Future	Jul-06	
S.200 DI Plant Optimization	43,675	20,580	47%		
S.19156.6235 Construction-Plumbing	110	110	Complete		
S.19170.6369 Supplementary Mod Pkg #1	488	488	Complete		
S.19154.6233 As-Needed Des. Phase 1	1,122	1,122	Complete		
S.18212.6364 Ancil Mods-Des 1	2,050	1,616	79%		Jan-06
S.19189.6590 Ancil Mods Des 2-1 (REI)	584	584	Complete		
S.19190.6591 Ancil Mods - Des 3-1	1,351	1,121	83%		Nov-05
S.19191.6592 Ancil Mods - Des 4	960	0	Future	Jun-05	
S.19220.6721 Long Term As Needed Des No. 1	3,000	0	Future	Jan-08	
S.19183.6499 Ancil Mods-Con 1	9,604	5,055	53%		Jan-06
S.19186.6536 Ancil Mods Constr 2-1	2,819	2,819	Complete		
S.19232.6744 Ancil Mods Constr 2-2	5,326	310	6%		Jun-07
S.19187.6537 Ancil Mods-Constr 3-1	3,573	3,573	Complete		
S.19188.6538 Ancil Mods-Con 4	3,470	0	Future	Nov-07	
S.19221.6722 Long -Term As Needed Des No.2	3,000	0	Future	Jan-08	
S.19206.6673 Digester Storage Tank - Repair	275	275	Complete		
S.19211.6698 As Needed Des Phase 4-1	1,000	0	Future	May-05	
S.19212.6699 As Needed Des Phase 4-2	1,000	60	6%		Mar-07
S.19215.6702 As-needed Design Phase 2-1	760	760	Complete		
S.19234.6753 As-needed design Phase 2-2	695	695	Complete		
S.19214.6701 As-needed Des. Phase 3-1	750	750	Complete		
S.19240.6768 Ancil Mods Des2-2 (REI/ESDC)	526	30	6%		Jun-07
S.19257.6874 As-needed Design Phase 3-2	750	750	Complete		
S.19286.6201 BHP Site Completion	462	462	Complete		

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.206 DI Asset Protection	95,367	5,992	6%		
S.19182.6478 Equip Replacement Projection	41,475	0	Future	Oct-00	
S.19193.6594 Equipment Condition Monitoring	1,527	1,527	Complete		
S.19231.6742 Drive Chain Replacement	264	264	Complete		
S.19238.6765 CTG Modifications	500	500	Complete		
S.19176.6422 Pump Packing Replacement	750	565	75%		Sep-05
S.19263.6880 Cathodic Protection Evaluation	250	0	Future	May-06	
S.19264.6881 NMPS Motor Repairs	900	0	Future	Jul-06	
S.19265.6882 CEMS Equip. Replacement	150	0	Future	Jul-05	
S.19268.6899 Clarifier Chain Replac	450	0	Future	Apr-08	
S.19287.7005 Digester Chiller Replacement	479	175	37%		Nov-05
S.19288.7006 Dystor Tank Membrane Replacement	773	411	53%		Sep-05
S.19290.7052 Grit Blower Replac Construction	314	0	Future	Apr-08	
S.19291.7053 Thick Prim Sldg Pump Repl Des	578	0	Future	Sep-06	
S.19292.7054 TPS Pump Replac Construction	5,531	0	Future	Oct-07	
S.19294.7056 LOCAT Scrubber Replac Const	289	0	Future	Jul-08	
S.19295.7057 Centrifuge Backdrive Replac	1,400	0	Future	Dec-05	
S.19226.6727 Study/Concept Des-Concrete Rpr	300	0	Future	Oct-05	
S.19204.6668 Expansion Joint Repair-Design	154	154	Complete		
S.19205.6669 Expansion Joint Repair- Constr 1	305	305	Complete		
S.19218.6705 Expansion Joint Repair- Constr 3	151	0	Future	May-09	
S.19217.6704 Expansion Joint Repair- Constr 2	151	0	Future	May-06	
S.19244.6812 Secondary Clarifier Access	275	275	Complete		
S.19243.6811 Outfall Modification-Inspection	174	174	Complete		
S.19239.6767 Elec Equip Upgrade Constr 2	2,415	250	10%		Jul-06
S.19236.6763 Busduct Replacement (2+22)	196	196	Complete		
S.19252.6851 Pipeline Repl #2 Design	364	0	Future	Apr-08	
S.19253.6852 Pipeline Repl #2 - Construction	1,213	0	Future	Jun-09	
S.19254.6853 Sodium Hypo Pipe Repl-Des	217	0	Future	Jun-08	
S.19255.6854 Sodium Hypo Pipe Repl- Constr	2,594	0	Future	Jun-08	
S.19256.6855 Elect Equip Upgrade Const 3	1,815	0	Future	Feb-06	
S.19258.6875 WTF VFD Replace Constr	1,290	0	Future	Dec-06	
S.19259.6876 Heat Loop Pipe Repl Constr 1	600	67	11%		Dec-05
S.19260.6877 Misc. VFD Replacements	1,050	0	Future	Sep-05	
S.19267.6884 PICS Replacement Const	1,677	0	Future	Jul-08	
S.19269.6900 Admin/Whse Switchgear Replac	1,200	0	Future	Sep-06	
S.19270.6901 Elect Equip Upgrade Const 4	2,213	0	Future	Apr-08	
S.19271.6902 NMPS VFD Repl Des/ESDC	518	0	Future	May-05	
S.19272.6903 NMPS VFD Replace Constr	5,805	0	Future	Aug-06	
S.19279.6968 Second Deaerator Constr	243	0	Future	Jun-09	
S.19280.6969 Fuel Transfer Pipe Repl Des	345	0	Future	Nov-05	
S.19281.6970 Fuel Transfer Pipe Repl Const	1,213	0	Future	Mar-07	
S.19282.6971 NMPS Motor Ctrl Ctr Des	575	0	Future	Sep-06	
S.19283.6972 NMPS Motor Ctrl Ctr Constr	2,891	0	Future	Oct-07	
S.19296.7058 DITP Switchgear Replac Design	230	0	Future	Dec-05	
S.19297.7059 DITP Switchgear Repl Constr	2,313	0	Future	Feb-07	
S.19298.7060 Power Consult Recs Design	385	0	Future	May-05	
S.19299.7061 Power System Improv Constr	2,987	0	Future	Jul-06	
S.19162.6241 DISC Application	250	146	58%		Dec-07
S.19241.6791 Document Format Conversion	353	10	3%		Dec-10
S.19237.6764 Sodium Hypo Tank Repair 1	518	86	17%		Oct-05
S.19249.6848 Metals Lab Fume Hood Repl	126	0	Future	May-06	
S.19251.6850 Metals Lab Modification Constr	798	798	Complete		
S.19262.6879 Lab Sample Area Mod-Const	377	0	Future	Oct-07	
S.19276.6965 Gravity Thickener Improv Des	188	0	Future	Feb-06	
S.19277.6966 Gravity Thickener Imp Constr	1,006	0	Future	Apr-08	

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.261 Residuals	67,654	66,950	Complete		
S.25941.5667 Design/RI/CS-Pelletizing 1	9,098	9,098	Complete		
S.25948.5669 Fast-Track Equip. Prepurchase	301	301	Complete		
S.26055.6009 Fast-Track Equip. Installation	1,450	1,450	Complete		
S.26056.6010 Phase 2 Outside Construction	13,019	13,019	Complete		
S.26057.6011 Phase 3 Equip. Prepurchase	4,777	4,777	Complete		
S.26058.6012 Phase 3 Inside Construction	32,378	32,378	Complete		
S.26065.6612 Fire Related Costs	1,694	1,694	Complete		
S.25961.5643 Res. Research	419	419	Complete		
S.26059.6083 License Fee	675	0	Future		
S.25968.5831 Royalty Payment	575	575	Complete		
S.26066.6615 Legal Services for Sludge Processing	3,268	3,239	Complete		
S.339 North Dorch Bay & Reserve Channel	223,692	19,716	9%		
S.32660.6220 Design ESDC/Tunnel	24,619	19,526	79%		Apr-11
S.32661.6244 Tunnel Construction (Ch30)	151,959	0	Future	Apr-06	
S.32662.6245 Dewater/Odor Control Constr	19,127	0	Future	Sep-08	
S.32726.6993 Tunnel & Facilities CM Services	20,965	190	1%		Mar-11
S.32732.7012 Pleasure Bay Construction	3,579	0	Future	Aug-05	
S.32733.7013 Design ESDC/Facilities	3,443	0	Future	May-07	
S.354 Hydraulic Relief Projects	2,295	2,295	Complete		
S.32692.6250 Design/CS/RI	558	558	Complete		
S.32669.6252 Construction	1,737	1,737	Complete		
S.347 East Boston Branch Sewer Relief	68,058	9,000	13%		
S.32673.6256 Design	9,577	3,530	37%		Nov-09
S.32674.6257 East Boston Branch Relief Sewer	44,818	0	Future	Oct-06	
S.32719.6840 East Boston Branch Sewer Rehab	5,470	5,470	Complete		
S.32720.6841 Sections 38 & 207 Replacement	8,143	0	Future	Apr-07	
S.348 BOS019 Storage Conduit	10,625	2,238	21%		
S.32675.6258 Design	2,104	1,989	95%		Nov-04
S.32677.6260 BOS019 Storage Conduit Constr	7,403	81	1%		Mar-07
S.32728.7008 Construction Management Services	1,118	168	15%		Sep-07
S.349 Chelsea Trunk Sewer	29,764	29,764	Complete		
S.32659.6198 Design/CS/RI	3,637	3,637	Complete		
S.32679.6262 Chelsea Trunk Relief	3,577	3,577	Complete		
S.32680.6263 Chelsea Branch Sewer	19,141	19,141	Complete		
S.32689.6370 Rehab/Chelsea Brnch/Revere Ext	3,125	3,125	Complete		
S.32690.6371 Modify Chelsea Screen House	284	284	Complete		
S.350 Union Park Detention Treatment Fac	44,958	35,708	79%		
S.32681.6264 Design	8,392	6,536	78%		Apr-06
S.32682.6265 Construction	41,828	33,142	79%		Apr-06
S.32718.6826 Construction - Park	500	180	36%		May-06
S.32721.6909 BWSC Construction ...	-5,762	-4,150	72%		Jan-06
S.353 Upgrade Existing CSO Facilities	22,387	22,387	Complete		
S.32647.6123 Design	6,501	6,501	Complete		
S.32685.6268 Cottage Farm CSO Facility	4,377	4,377	Complete		
S.32686.6269 Prision Point CSO Facility	3,339	3,339	Complete		
S.32693.6496 Comm/Fox Point, Som. Marginal	8,029	8,029	Complete		
S.32687.6270 Non-Treated Floatable (Beacon)	124	124	Complete		
S.355 MWR003 Gate & Siphon	1,848	25	1%		0%
S.32722.6952 Design	308	25	8%		Feb-08
S.32723.6953 Construction	1,540	0	Future	Nov-06	
S.357 Charles River CSO Controls	824	0	Future		
S.32730.7010 Design CS/RI	383	0	Future	Jul-05	
S.32731.7011 Construction	441	0	Future	Sep-06	

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.340 S. Dorch Bay Sew Separ (Fox Pt.)	54,521	45,989	84%		
S.32651.6155 Design	11,211	10,729	96%		Aug-09
S.32664.6247 Construction	43,310	35,260	81%		Nov-06
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)	62,993	41,628	66%		
S.32650.6154 Design	13,279	12,332	93%		Aug-09
S.32665.6248 Construction	49,714	29,296	59%		Nov-07
S.344 Stony Brook Sewer Separation	43,711	35,865	82%		
S.32667.6395 Design/CS/RI	9,182	8,667	94%		Apr-07
S.32668.6251 Construction	34,529	27,198	79%		Sep-06
S.342 Neponset River Sewer Separation	2,681	2,445	91%		
S.32652.6156 Design/CS/RI	480	470	98%		Dec-03
S.32653.6160 Construction	2,201	1,975	90%		Oct-02
S.343 Constitution Beach Sewer Separation	3,769	3,769	Complete		
S.32649.6153 Design/CS/RI	673	673	Complete		
S.32666.6249 Construction	3,096	3,096	Complete		
S.346 Cambridge CAM002-004 Sew.Separation	39,467	18,245	46%		
S.32654.6161 Design/CS/RI	10,980	8,058	73%		Jun-13
S.32672.6255 Construction	28,487	10,187	36%		Dec-12
S.351 BWSC Floatables Controls	933	933	Complete		
S.32657.6168 Design	555	555	Complete		
S.32683.6266 Construction	378	378	Complete		
S.352 Cambridge Floatables Controls	2,660	922	35%		
S.32655.6162 Design	377	377	Complete		
S.32684.6267 Construction	2,283	545	24%		Jun-08
S.356 Fort Point Channel Sewer Separation	5,258	1,111	21%		
S.32725.6992 Construction	4,178	522	12%		Mar-07
S.32724.6991 Design	1,080	589	55%		Mar-08
S.358 Morrissey Boulevard Drain	20,883	45	0%		
S.32713.6696 Construction	16,974	0	Future	Dec-06	
S.32735.7015 Design	3,909	45	1%		Dec-09
S.359 Reserved Channel Sewer Separation	54,372	0	Future		
S.32727.6994 Construction	43,267	0	Future	May-09	
S.32734.7014 Design	11,105	0	Future	Jan-07	
S.324 CSO Support Total	51,335	38,948	76%		
S.32400.5790 Technical Assistance	228	228	Complete		
S.32401.5791 Planning/EIR	10,769	10,769	Complete		
S.32403.5716 Master Planning	22,007	22,007	Complete		
S.32645.6036 Watershed Planning	877	877	Complete		
S.32409.5795 Modeling	300	300	Complete		
S.32411.5767 SOP Program	1,957	1,957	Complete		
S.32691.6372 System Assessment	476	77	16%		Dec-08
S.32648.6150 Technical Review	717	641	89%		Dec-09
S.32658.6169 Land/Easement	13,943	2,031	15%		Jul-08
S.128 I/I Local Financial Assistance	68,593	58,445	85%		
S.10273.6084 Grants - Phase II	15,937	15,937	Complete		
S.10274.6085 Loans - Phase II	47,664	47,664	Complete		
S.10282.6170 Repayment - Phase II	-47,664	-42,481	89%		May-11
S.10368.6736 Grants - Phase IV	34,650	20,111	58%		May-13
S.10369.6737 Loans - Phase IV	42,350	24,580	58%		May-13
S.10370.6738 Repayment - Phase IV	-42,350	-11,859	28%		May-18
S.10407.6925 Grants-Phase V	18,000	2,019	11%		May-13
S.10408.6926 Loans-Phase V	22,000	2,468	11%		May-13
S.10409.6927 Repayments-Phase V	-22,000	0	Future	Aug-05	
S.138 Sewerage System Mapping Upgrade	284	284	Complete		
S.10308.6418 Contract 2-Existing Data	177	177	Complete		

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.542 Walnut Hill Water Treatment Plant	419,525	357,807	85%		
S.53293.5023 Study 1	444	444	Complete		
S.53294.5024 Study 2	2,368	2,368	Complete		
S.53375.6182 AWWARF Study	692	692	Complete		
S.53376.6206 Emerg Dis Res Water Mgmt Study	1,454	1,454	Complete		
S.53367.6118 Crypto. Inactivation Study	150	150	Complete		
S.53390.6365 Cosgrove Disinfection Ph II	2,169	2,169	Complete		
S.53391.6397 Cosgrove Disinfection Ph I	150	150	Complete		
S.53296.5042 EIR/Conceptual Design	5,808	5,808	Complete		
S.53301.5017 Design/CS/RI - Wachusett WTP	49,159	47,727	97%		Jun-06
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	15,391	15,391	Complete		
S.53412.5522 WHCP2 Interim Rehab. Wach. Aque.	23,400	23,400	Complete		
S.53413.6488 WHCP3 Sitework & Storage Tanks	67,369	67,369	Complete		
S.53414.6489 WHCP4 Treatment Facility	135,365	133,818	Complete		
S.53416.6491 WHCP6 Late Sitework	3,678	2,882	78%		Nov-05
S.53426.6650 WHCP7 Existing Facilities Mods	5,000	0	Future	Jun-06	
S.53371.6134 Design Management Support	1,730	1,730	Complete		
S.53378.6208 Construction Management/RI	31,831	29,271	92%		Jun-06
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	217	217	Complete		
S.53418.6494 OCIP	5,802	5,802	Complete		
S.53419.6495 Professional Services	2,762	2,704	98%		Jun-03
S.53420.6497 Marlboro MOA	5,859	5,859	Complete		
S.53421.6520 WHWTP- MECO	310	310	Complete		
S.53425.6613 Site Security Services	1,266	1,266	Complete		
S.53428.6671 Wachusett Algae Design CS/RI	450	0	Future	Nov-05	
S.53432.6691 Public Health Research	2,800	1,420	51%		Jun-07
S.53435.6756 Security Equipment	571	571	Complete		
S.53437.6773 WHCP8 Cosgrove Screens Con	3,246	3,246	Complete		
S.53443.6815 AWWARF-Evaluation Ozone & UV	303	303	Complete		
S.53445.6827 Fitout/Construction	1,350	792	59%		Jul-07
S.53448.6889 Wachusett Algae ...	1,800	0	Future	May-07	
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	9,500	0	Future	Jan-07	
S.53451.6924 WH Ultra Violet Disinfect Cons	34,000	0	Future	Jan-10	
S.53453.6951 Des WH CP7 Existing Fac Mods	1,373	241	18%		Jun-08
S.543 Quabbin Water Treatment Plant	15,456	10,256	66%		
S.53363.6043 Quabbin WTP Des/CA/RI	3,823	3,823	Complete		
S.53382.6212 Construction	5,080	5,080	Complete		
S.53439.6775 Quabbin UVWTP: Des/CA/RI	906	0	Future	Dec-06	
S.53440.6776 Quabbin UVWTP: Construction	4,229	0	Future	Feb-09	
S.53442.6804 Quabbin UVWTP:Study/Pilot	1,283	1,258	Complete		
S.544 Norumbega Covered Storage	107,473	104,817	98%		
S.53297.5041 Conceptual Design/EIR	2,873	2,873	Complete		
S.53364.6057 Owners Representative	4,636	4,385	95%		Jun-05
S.53383.6213 Design/Build	96,647	94,522	98%		Jun-05
S.53372.6145 Land	3,000	3,000	Complete		
S.53422.6529 Booster Disinfection Design	244	0	Future	Jul-07	
S.545 Blue Hills Covered Storage	35,955	1,659	5%		
S.68025.6139 EIR/Preliminary Design/OR	2,357	1,634	69%		Sep-08
S.53384.6214 DB Field Oversight	2,189	0	Future	Nov-05	
S.53386.6216 Design Build	31,305	0	Future	Nov-05	

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.604 MetroWest Tunnel	703,383	626,504	89%		
S.59794.5043 Study	415	415	Complete		
S.59796.5048 Construction-Sudbury Pipe Bridge	296	296	Complete		
S.59795.5044 Design/EIR - Tunnel/ESDC	37,981	37,897	Complete		
S.59798.6054 West Tunnel Segment - CP1	147,787	147,787	Complete		
S.60013.6055 Midd.Tunnel Segment - CP2	245,770	245,770	Complete		
S.60015.6059 Shaft 5A - CP3	5,872	5,872	Complete		
S.60040.6374 East Tunnel Segment-CP3A	56,055	56,054	Complete		
S.60014.6056 MHD Salt Sheds - CP5	1,314	1,314	Complete		
S.60031.6205 CP6B Upper Hultman Rehab	6,300	0	Future	Jul-09	
S.60030.6204 Testing & Disinfection-CP7	3,612	3,612	Complete		
S.60029.6203 Loring Road Storage Tanks CP-8	41,368	41,368	Complete		
S.59799.5284 Const. Mgmt/Resident Inspect	39,510	39,510	Complete		
S.59806.5141 Hultman Study	2,095	2,004	96%		Mar-05
S.60022.6128 Hultman Leak Repair	307	307	Complete		
S.60042.6430 Hultman Investigation and Repair	1,604	1,604	Complete		
S.60043.6492 Hultman Repair Bands 98-99	116	116	Complete		
S.59805.5139 Land Acquisition	6,259	6,259	Complete		
S.60020.6117 Prof. Services	814	764	94%		Dec-03
S.60023.6129 Framingham MOU	2,539	2,539	Complete		
S.60039.6367 Weston MOA	1,018	1,018	Complete		
S.60038.6366 Southboro MOA	322	322	Complete		
S.60053.6762 Wayland MOA	107	107	Complete		
S.60017.6063 Local Sup Cont Des/CA/RI	859	859	Complete		
S.60024.6130 Loc. Support Cont. Constr	4,258	4,258	Complete		
S.60018.6067 Community Technical Assistance	297	297	Complete		
S.60021.6122 OCIP	24,515	24,515	Complete		
S.60054.6777 Equipment Prepurchase	500	200	40%		Sep-05
S.60058.6856 Hultman Rehab CP9	4,100	0	Future	Jul-05	
S.60059.6872 Interim Disinfection	1,202	1,202	Complete		
S.60066.6911 Design CA/RI CP6	12,900	0	Future	Jul-05	
S.60072.6950 Valve Chamber Modifications	300	0	Future	Jul-05	
S.60073.6975 CP6A Lower Hultman Rehab	52,700	0	Future	Jul-07	
S.601 Sluice Gate Rehabilitation	9,786	9,212	94%		
S.59757.5255 Design/CS/RI	177	177	Complete		
S.59758.5256 Construction 1	1,529	1,529	Complete		
S.60034.6272 Design CS/RI 2	1,298	1,045	81%		Sep-06
S.59760.5258 Construction 2	4,928	4,611	94%		Sep-05
S.59761.5259 Constr-Stop Planks	444	444	Complete		
S.60027.6158 Const-Sudbury Toe Drain Repair	1,400	1,400	Complete		
S.615 Chicopee Valley Aqued. Redundancy	10,555	1,556	15%		
S.60045.6527 Pipeline Redundancy Des/CA/RI	2,110	1,219	58%		Dec-06
S.60046.6528 Pipeline Redundancy Construction	8,345	300	4%		Mar-07
S.616 Quabbin Transmission System	5,731	650	11%		
S.75491.6690 Phase 1 Oakdale Valves Const.	2,000	0	Future	Oct-05	
S.60055.6828 Facilities Inspection	1,250	100	8%		Feb-06
S.75496.6831 Ph 1 Oakdale Valves Study/Des	1,475	350	24%		Nov-06
S.60075.7007 Equipment Pre-purchase	1,006	200	20%		Jun-10
S.617 Sudbury /Weston Aqueduct Repairs	3,648	726	20%		
S.75486.6617 Haz Material Sudbury Aqueduct	300	276	92%		May-05
S.60056.6838 Sudbury Aqueduct Inspection	754	400	53%		May-05
S.60076.7016 Sudbury Short-Term Repairs	2,544	0	Future	Jul-05	
S.619 Winsor Dam Repair	1,200	0	Future		
S.60077.7017 Design CA/RI	200	0	Future	Apr-06	
S.60078.7018 Construction	1,000	0	Future	Mar-07	

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.620 Wachusett Reservoir Spillway Improvement	8,200	0	Future		
S.60079.7019 Design	1,200	0	Future	Apr-06	
S.60080.7020 Construction	7,000	0	Future	Oct-07	
S.621 Watershed Land	9,000	4,500	50%		
S.60081.7069 Land Acquisition	9,000	4,500	50%		Jun-06
S.622 Cosgrove/Wachusett Redundancy	500	0	Future		
S.60082.7071 Cosgrove Tunnel Alternative Study	500	0	Future	Jun-06	
S.677 Valve Replacement	14,503	7,560	52%		
S.67559.5126 Construction 1	718	718	Complete		
S.68012.6105 Construction 2	1,385	1,385	Complete		
S.68039.6278 Construction 3	1,338	1,338	Complete		
S.68079.6345 Construction 4	1,540	1,540	Complete		
S.68080.6346 Construction 5	1,336	1,303	98%		Jul-05
S.68126.6435 Construction 6	1,965	0	Future	Dec-05	
S.68127.6436 Construction 7	2,069	0	Future	Oct-08	
S.68005.6088 Equip. Purchase	4,036	1,164	29%		Jun-09
S.712 Cathodic Protection Of Distr.Mains	1,797	241	13%		
S.68002.6058 Planning Phase I	108	108	Complete		
S.68128.6437 Test Station Installation 1	399	100	25%		Mar-06
S.68129.6438 Test Station Installation 2	419	0	Future	May-13	
S.68130.6439 Test Station Installation 3	419	0	Future	May-14	
S.68131.6440 Test Station Installation 4	419	0	Future	May-15	
S.678 Boston Low Serv.-Pipe & Valve Rehab	23,840	23,840	Complete		
S.67570.5120 Study - Pipe	297	297	Complete		
S.67571.5122 Design/CS	1,753	1,753	Complete		
S.67572.5123 Ph 1 Equip Prepurchase	892	892	Complete		
S.68000.6045 Const Clinton Rd & Boylston St	7,933	7,933	Complete		
S.67999.6044 Construction Beacon Street	12,964	12,964	Complete		
S.730 Weston Aqueduct Supply Mains (WASMs)	113,628	60,184	53%		
S.68027.6142 Design/CA/RI-PhA/W1&2	5,374	4,856	90%		Jul-06
S.67865.5147 Design/CA/RI - W4	6,149	5,986	97%		Jun-05
S.68041.6280 Newton WASM 1&2	9,219	9,219	Complete		
S.68042.6281 Boston WASM 1&2	7,531	6,705	89%		Jun-05
S.68166.6539 Design/CA/RI WASM3	9,250	0	Future	Jan-06	
S.68170.6543 Waltham WASM 3-CP2	15,616	0	Future	Jan-10	
S.68171.6544 Belmont WASM 3 - CP3	11,860	0	Future	Apr-12	
S.68172.6545 Arlington WASM 3 - CP4	9,122	0	Future	Oct-14	
S.68173.6546 Section 28, Arlington-CP1	3,853	0	Future	Jan-08	
S.68031.6175 Auburndale WASM 1,2&4	4,001	4,001	Complete		
S.68069.6312 Newton WASM 2&4	8,282	8,282	Complete		
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	17,617	17,617	Complete		
S.59774.5034 Construction Newton Water Mains	669	669	Complete		
S.68269.6996 Temporary Water Supply Plan	1,500	0	Future	Jan-08	
S.68272.7000 Section PCCP W-12 ...	2,104	2,104	Complete		
S.68273.7001 WASM3 SPL12 PCCP Des	349	158	45%		May-06
S.732 Walnut St. & Fisher Hill Pipeline Rehab.	3,141	9	0%		
S.68189.6586 Construction Phs. 1	3,083	0	Future	Jul-06	
S.683 Heath Hill Road Pipe Replacement	19,925	10,148	51%		
S.67639.5192 Design/CS/RI-Sec 52 Ph 1	218	218	Complete		
S.68047.6288 Design Sec 52 Ph 2	2,408	1,184	49%		Oct-08
S.67645.6042 Const-Sect 52 New	745	745	Complete		
S.67642.5194 Construction Section 52 Rehab	8,516	0	Future	Jan-06	
S.67640.5206 Design/CS/RI - Sec 58,20	1,595	1,595	Complete		
S.67643.5102 Construction Sect 58,20,19	6,362	6,362	Complete		

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.721 Southern Spine Distribution Mains	60,805	13,137	22%		
S.68083.6290 Sec 21,43,22 Design	8,076	4,089	51%		Mar-12
S.68084.6291 Sec 21,43,22 Easements	160	83	52%		Feb-09
S.68085.6292 Section 22 South Construction	5,586	5,586	Complete		
S.68089.6296 Sec 20 & 58 Design	1,986	0	Future	Jan-07	
S.68091.6298 Sec 20 & 58 Construction	9,346	0	Future	Sep-09	
S.68122.6396 Adams Street Bridge	154	154	Complete		
S.68194.6602 Southern High Ext Study	242	242	Complete		
S.68228.6787 Boston Paving	242	18	7%		Nov-13
S.68235.6844 Section 22 North Construction	11,406	0	Future	Feb-09	
S.68236.6845 Sections 21&43 Construction	20,374	0	Future	Jul-06	
S.68247.6885 Contract 1A Construction	3,170	2,945	93%		Jun-05
S.714 South. Extra High Sects 41,42 & 74	4,486	4,486	Complete		
S.68014.6107 Design/CA/RI	1,591	1,591	Complete		
S.68049.6299 Easements	85	85	Complete		
S.68050.6300 Construction	2,345	2,345	Complete		
S.68183.6561 Boston Paving	455	455	Complete		
S.719 Chestnut Hill Connecting Mains	17,982	17,550	98%		
S.68026.6141 Des/CA/RI PS Potable Connection	1,403	1,403	Complete		
S.68051.6301 Preliminary Engineering	613	360	59%		Nov-05
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	1,120	1,121	Complete		
S.68155.6501 Const - Emer. Pump Relocation	6,502	6,502	Complete		
S.68053.6303 Easements	131	90	69%		Dec-07
S.68180.6558 Boston Paving	313	183	58%		Dec-07
S.68199.6623 BECO Emergency Pump Construction	431	431	Complete		
S.68203.6651 Const. - Pump Station Potable Connection	7,139	7,139	Complete		
S.68230.6814 Equipment pre-purchase	178	178	Complete		
S.704 Rehab of Other Pumping Stations	22,810	4,341	19%		
S.67885.5153 Preliminary Design	351	351	Complete		
S.68017.6110 Design/CS/RI	2,671	2,671	Complete		
S.68072.6304 Construction II&C	639	639	Complete		
S.68102.6375 Rehab of 5 Pump Stations	14,956	0	Future	Nov-06	
S.68204.6676 Proprietary Equipment Purchases	285	178	62%		Jan-10
S.68266.6980 Design 2 CS/RI	3,898	500	13%		Jan-11
S.722 NIH Redundancy & Covered Storage	12,147	75	1%		
S.68093.6306 Easements	300	0	Future	Nov-06	
S.68252.6906 Section 29A Construction	1,907	0	Future	Mar-09	
S.53454.6954 Con Pl Pre Des/Env Rev Sec 89 F/D CA/	3,882	75	2%		May-10
S.68276.7026 Sec 89 & Sec 29 Rehab Constr	5,029	0	Future	Jun-10	
S.68277.7045 Design CA/RI Sec 89/29 Rehab	1,006	0	Future	Dec-08	
S.689 James L. Gillis Pump Station Rehab.	34,146	33,388	98%		
S.67702.5076 Electrical Upgrade	200	200	Complete		
S.67703.5077 Design/CS-Pump Station	2,308	2,308	Complete		
S.67707.5078 Construction-PS-Phase I	630	630	Complete		
S.67708.5051 Const-P.S.-Ph2	12,890	12,890	Complete		
S.67716.5047 Oil Control Plan	171	171	Complete		
S.67717.5050 Drain Line Cleaning	268	268	Complete		
S.67704.5072 Design/CS/RI-Suction Pipe	1,379	1,379	Complete		
S.67705.5071 Study-Suction Pipe	603	603	Complete		
S.67706.5073 Construction-Suction Pipe	11,265	11,265	Complete		
S.68105.6378 Woodland Road Pavement Improvements	396	396	Complete		
S.67720.5219 Constr-Rehab Discharge	2,041	2,041	Complete		
S.67719.5144 Construction Sewer P.S.	203	203	Complete		
S.67718.5053 Environ Assess & Remedial Plan	634	494	78%		Sep-07
S.68055.6308 Remedial Action Plan	600	0	Future	Feb-07	

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.713 Spot Pond Supply Mains - Rehab	60,885	39,656	65%		
S.68038.6223 Prelim Design & Design/CA/RI	10,874	9,678	89%		Apr-08
S.68060.6317 North (Medford/Melrose)	6,599	6,599	Complete		
S.68108.6381 Middle (Medford/Somerville)	21,335	16,327	77%		Jun-06
S.68109.6382 South (Cambridge/Boston)	16,777	4,000	24%		Apr-08
S.68150.6475 Early Valve Replacement Contract	2,387	2,387	Complete		
S.68209.6697 Construction 4-Trusses	876	0	Future	Apr-08	
S.68153.6483 Early Valve Equip. Purchase	161	161	Complete		
S.68274.7003 CA/RI CP3	1,276	250	20%		Apr-08
S.723 Nor Low Service Rehab Secs. 8	14,581	0	Future		
S.68095.6322 Sec 8 Construction	9,296	0	Future	Aug-09	
S.68262.6962 Rehab Sects 37,38 Chel/EB Con	3,200	0	Future	Aug-08	
S.68275.7021 Section 97A Construction	2,000	0	Future	Aug-07	
S.702 New Connecting Mains - Shaft 7 to	49,267	3,956	8%		
S.68035.6199 Watertown MOU	167	167	Complete		
S.67846.5163 Routing Study	397	397	Complete		
S.68110.6383 Design/CA/RI DP1	5,310	2,631	50%		Dec-09
S.68118.6391 Revised N. Segment (CP1A) New 48"	24,076	0	Future	Mar-07	
S.68111.6384 Des/CA/RI DP2/4 Meter 120	2,943	744	25%		Jun-08
S.68174.6548 Constr CP2 C&L Sec 59&60	2,964	0	Future	Nov-12	
S.68119.6392 South Segment (CP3)	4,957	0	Future	Feb-08	
S.68121.6394 Northeast Segment (CP5)	5,713	0	Future	Oct-07	
S.68255.6955 Repl of Sect 25-Design CA/RI	400	0	Future	Jul-09	
S.68256.6956 Repl of Sect 25-Construction	2,100	0	Future	Jul-11	
S.692 NHS - Section 27 Improvements	2,553	124	5%		
S.67769.6333 Construction Sect 27	2,429	27	1%		Mar-15
S.693 NHS - Revere & Malden Pipeline Impr	32,916	23,867	73%		
S.67780.5185 Design/CS/RI-Revere/Malden	1,786	1,786	Complete		
S.67781.5186 Constr-Revere Beach	6,314	6,314	Complete		
S.67782.5176 Constr-Malden Sect 53	10,026	10,026	Complete		
S.67792.5238 Construction - Linden Square	1,849	1,849	Complete		
S.67793.5239 Construction Admin.-Linden Squar	125	125	Complete		
S.67784.5177 Const-Revere Sect 53	3,572	0	Future	Jul-06	
S.67997.6034 Construction Road Restoration	1,714	1,714	Complete		
S.67785.5191 Constr-Control Valves	949	949	Complete		
S.67786.5179 Const.-DI Pipeline C&L	158	158	Complete		
S.67787.5178 Constr-Win C&L	575	575	Complete		
S.67790.6335 Constr 68 & 53A	4,229	0	Future	Jul-13	
S.67791.5986 Technical Assistance	206	206	Complete		
S.68258.6958 Shaft 9A-D Ext Construction	1,200	0	Future	Apr-14	
S.731 Lynnfield Pipeline	4,000	0	Future		
S.68187.6584 Construction	3,000	0	Future	Sep-07	
S.68196.6619 Easem/Legal/License/Permits	200	0	Future	Apr-06	
S.68251.6905 Design CA/RI	800	0	Future	Apr-06	
S.708 Nor Extra High Serv - New Pipelines	8,457	3,645	43%		
S.67970.5242 Design/CA/RI	588	588	Complete		
S.67972.6340 Construction	3,032	3,032	Complete		
S.68162.6522 Construction-Sections 34,36,45	4,764	0	Future	Jan-10	
S.725 Hydraulic Model Update	686	686	Complete		
S.68101.6342 Hydraulic Model Update	563	563	Complete		
S.68165.6531 Model Enhancement Support Services	123	123	Complete		

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	Status Based on % of Budget Expended	Planned Start	Planned End
S.753 Central Monitoring System	16,140	15,637	97%		
S.75300.5025 Study	190	190	Complete		
S.75301.5026 Design	2,651	2,651	Complete		
S.75304.5160 Communications Structures	161	161	Complete		
S.75305.5173 CS/Start Up Services	352	352	Complete		
S.75302.5027 Equipment Prepurchase	2,162	2,162	Complete		
S.75306.5171 Construction 1	209	209	Complete		
S.75303.5028 SCADA Implementation	2,201	1,698	77%		Jun-09
S.75474.6125 Microwave Equipment	782	782	Complete		
S.75308.5849 Operations Center Construction	1,499	1,499	Complete		
S.75309.5987 Technical Assistance	386	386	Complete		
S.75488.6653 Microwave Comm System-Wide Backbone	1,694	1,694	Complete		
S.75489.6654 Study & Design Monitoring & Control	1,858	1,858	Complete		
S.75494.6816 Microwave Comm for Waterworks Facil	1,954	1,954	Complete		
S.763 Distribution Systems Facs. Mapping	2,226	1,030	46%		
S.75458.5162 Planning Design	930	930	Complete		
S.75476.6152 Data Purchase	100	100	Complete		
S.75484.6525 Records Development	1,196	0	Future	Jul-06	
S.765 Local Water Pipeline Imp. Loan Program	0	71,947			
S.75485.6608 Community Loans	254,800	88,641	35%		Jun-13
S.75493.6759 Community Repayment	-254,800	-16,694	7%		Jun-23
S.766 Waterworks Facility Asset Protection	4,003	281	7%		
S.75490.6689 Meter Vault Manhole Retrofits	1,336	0	Future	Sep-14	
S.75497.6832 Design-Walnut Hill Tank	300	0	Future	Sep-08	
S.75498.6833 Construction-Walnut Hill Tank	1,000	0	Future	Oct-10	
S.75501.6910 Waltham Pipe/Bridge Repl	272	272	Complete		
S.75506.7023 Design Cosgrove Turbine Isolation	480	0	Future	Jul-15	
S.75509.7064 Cosgrove Valve Seat Repl	500	0	Future	Jul-08	
S.75510.7065 Des Cosgrove Valve Seat Repl	100	0	Future	Jul-07	
S.933 Capital Maintenance Planning/Development	8,928	2,902	33%		
S.19175.6421 Inventory & Evaluation-1&2	2,616	2,590	Complete		
S.92387.6976 As-needed Design Contract 1	750	156	21%		Feb-07
S.92393.6988 As Needed Des/TA Contract	750	156	21%		Feb-07
S.92399.7070 Long-Term As-Needed Design	4,812	0	Future	Jan-07	
S.881 Equipment Purchase	8,996	3,644	41%		
S.92367.6732 TV Inspection Truck	175	175	Complete		
S.92374.6760 Security Equip & Installation	6,112	1,710	28%		Dec-02
S.92379.6808 ICP-MS Lab Testing Equip	150	150	Complete		
S.92381.6866 Back Hoe	130	130	Complete		
S.92382.6867 Vactor Truck	220	220	Complete		
S.92383.6907 Water Service Truck	114	114	Complete		
S.92384.6944 Bucket Machine	200	200	Complete		
S.92385.6945 Excavator	250	0	Future	Apr-06	
S.92386.6946 Grove Crane	250	250	Complete		
S.92388.6981 Land Fill Loader	280	280	Complete		
S.92392.6986 PowerSweeper/Catch Basin ...	155	155	Complete		
S.92394.6990 Back Hoe (WRA385)	150	150	Complete		
S.92395.7027 Closed Circuit TV Insp Truck	200	0	Future	Jan-06	
S.92396.7028 Front-End Loader	390	0	Future	Jul-05	
S.92397.7029 Dump Truck (WRA 192)	110	110	Complete		
S.92398.7030 Dump Truck (WRA 522)	110	0	Future	Jul-05	

**Appendix 3
Project Status Overview**

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	<u>Status</u> Based on % of Budget Expended	Planned Start	Planned End
S.930 MWRA Facilities Chelsea	10,225	10,225	Complete		
S.92354.6510 Design Review	379	379	Complete		
S.92355.6511 Fitout - Office Furnish/Equip	644	644	Complete		
S.92356.6512 Inform./Telecom. Consultant	382	382	Complete		
S.92357.6513 Existing Facility "Button Up"	380	380	Complete		
S.92358.6514 Moving Expense	362	362	Complete		
S.92363.6713 Moving Expenses CNY	237	237	Complete		
S.92364.6714 CNY Retrofit	1,577	1,577	Complete		
S.92365.6715 MIS Network	1,506	1,506	Complete		
S.92366.6716 Fitout - All Other	4,640	4,640	Complete		
S.925 Technical Assistance	1,650	0	Future		
S.30000.MECH Mechanical	150	0	Future		
S.50000.MATT Material Testing	150	0	Future		
S.80000.SURV Surveying	150	0	Future		
S.90000.HAZM Hazardous Material	900	0	Future		
S.33000.INST Instrument Control	150	0	Future		
S.44000.WETP Wetland/Permitting	150	0	Future		
S.931 Business Systems Plan	25,340	19,083	75%		
S.92338.6014 Phase I (FY95-97)	1,146	1,146	Complete		
S.92339.6013 Hardware-Phase I	441	441	Complete		
S.92322.6015 Network-Phase I	142	142	Complete		
S.92343.6177 Phase II FY97-99	4,274	2,156	50%		Jun-07
S.92347.6362 Phase III (FY99-01)	10,807	10,807	Complete		
S.92352.6508 Phase IV / Year 2000 Imp.	3,051	3,051	Complete		
S.92353.6509 Phase V	2,688	381	14%		Jun-09
S.92380.6865 Phase VI	2,791	959	34%		Jun-07
S.932 Environmental Remediation	1,860	1,355	73%		
S.92369.6745 Tech Asst./ Env. Remediation	469	469	Complete		
S.92370.6746 Prision Point Tank Removal - Const.	882	417	47%		Aug-99
S.92371.6747 Cottage Farm Tank Replace - Const	428	428	Complete		
S.92376.6805 Oakdale Power Station	73	33	45%		Dec-04
S.934 MWRA Facilities Management & Planning	3,931	343	9%		
S.92389.6983 Design/Engineering Services	763	343	45%		Jun-08
S.92390.6984 Facilities Construction	3,168	0	Future	Apr-05	

APPENDIX 4

Municipality and Project Reference by Municipality

**APPENDIX 4
PROJECT/MUNICIPALITY(s)**

Project Number/Project	Community(s) Served	
101	Wastewater Metering System Upgrade	Arlington, Ashland, Braintree, Brookline, Canton, Chelsea, Malden, Medford, Milton, Natick, Somerville, Wellesley, Winchester, Winthrop
102	Quincy Pump Facilities	Quincy
104	Braintree-Weymouth Relief Facilities	Braintree, Hingham, Holbrook, Randolph, Weymouth, Quincy
105	New Neponset Valley Relief Sewer	Canton, Dedham, Hyde Park, Milton, Norwood, Stoughton, Walpole, Westwood
106	Wellesley Extension Replacement Sewer	Dedham, Needham, Wellesley, Dover
107	Framingham Extension Relief Sewer	Ashland, Framingham, Natick
127	Cummingsville Replacement Sewer	Burlington, Winchester, Woburn
128	Infiltration/Inflow Local Financial Assistance Program.	All Wastewater Communities
131	Upper Neponset Valley Sewer System	Brookline, Dedham, Newton, West Roxbury
132	Corrosion and Odor Control Study	All Wastewater Communities
134	Ashland Extension Sewer	Ashland
137	Wastewater Central Monitoring	All Wastewater Communities
138	Sewerage System Mapping Upgrade	All Wastewater Communities
139	South System Relief Project	Boston, Milton
141	Wastewater Process Optimization	All Wastewater Communities
142	Wastewater Metering System Equipment Replacement	All Wastewater Communities
143	Regional I/I Management Study	All Wastewater Communities
145	Interception & Pumping Facility Asset Protection	All Wastewater Communities
182	Deer Island Primary and Secondary Treatment Facilities	All Wastewater Communities
183	Water Transportation Facilities	All Wastewater Communities
200	Deer Island Plant Optimization	All Wastewater Communities
206	Deer Island Treatment Plant Asset Protection	All Wastewater Communities
261	Residuals Management Facilities	All Wastewater Communities
324	CSO Support	Boston, Cambridge, Chelsea, Revere, Somerville
339	North Dorchester Bay & Reserve Channel Conduits/CSO	Boston
340	South Dorchester Bay Sewer Separation (Fox Point)	Boston
341	South Dorchester Bay Sewer Separation (Commercial Pt.)	Boston
342	Neponset River Sewer Separation	Boston
343	Constitution Beach Sewer Separation	Boston
344	Stony Brook Sewer Separation	Boston
346	Cambridge CAM002-004 Sewer Separation	Cambridge
347	East Boston Branch Sewer Relief	Boston, Chelsea, Everett
348	Fort Point Channel & BOS019 Conduits	Boston
349	Chelsea Trunk Sewer	Chelsea, Revere
350	Union Park Detention Treatment Facility	Boston
351	BWSC Floatables Control	Boston
352	Cambridge Floatables Control	Cambridge
353	Upgrade Existing CSO Facilities	Boston, Cambridge, Revere, Somerville
354	Hydraulic Relief Projects	Boston, Cambridge
355	MWR003 Gate and Siphon	Boston, Cambridge
356	Fort Point Channel Sewer Separation	Boston
357	Charles River CSO Controls	Boston, Brookline, Cambridge
358	Morrissey Boulevard Drain	Boston
359	Reserved Channel Sewer Separation	Boston

**APPENDIX 4
PROJECT/MUNICIPALITY(s)**

Project Number/Project	Community(s) Served
542 Walnut Hill Treatment Plant	All Water Customers (except Chicopee, Wilbraham, South Hadley Fire District #1, Worcester, Clinton, and Leominster)
543 Quabbin Water Treatment Plant	South Hadley, Chicopee, Wilbraham
544 Norumbega Covered Storage	Arlington, Bedford, Belmont, Boston, Brighton, Cambridge, Chestnut Hill, Lexington, Malden, Medford, Somerville, Waltham, Watertown, Weston, Winchester
545 Blue Hills Covered Storage	Boston, Canton, Milton, Norwood, Quincy
546 Northern Intermediate High Covered Storage	Stoneham, Wakefield, Winchester, Woburn
547 Fells Covered Storage	Malden, Medford, Melrose, Saugus, Stoneham, Wakefield
549 SEH Additional Storage	Boston, Brookline, Canton, Milton, Newton, Norwood
550 Low Service Storage Near Spot Pond	Cambridge, Charlestown, Chelsea, East Boston, Everett, Malden, Medford, Somerville
601 Sluice Gate Rehabilitation	All Water Communities
604 MetroWest Tunnel	All Water Communities (except South Hadley, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
615 Chicopee Valley Aqueduct Redundancy	Chicopee, South Hadley Fire District, Wilbraham
616 Quabbin Transmission System	Chicopee, South Hadley, Wilbraham
617 Sudbury/Weston Aqueduct Repairs	Framingham, Natick, Sudbury, Weston
619 Winsor Dam Repair	All Water Communities
620 Wachusetts Reservoir Spillway	All Water Communities
621 Watershed Land	All Water Communities
622 Cosgrove/Wachusett Redundancy	All Water Communities
677 Valve Replacement	All Water Communities
678 Boston Low Service Pipe and Valve Rehab.	Boston, Brookline
681 Southern Service Improvements	Boston, Brookline, Canton, Milton, Norwood, Quincy
683 Heath Hill Road Pipe Replacement	Boston, Brookline
684 Commonwealth Ave. Pump Station Modernization	Newton
689 James L. Gillis Pump Station Rehabilitation	Lynn, Lynnfield, Malden, Marblehead, Medford, Melrose, Nahant, Peabody, Saugus, Stoneham, Swampscott, Wakefield, Winchester, Woburn
690 Northern Low Service Pipeline Replacement	Chelsea, Everett, Malden
692 Northern High Service Section 27 Improvements	Lynn, Marblehead, Nahant, Peabody, Swampscott
693 Northern High Service Pipe Improvements - Revere/Malden	East Boston, Lynn, Malden, Marblehead, Nahant, Peabody, Revere, Saugus, Winthrop
702 New Connecting Mains - Shaft 7 to WASM 3	Arlington, Bedford, Belmont, Boston, Lexington, Medford, Newton, Somerville, Waltham, Watertown, Winchester
704 Rehabilitation of Other Pump Stations	Arlington, Bedford, Belmont, Boston, Brookline, Canton, Lexington, Milton, Norwood, Waltham, Watertown, Winchester
706 Northern High Service Connecting Mains from Sec. 91	Lynn, Lynnfield, Marblehead, Nahant, Revere, Saugus, Swampscott
708 Northern Extra High Service - New Pipelines	Arlington, Bedford, Lexington, Waltham
712 Cathodic Protection of Distribution Mains	All Water Communities
713 Spot Pond Supply Mains Rehabilitation	Arlington, Boston, Cambridge, Chelsea, Everett, Malden, Medford, Somerville
714 Southern Extra High - Sections 41, 42, and 74	Boston, Brookline, Canton, Milton, Norwood
715 Newton Service Improvements	Newton
716 Water Main Relocation in Chelsea River	East Boston (Logan Airport)
719 Chestnut Hill Connecting Mains	Boston, Brookline, Newton

**APPENDIX 4
PROJECT/MUNICIPALITY(s)**

Project Number/Project		Community(s) Served
720	Warren Cottage Line Rehabilitation	Boston, Brookline
721	Southern Spine Distribution Mains	Boston, Brookline, Canton, Milton, Norwood, Quincy
722	Bear Hill Improvements - Section 29 Rehabilitation	Stoneham, Wakefield, Winchester, Woburn
723	Northern Low Service Rehab. - Sections 8 & 57	Chelsea, East Boston, Everett, Malden, Medford
725	Hydraulic Model Update	All Water Communities
730	Weston Aqueduct Supply Mains	Weston, Newton, Boston, Watertown, Cambridge, Waltham, Belmont, Arlington, Somerville
731	Lynnfield Pipeline	Lynnfield
732	Walnut St. & Fisher Hill Pipeline Rehabilitation	Brookline, Chestnut Hill
753	Central Monitoring System	All Water Communities
758	Rehabilitation of Existing Facilities	All Water Communities
763	Distribution Systems Facilities Mapping	All Water Communities
764	Local Water Infrastructure Rehab Assistance Program.	All Water Communities
765	Local Water Pipeline Improvement Loan Program	All Water Communities
766	Waterworks Facility Asset Protection	All Water Communities
881	Centralized Equipment Purchase	All MWRA Customers
925	Technical Assistance	All MWRA Customers
930	North Maintenance Facility - Chelsea	All MWRA Customers
931	Business Systems Plan	All MWRA Customers
932	Environmental Remediation	All MWRA Customers
933	Capital Maintenance Planning/Development	All MWRA Customers
934	MWRA Facilities Management	All MWRA Customers

APPENDIX 5

Municipality and Project Reference by Project

APPENDIX 5
MUNICIPALITY/PROJECT(s)

Municipality Project Number/Project	Municipality Project Number/Project
AII MWRA COMMUNITIES	Ashland
881 Equipment Purchase	101 Wastewater Metering System Upgrade
925 Technical Assistance	107 Framingham Extension Relief Sewer
930 MWRA Facility - Chelsea	
931 Business Systems Plan	
932 Environmental Remediation	Bedford
933 Capital Maintenance Planning/Development	544 Norumbega Covered Storage
934 MWRA Facilities Management	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	708 Northern Extra High Service - New Pipelines
ALL WASTEWATER COMMUNITIES	Belmont
128 Infiltration/Inflow Local Financial Assistance Program	544 Norumbega Covered Storage
132 Corrosion & Odor Control Study	702 New Connecting Mains - Shaft 7 to WASM 3
137 Wastewater Central Monitoring	704 Rehabilitation of Other Pump Stations
138 Sewerage System Mapping Upgrade	730 Weston Aqueduct Supply Mains
141 Wastewater Process Optimization	
142 Wastewater Metering System Equipment Replacement	Boston
143 Regional I/I Management Planning	139 South System Relief Project
145 Interception & Pumping Facilities Asset Protection	324 CSO Support
182 Deer Island Primary and Secondary Treatment Facility	339 North Dorchester Bay & Reserve Channel Conduits/CSO
183 Water Transportation Facilities	340 South Dorchester Bay Sewer Separation (Fox Point)
200 Deer Island Plant Optimization	341 South Dorchester Bay Sewer Separation (Commercial Pt.)
206 Deer Island Treatment Plant Asset Protection	342 Neponset River Sewer Separation
261 Residuals Management Facilities	344 Stony Brook Sewer Separation
	347 East Boston Branch Sewer Relief
ALL WATER COMMUNITIES	348 Fort Point Channel & BOS019 Conduits
541 Watershed Protection	350 Union Park Detention Treatment Facility
601 Sluice Gate Rehabilitation	351 BWSC Floatables Control
619 Winsor Dam Repair	353 Upgrade Existing CSO Facilities
620 Wachusett Reservoir Spillway	354 Hydraulic Relief Facilities
621 Watershed Land	355 MWR003 Gate and Siphon
622 Cosgrove/Wachusett Redundancy	356 Fort Point Channel Sewer Separation
677 Valve Replacement	357 Charles River CSO Controls
712 Cathodic Protection of Distribution Mains	358 Morrisey Boulevard Drain
725 Hydraulic Model Update	359 Reserved Channel Sewer Separation
753 Central Monitoring System	544 Norumbega Covered Storage
758 Rehabilitation of Existing Facilities	545 Blue Hills Covered Storage
763 Distribution Systems Facilities Mapping	549 SEH Additional Storage
764 Local Water Infrastructure Rehab Assistance Program.	678 Boston Low Service Pipe And Valve Rehabilitation
765 Local Water Pipeline Improvement Loan Program	683 Heath Hill Road Pipe Replacement
766 Waterworks Facility Asset Protection	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
ALL WATER COMMUNITIES (except South Hadley, Chicopee,	713 Spot Pond Supply Mains Rehabilitation
542 Walnut Hill Treatment Plant	714 Southern Extra High - Sections 41, 42, and 74
604 MetroWest Tunnel	719 Chestnut Hill Connecting Mains
	720 Warren Cottage Line Rehabilitation
Arlington	721 Southern Spine Distribution Mains
101 Wastewater Metering System Upgrade	730 Weston Aqueduct Supply Mains
544 Norumbega Covered Storage	
702 New Connecting Mains - Shaft 7 to WASM 3	Braintree
704 Rehabilitation of Other Pump Stations	101 Wastewater Metering System Upgrade
708 Northern Extra High Service - New Pipelines	104 Braintree-Weymouth Relief Facilities
713 Spot Pond Supply Mains Rehabilitation	
730 Weston Aqueduct Supply Mains	

APPENDIX 5
MUNICIPALITY/PROJECT(S)

Municipality Project Number/Project	Municipality Project Number/Project
Brighton 544 Norumbega Covered Storage	Chestnut Hill 544 Norumbega Covered Storage 732 Walnut St. & Fisher Hill Pipeline Rehabilitation
Brookline 101 Wastewater Metering System Upgrade 131 Upper Neponset Valley Sewer System 357 Charles River CSO Controls 678 Boston Low Service Pipe And Valve Rehabilitation 681 Southern Service Improvements 683 Heath Hill Road Pipe Replacement 704 Rehabilitation of Other Pump Stations 714 Southern Extra High - Sections 41, 42, and 74 719 Chestnut Hill Connecting Mains 720 Warren Cottage Line Rehabilitation 721 Southern Spine Distribution Mains 732 Walnut St. & Fisher Hill Pipeline Rehabilitation	Chicopee 543 Quabbin Water Treatment Plant 548 Nash Hill Covered Storage 615 Chicopee Valley Aqueduct Redundancy 616 Quabbin Transmission System
Burlington 127 Cummingsville Replacement Sewer	Dedham 105 New Neponset Valley Relief Sewer 106 Wellesley Extension Replacement Sewer 131 Upper Neponset Valley Sewer System
Cambridge 324 CSO Support 346 Cambridge CAM002-004 Sewer Separation 352 Cambridge Floatables Control 353 Upgrade Existing CSO Facilities 354 Hydraulic Relief Projects 355 MWR003 Gate and Siphon 357 Charles River CSO Controls 544 Norumbega Covered Storage 713 Spot Pond Supply Mains Rehabilitation 730 Weston Aqueduct Supply Mains	Dover 106 Wellesley Extension Replacement Sewer
Canton 101 Wastewater Metering System Upgrade 105 New Neponset Valley Relief Sewer 545 Blue Hills Covered Storage 549 SEH Additional Storage 704 Rehabilitation of Other Pump Stations 714 Southern Extra High - Sections 41, 42, and 74 721 Southern Spine Distribution Mains	East Boston 693 Northern High Service Pipe Improvements - Revere/Malden 716 Water Main Relocation In Chelsea River 723 Northern Low Service Rehab. - Sections 8 & 57
Chelsea 101 Wastewater Metering System Upgrade 324 CSO Support 347 East Boston Branch Sewer Relief 349 Chelsea Trunk Sewer 713 Spot Pond Supply Mains Rehabilitation 723 Northern Low Service Rehab. - Sections 8 & 57	Everett 347 East Boston Branch Sewer Relief 690 Northern Low Service Pipeline Replacement 713 Spot Pond Supply Mains Rehabilitation 723 Northern Low Service Rehab. - Sections 8 & 57
	Framingham 107 Framingham Extension Relief Sewer 617 Sudbury/Weston Aqueduct
	Hingham 104 Braintree-Weymouth Relief Facilities
	Holbrook 104 Braintree-Weymouth Relief Facilities 617 Sudbury/Weston Aqueduct

APPENDIX 5
MUNICIPALITY/PROJECT(S)

Municipality Project Number/Project	Municipality Project Number/Project
Hyde Park	Melrose
105 New Neponset Valley Relief Sewer	547 Fells Covered Storage
	689 James L. Gillis Pump Station Rehabilitation
Lexington	Milton
544 Norumbega Covered Storage	101 Wastewater Metering System Upgrade
702 New Connecting Mains - Shaft 7 to WASM 3	105 New Neponset Valley Relief Sewer
704 Rehabilitation of Other Pump Stations	139 South System Relief Project
708 Northern Extra High Service - New Pipelines	545 Blue Hills Covered Storage
	549 SEH Additional Storage
Logan Airport	681 Southern Service Improvements
716 Water Main Relocation In Chelsea River	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
Lynn	721 Southern Spine Distribution Mains
689 James L. Gillis Pump Station Rehabilitation	
692 Northern High Service Section 27 Improvements	Nahant
693 Northern High Service Pipe Improvements - Revere/Malden	689 James L. Gillis Pump Station Rehabilitation
706 Northern High Service Connecting Mains from Sec. 91	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden
Lynnfield	706 Northern High Service Connecting Mains from Sec. 91
689 James L. Gillis Pump Station Rehabilitation	
706 Northern High Service Connecting Mains from Sec. 91	Natick
731 Lynnfield Pipeline	101 Wastewater Metering System Upgrade
	107 Framingham Extension Relief Sewer
Malden	617 Sudbury/Weston Aqueduct Repairs
101 Wastewater Metering System Upgrade	
544 Norumbega Covered Storage	Needham
547 Fells Covered Storage	106 Wellesley Extension Replacement Sewer
689 James L. Gillis Pump Station Rehabilitation	
693 Northern High Service Pipe Improvements - Revere/Malden	Newton
713 Spot Pond Supply Mains Rehabilitation	131 Upper Neponset Valley Relief Sewer
723 Northern Low Service Rehab. - Sections 8 & 57	549 SEH Additional Storage
	684 Commonwealth Ave. Pump Station Modernization
Marblehead	702 New Connecting Mains - Shaft 7 to WASM 3
689 James L. Gillis Pump Station Rehabilitation	715 Newton Service Improvements
692 Northern High Service Section 27	719 Chestnut Hill Connecting Mains
693 Northern High Service Pipe Improvements - Revere/Malden	730 Weston Aqueduct Supply Mains
706 Northern High Service Connecting Mains from Sec. 91	
	Norwood
Medford	105 New Neponset Valley Relief Sewer
101 Wastewater Metering System Upgrade	545 Blue Hills Covered Storage
544 Norumbega Covered Storage	549 SEH Additional Storage
547 Fells Covered Storage	681 Southern Service Improvements
689 James L. Gillis Pump Station Rehabilitation	704 Rehabilitation of Other Pump Stations
690 Northern Low Service Pipeline Replacement	714 Southern Extra High - Sections 41 and 42
702 New Connecting Mains - Shaft 7 to WASM 3	721 Southern Spine Distribution Mains
713 Spot Pond Supply Mains Rehabilitation	
723 Northern Low Service Rehab. - Sections 8 & 57	Peabody
	689 James L. Gillis Pump Station Rehabilitation
	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden

APPENDIX 5
MUNICIPALITY/PROJECT(s)

Municipality Project Number/Project	Municipality Project Number/Project
Quincy 102 Quincy Pump Facilities 104 Braintree-Weymouth Relief Facilities 545 Blue Hills Covered Storage 681 Southern Service Improvements 721 Southern Spine Distribution Mains	Sudbury 617 Sudbury/Weston Aqueduct Repairs
Randolph 104 Braintree-Weymouth Relief Facilities	Swampscott 689 James L. Gillis Pump Station Rehabilitation 692 Northern High Service Section 27 706 Northern High Service Connecting Mains from Sec. 91
Revere 324 CSO Support 349 Chelsea Trunk Sewer 353 Upgrade Existing CSO Facilities 693 Northern High Service Pipe Improvements - Revere/Malden 706 Northern High Service Connecting Mains from Sec. 91	Wakefield 546 Northern Intermediate High Covered Storage 547 Fells Covered Storage 689 James L. Gillis Pump Station Rehabilitation 722 Bear Hill Improvements - Section 29 Rehabilitation
Saugus 547 Fells Covered Storage 689 James L. Gillis Pump Station Rehabilitation 693 Northern High Service Pipe Improvements - Revere/Malden 706 Northern High Service Connecting Mains from Sec. 91	Walpole 105 New Neponset Valley Relief Sewer
Somerville 101 Wastewater Metering System Upgrade 324 CSO Support 353 Upgrade Existing CSO Facilities 544 Norumbega Covered Storage 702 New Connecting Mains - Shaft 7 to WASM 3 713 Spot Pond Supply Mains Rehabilitation 730 Weston Aqueduct Supply Mains	Waltham 544 Norumbega Covered Storage 702 New Connecting Mains - Shaft 7 to WASM 3 704 Rehabilitation of Other Pump Stations 708 Northern Extra High Service - New Pipelines 730 Weston Aqueduct Supply Mains
South Hadley 543 Quabbin Water Treatment Plant 548 Nash Hill Covered Storage 615 Chicopee Valley Aqueduct Redundancy 616 Quabbin Transmission System	Watertown 544 Norumbega Covered Storage 702 New Connecting Mains - Shaft 7 to WASM 3 704 Rehabilitation of Other Pump Stations 730 Weston Aqueduct Supply Mains 704 Rehabilitation of Other Pump Stations 708 Northern Extra High Service - New Pipelines 730 Weston Aqueduct Supply Mains
Stoneham 546 Northern Intermediate High Covered Storage 689 James L. Gillis Pump Station Rehabilitation 722 Bear Hill Improvements - Section 29 Rehabilitation	Wellesley 101 Wastewater Metering System Upgrade 106 Wellesley Extension Sewer Replacement 617 Sudbury/Weston Aqueduct Repairs
Stoughton 105 New Neponset Valley Relief Sewer	West Roxbury 131 Upper Neponset Valley Relief Sewer
	Weston 544 Norumbega Covered Storage 617 Sudbury/Weston Aqueduct Repairs 730 Weston Aqueduct Supply Mains

APPENDIX 5
MUNICIPALITY/PROJECT(S)

Municipality Project Number/Project	Municipality Project Number/Project
Westwood	Winthrop
105 New Neponset Valley Relief Sewer	101 Wastewater Metering System Upgrade
	693 Northern High Service Pipe Improvements - Revere/Malden
Weymouth	Woburn
104 Braintree-Weymouth Relief Facilities	127 Cummingsville Replacement Sewer
	546 Northern Intermediate High Covered Storage
Wilbraham	689 James L. Gillis Pump Station Rehabilitation
543 Quabbin Water Treatment Plant	722 Bear Hill Improvements - Section 29 Rehabilitation
548 Nash Hill Covered Storage	
615 Chicopee Valley Aqueduct Redundancy	
616 Quabbin Transmission System	
Winchester	
101 Wastewater Metering System Upgrade	
127 Cummingsville Replacement Sewer	
544 Norumbega Covered Storage	
546 Northern Intermediate High Covered Storage	
689 James L. Gillis Pump Station Rehabilitation	
702 New Connecting Mains - Shaft 7 to WASM 3	
704 Rehabilitation of Other Pump Stations	
722 Bear Hill Improvements - Section 29 Rehabilitation	

APPENDIX 6

MWRA Completed Projects

APPENDIX 6

MWRA Completed Projects (as of December 31, 2004)

Project	Total Cost (\$000)	Completion Date	Summary
Wastewater	\$3,998,920		
Waterworks	\$167,781		
Business and Operations Support	\$33,644		
MWRA Total	\$4,200,345		
Wastewater			
Residuals Management – Interim Phase	\$109,407	Feb-92	Construction of the Residual Treatment Facility at the FRSA. Termination of sludge discharge to Boston Harbor
S.106 Wellesley Extension Replacement Sewer	\$64,359	Jan-96	Construction of a replacement sewer and rehabilitation of sections of existing sewer lines to alleviate capacity restraints, improve the water quality of the Charles River, protect aquifers, and reduce back-ups in Needham and Dedham.
S.110 East Boston Pump Facilities	\$48,304	Jan-93	Constructed to eliminate sewage back-ups.
S.185 Clinton Wastewater Treatment Plant	\$36,747	Sep-92	Upgrade existing plant to improve water quality and meet standards by rehabbing and new equipment.
S.112 Charlestown Pump Station Replacement	\$32,529	Apr-93	New 93 mgd pump station to increase pumping efficiency and eliminate overflows to the Mystic River
S.178 Deer Island Pump and Power Station Upgrade	\$32,943	Feb-91	Constructed to prevent sewage surcharges and overflows in the upstream sewer system by improving flows to Deer Island Tunnel System and Plant.
S.179 Deer Island Remote Headworks Improvements	\$27,450	Jul-99	Facility rehabilitation restored headworks capacity.
S.180 D.I. Sedimentation Tank System Improvements	\$1,657	Jul-89	Restoration of operating efficiency by replacing 80 inlet sluice gates and baffles, rehabilitation of control building and other improvements.
Residuals Management Walpole Landfill	\$15,025	Sep-93	Development of minor residuals landfill plan.
Boston Harbor Project	\$3,519,253	Nov-01	BHP constructed to minimize the pollution of Boston Harbor. The new Deer Island Primary and Secondary Treatment Facilities are the largest components of the Project to comply with the requirements of the federal Clean Water Act and to improve the harbor for recreational and commercial uses.
S.198 Boston Harbor Performance Certification	\$1,276	Dec-02	Certification required for continuous federal grant and loan programs during construction.
S.129 North Metropolitan Trunk Sewer	\$11,997	Mar-99	Rehabilitation of a 19,700 linear-foot 100-year old sewer line.
S.922 Fore River Preservation	\$4,946	Nov-97	Modify FRSA for on-going construction and operational support.
S.184 Nut Island Immediate Upgrade	\$1,254	Dec-86	Upgrade or replacement of equipment, including switch gear, sludge cross collectors and replacement of electric distribution substation to accommodate increased flows to Deer Island Treatment Plant.
S.181 Deer Island Intermediate Upgrade	\$9,490	Jun-92	Upgrade of the old Deer Island treatment plant.
S.101 Wastewater Metering	\$7,516	Dec-93	Construction of system to provide accurate flow data.
S.195 Deer Island Digester Rehabilitation	\$7,354	Oct-86	Restoration of digester operating efficiency.

APPENDIX 6

MWRA Completed Projects (as of December 31, 2004)

Project	Total Cost (\$000)	Completion Date	Summary
S.326 Commercial Point CSO Facility	\$7,117	Feb-91	Improvements to water quality by reducing wet weather overflows via construction of a screening and disinfection facility.
S.113 Millbrook Valley Interceptor Relief Sewer	\$6,176	Mar-88	Increase in flow capacity to eliminate surcharges.
S.115 Reading Pump Station Replacement and Extension Relief Sewer	\$412	Sep-87	Elimination of surcharges, reduction in staff requirements, and correction of safety hazards.
S.259 Interim Scum Management	\$22	Jul-89	Provision of an interim scum processing solution.
S.325 Fox Point CSO Facility	\$160	Apr-89	Elimination of untreated sewage discharges
S.103 Hingham Pump Station	\$3,027	Apr-92	Elimination of untreated sewage discharges
S.178 Deer Island Duel Fuel Engine/Generator	\$32,943	Dec-89	Provision of uninterrupted electricity supply for Deer Island.
S.114 Southern System Modeling	\$2,607	Jun-88	Collection and study of flow data needed for system capacity assessment.
S.191 Deer Island Chlorination Facility Rehabilitation	\$4	Mar-89	Provision of effective disinfection operation and safe working environment.
S.190 Deer Island Electrical Equipment Upgrade	\$27	Mar-88	Restoration of system operating efficiency.
S.187 Deer Island Sludge Thickeners Rebuilding	\$114	Sep-88	Ensuring efficient operation of Deer Island treatment plant digesters.
S.118 Bell Isle Siphon Rehabilitation	\$78	Apr-89	Reduction of salt water infiltration and increase in system capacity.
S.403 Sewerage Division Management Services	\$1,930	Dec-86	Provision of engineering design and construction advice.
S.332 Somerville Marginal CSO Rehabilitation	\$98	Feb-89	Elimination of inadequately treated sewage discharges.
S.924 Harbor Environmental Studies	\$1,666	Jun-92	Collection and study of harbor water quality data.
S.108 Alewife Brook Parkway Pump Station Rehabilitation	\$1,455	May-95	Replacement of equipment, construction of building addition and wetwell modifications.
S.197 Deer Island Treatment Plant Outfall Repair	\$1,300	Sep-97	Repair of effluent discharge Outfall 002.
S.194 Nut Island Intermediate Upgrade	\$2,686	Dec-92	Improvements to ensure effective operation of the Nut Island treatment plant.
S.402 Comprehensive Safety Action Project	\$891	Nov-90	Correction of safety hazards at MWRA facilities and establishment ongoing safety management program
S.331 Constitution Beach CSO Facility	\$1,265	Sep-87	Elimination of untreated sewage discharges into Boston Harbor.
S.117 Slade's Siphon	\$1	Sep-88	Elimination of seawater inflows and sewage overflows
S.192 Deer Island Operation and Construction Coordination Program	\$733	Jan-89	Provision of coordination services for operations and construction activities.
S.332 Cottage Farm CSO and Charlestown Pump Repair	\$133	Dec-87	Restoration of system capacity.
S.193 Deer Island Odor Monitoring	\$334	Feb-89	Provision of data needed to develop odor management plan for Deer Island.
Watertown Siphon Reconstruction	\$328	May-88	Extension of Watertown sewer system useful life.
Deer Island Sludge Grinding	\$291	Jun-87	Improvements to Deer Island sludge grinding system
S.327 Southwest Corridor CSO	\$290	Fall 86	Elimination of combined sewer overflows.

APPENDIX 6

MWRA Completed Projects (as of December 31, 2004)

Project	Total Cost (\$000)	Completion Date	Summary
S.335 Moon Island CSO Facility	\$269	Sep-86	Examination of options for treatment of CSO discharges.
Deer Island Microwave Equipment Replacement	\$235	Nov-86	Replacement of obsolete equipment.
Porter Street Construction	\$136	Sep-93	Reimbursement to Central Artery project for CSO related construction.
S.328 Industrial Discharge Limitations	\$215	Aug-86	Development of industrial discharge limitation guidelines.
S.338 Cottage Farm CSO Ventilation System Repairs	\$133	Sep-94	Rehabilitation of HVAC duct work.
S.111 Bremen Street Siphon Replacement	\$102	Mar-90	Evaluation of current siphon condition and development of a system for improved waste disposal
Chelsea CSO Facility	\$90	Jan-91	Elimination of sewage overflows
Boston Gatehouses	\$65	Dec-86	Identification of alternatives to minimize construction impacts.
Industrial Waste-Technical Support	\$63	Oct-86	Provision of laboratory services for the Toxic Reduction and Control Department.
S.330 St. Mary's Street CSO Modifications	\$17	Feb-87	Identification of solution for storm water detention.
Sub-Total Wastewater	\$3,998,920		
Waterworks			
S.715 Newton Service Improvements	\$5,762	Nov-99	New supply to Newton's Oak Hill Tank replacing an antiquated pump station and providing some system redundancy in the area.
S.720 Warren Cottage Line Rehab	\$1,205	Dec-02	To improve the carrying capacity and internal condition of the Warren Cottage Line.
S.706 NHS - Con. Mains from Section 91	\$2,342	Jun-02	To integrate the new Section 91 pipeline with the existing grid network, improving service pressures and reliability to community meters.
S.764 Local Water Infrastructure Rehab Asst. Program	\$7,488	Jun-04	To provide financial support to MWRA waterworks communities to replace, rehabilitate, and maintain their waterworks system infrastructures.
S.681 Southern Service Improvements	\$14,458	Oct-99	Reliability and capability improvements to pipelines and pump stations serving the Southern service area
S.716 Water Main Relocation in Chelsea River	\$10,648	Nov-00	Relocation of the Section 8 water main over the Chelsea River.
S.547 Fells Covered Storage	\$17,995	Jun-00	Covered storage for Northern High Service System.
S.548 Nash Hill Covered Storage	\$14,297	Jul-99	To improve the quality of drinking water to the three Chicopee Valley Aqueduct communities.
S.541 Watershed Protection	\$8,500	Dec-03	To develop watershed protection measures for the MWRA/MDC reservoir system.
S.691 Northern High Service Improvements - Lynn Pipeline	\$13,483	Jun-99	Installation of a new primary supply line for the northeast section of the Northern High Service System.
S.688 Northern Intermediate High Pipelines	\$927	Nov-88	Increase in pipe capacity and pressure.
S.754 Domestic Device Retrofit	\$10,319	Dec-93	Installation of water saving devices to reduce demand.

APPENDIX 6

MWRA Completed Projects (as of December 31, 2004)

Project	Total Cost (\$000)	Completion Date	Summary
S.532 Long-Range Water Supply	\$5,579	Apr-89	Identification of water supply programs.
S.603 Transmission Maintenance Facility	\$5,025	May-93	Construction of new waterworks maintenance facility in Southborough.
S.602 Hultman – Weston Aqueduct Transfer for Hydropower	\$4,506	May-89	Production of approximately 3,700,000 kW hours per year of electricity.
S.687 Lexington St Pump Station Rehabilitation	\$3,985	Jun-99	Installation of larger capacity pumping units, backup power generation, and various electrical upgrades
S.607 Weston Reservoir Chlorination Facility	\$2,539	Jun-93	Replacement of obsolete facility with new 4,000 sq.ft. chlorination and ammonia feed facility.
S.679 Nonantum Road Pipe Rehabilitation	\$2,138	Mar-97	Rehabilitation and/or replacement of deteriorated pipeline.
S.533 Local Sources of Supply	\$2,108	Jul-95	Provision of assistance to communities to promote effective protection of existing local water supply sources and encourage development of additional local sources where feasible.
S.755 Leak Detection Survey	\$751	Aug-90	Provision of data on the magnitude and location of water leaks.
S.723 Northern Low Service – Section 57	\$1,814	Oct-87	Restoration of pipe capacity and pressure.
S.599 Dam Control Valve Replacement	\$1,751	Jul-98	Valve replacement at Sudbury Reservoir in Southborough and Wachusett Dam.
S.606 Norumbega Chlorination Facility	\$10	Mar-89	Provision of a new water disinfection facility.
S.675 Water Distribution Master Plan	\$1,178	Mar-93	Development of data base and recommendations for master plan.
S.688 Northern Immediate High Service	\$1,026	Aug-92	Increase in water treatment capacity.
S.600 Oakdale Power Station Generator Repair	\$881	Sep-91	Repair of substation metering and transformer systems.
S.535 Reservoir Risk Assessment	\$647	Jun-92	Development of maps and data to determine at risk areas.
S.756 Asbestos Abatement	\$562	Aug-90	Elimination of asbestos in MWRA facilities.
S.538 Sudbury Reservoir Treatment Plant Study and EIR	\$513	Sep-92	Evaluation of alternative uses of the Sudbury Reservoir.
S.757 PCB Abatement	\$432	Aug-91	Replacement of equipment with unacceptable levels of PCB concentrations.
S.605 Echo Bridge Rehabilitation	\$356	Sep-92	Repair and cleaning of bridge façade and construction of new surface topping.
Cosgrove Intake Screens	\$317	Dec-87	Prevention of debris entering the aqueducts
Cosgrove Intake Turbine Repair	\$225	Jul-86	Full resumption of hydroelectric power generation.
S.759 Municipal Toilet Replacement	\$127	Dec-90	Reduction in water consumption.
Air Release Valves	\$82	Apr-90	Removal of excess air to maintain the carrying capacity of pipes.
S.694 General Edwards Bridge Pipe Replacement	\$74	Nov-89	Repair of pipe leaks.
S.701 Northern Extra High Service – Bedford Pipeline	\$71	Jan-92	Development of a plan to supply water to Bedford.
S.926 Chestnut Hill Low Service Pump Station	\$72	May-88	Repair of the front granite steps of the station.

APPENDIX 6

MWRA Completed Projects (as of December 31, 2004)

Project	Total Cost (\$000)	Completion Date	Summary
S.686 Dudley Road Pump Station	\$55	Jun-91	Evaluation of the feasibility of pump station rehabilitation.
S.685 Ward Street Pump Station	\$35	Aug-89	Evaluation of the feasibility of pump station rehabilitation.
S.758 Rehab of Existing Facilities	\$14,205	Nov-02	Upgrade various facilities in need of significant capital improvement.
S.690 Northern Low Service Pipeline Replacement	\$714	Aug-99	Repair of Section 16W with replacement and pipe slip lining methods.
S.684 Commonwealth Ave	\$8,509	Dec-99	Modernize and improve station serving a major portion of
S.717 Blue Hills Reservoir Cover – Quincy	\$31	Dec-86	Identification of solutions to a seagull contamination problem.
Instrumentation Telemetry	\$24	Sep-86	Development of a future operation plan for the water distribution system.
S.598 Wachusett Reservoir Bypass Tunnel	\$15	Jan-89	Evaluation of the option of constructing a tunnel by-pass.
Sub-Total Water	\$167,781		
Business & Operations Support			
S.921 Management Information Systems	\$24,117	Dec-92	Enhancement to information systems to support more effective management of MWRA business activities
S.901 Charlestown Headquarters	\$6,827	Jun-91	Provision of office equipment at MWRA headquarters.
S.882 Radio Communications System	\$1,000	Sep-89	Enhancement of communication among geographically dispersed facilities.
S.928 MWRA Mitigation Program	\$475	Oct-88	Mitigation of the construction impacts of the Deer Island Treatment Plant on Winthrop.
S.903 Vehicle Maintenance Garage	\$412	Mar-89	Improved management and maintenance control of the vehicle fleet.
S.929 Affirmative Action Study	\$403	Mar-91	Evaluation of minority participation in the MWRA procurement process.
S.923 Engineering Feasibility Study	\$249	Jun-89	Evaluation of the integrity of the water and wastewater systems.
S.902 Permanent Headquarters	\$161	Jun-87	Examination and evaluation of options for relocation of office space.
Sub-Total BOS	\$33,644		

**\$75.4 million in completed capital projects moved to Appendix A as part of the FY06 budget. These projects are in italics.*