Capital Improvement Program

Proposed FISCAL YEAR 2013

MASSACHUSETTS WATER RESOURCES AUTHORITY

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January 2012

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

Dear Chairwoman Dunphy:

This letter transmits to the Advisory Board the MWRA's Proposed Capital Improvement Program (CIP) for Fiscal Year 2013. The MWRA's Board of Directors approved the transmittal of the Proposed CIP at its December 14, 2011 meeting.

The FY13 Proposed CIP represents an update to the FY12 CIP approved by the Board in June 2011 and includes the latest projected spending estimates and project schedules.

The FY13 Proposed CIP for the FY09–13 Cap period is $898.8 million, a decrease of $245 million or 21.4% from the Base-Line Cap of $1.144 billion and complies with both the annual and the overall 5-year Cap requirements. FY13 Proposed spending is projected at $191.4 million, including new project requests of $10.5 million, with the majority of spending beyond FY13.

Staff estimate that by the end of the Cap period, MWRA will reach a significant milestone by completing over 96% of the total Combined Sewer Overflow Control program, which has dominated the capital program for more than a decade.

Going forward, MWRA will focus on critical asset protection and water system redundancy initiatives. However, three very important projects - the Southern Extra High and Northern Intermediate High redundancy projects, and rehabilitation of the Chelsea Creek, Ward Street, and Columbus Park Headworks - will require further review and deliberation by the Board of Directors due to the complexity of issues and possible alternatives. Depending on the final decisions made, the shape of the program may be altered substantially from the Proposed FY13 CIP.

A copy of the proposed CIP document is available on-line at www.mwra.com. Questions or comments on this document should be directed to the MWRA Budget Department.

Thank you for your continued support. We look forward to working with the Advisory Board during its review and to receiving your official comments and recommendations on the FY13 Proposed CIP.

Sincerely,

Frederick A. Laskey
Executive Director

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FY13 Proposed Capital Improvement Program

Overview

The MWRA was created by the Massachusetts legislature in 1985 and since that time has invested over $7.5 billion to modernize and improve the wastewater and waterworks systems serving its member communities. Since its inception, the Authority has completed most of the major initiatives in the CIP, including the Boston Harbor Program, the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and has made significant progress in the remaining court-mandated projects, most notably the long-term Combined Sewer Overflow (CSO) Control Plan, as well as ongoing rehabilitation, repair, and maintenance of its infrastructure. These capital initiatives have been primarily funded through long-term borrowings, and the debt service on these outstanding bonds represents a significant and growing portion of the Authority's operating budget.

To arrive at the FY13 Proposed CIP, the Authority identified the needs of the programs taking into account the mandated project timeframes and the recommendations of the Master Plan. Of the total expended to date, nearly 80% has funded court mandated projects and the balance has supported waterworks treatment, transmission, distribution, and water supply protection improvements. As the MWRA matures as an agency, a greater proportion of its capital budget is designated for asset protection and water redundancy initiatives, absent new regulatory mandates, to preserve operating assets and insure uninterrupted service. This long-term strategy for capital work is identified in the Authority's Master Plan which was published in 2006 and serves as a road map for inclusion of projects in the CIP in every budget cycle.

The FY13 Proposed Capital Improvement Program (CIP) budget totals $5.5 billion, of which $3.4 billion has been expended through FY11 with a remaining balance of $2.1 billion. It is important to note that the totals represented above do not include the Boston Harbor Project and some other smaller projects removed from the CIP upon completion. These projects totaled approximately $4.1 billion dollars. As such, the overall Authority CIP budget since inception totals more than $9.6 billion dollars of which $7.5 billion has been spent through FY11.

The CSO program is the largest remaining program initiative in terms of spending with an FY13 budget of $860.7 million of which $754.7 million has been expended through FY11. The CSO Program accounts for $312.1 million or 35.1% of projected Authority spending over the FY09-13 period.

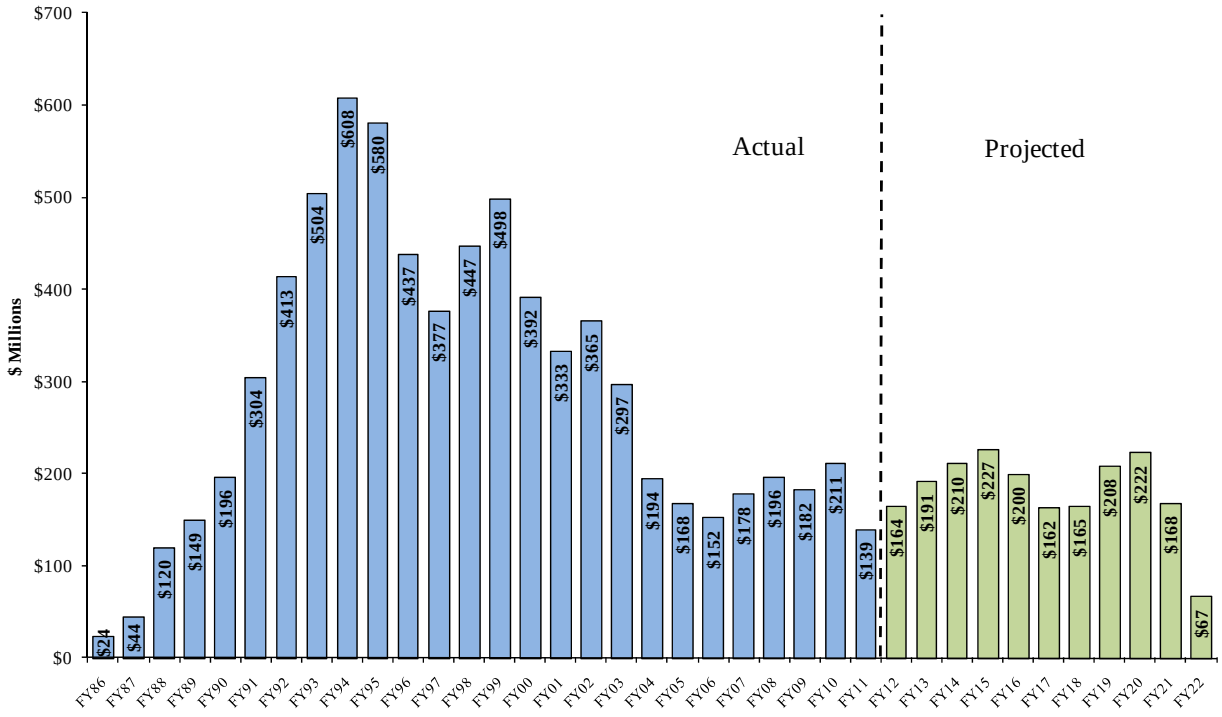
Going forward, asset protection initiatives to preserve operating assets and critical long-term water redundancy projects will be the main focus of the capital program.

Three large projects which will require further review and Board of Director's deliberation, due to the complexity of issues and possible options may alter the shape of the program depending on which strategy is chosen. The projects referenced are:

- Southern Extra High;
- Northern Intermediate High; and
- Rehabilitation of the Headworks (Chelsea Creek, Ward Street, and Columbus Park)

The graph below represents historical CIP spending through FY11 and projected spending to FY22 based on the FY13 Proposed CIP.

MWRA Capital Spending



As indicated previously, of the total $7.5 billion expended to date, nearly 80% has funded court mandated projects such as the Boston Harbor Project, the MetroWest Supply Tunnel, the Carroll Water Treatment Plant, and the Combined Sewer Overflow (CSO) program. The mandated projects represent 42.5% of projected FY09-13 spending.

As presented in the table on the following page, Asset Protection and Water Redundancy initiatives account for 31.6% and 16.8% of FY09-13 spending. These percentages grow substantially to 53.5% and 37.3% respectively for the FY14-18 timeframe.

	Total Contract	FY09-13	FY14-18	Beyond 18
Asset Protection	$ 1,907.6	$ 281	$ 516	$ 475
Carroll WTP	428.0	39.5	15.8	-
Water Redundancy	1,827.6	149.6	359.4	456.0
CSO	836.0	312.1	25.9	0.4
Other	521.4	106.4	47.0	(126.6)
Total	**$ 5,520.7**	**$ 888.7**	**$ 964.1**	**$ 804.9**
Asset Protection	**34.6%**	**31.6%**	**53.5%**	**59.0%**
Carroll WTP	7.8%	4.4%	1.6%	0.0%
Water Redundancy	**33.1%**	**16.8%**	**37.3%**	**56.7%**
CSO	15.1%	35.1%	2.7%	0.1%
Other	9.4%	12.0%	4.9%	-15.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

FY09-13 Spending Cap

In June 2008, the Board of Directors established the FY09-13 Base-Line Spending Cap. The Spending Cap anticipated capital expenditures in the FY09-13 timeframe to total $1.081 billion. Including $64.8 million for contingency, $22.4 million for inflation on un-awarded construction projects and a reduction of $24.8 million for the Chicopee Valley Aqueduct (CVA) projects, the FY09-13 Cap is $1.144 billion.

Table 1

Base-Line Cap		FY09	FY10	FY11	FY12	FY13	Total FY09-13
	Projected Expenditures	$230.0	$251.7	$224.3	$196.7	$178.7	$1,081.4
	Contingency	15.6	13.8	12.0	12.1	11.4	64.8
	Inflation on Unawarded Construction	0.0	0.5	2.8	7.8	11.3	22.4
	Less: Chicopee Valley Aqueduct Projects	(1.2)	(1.9)	(9.1)	(9.5)	(2.9)	(24.8)
	FY09-13 Base-Line Cap	**$244.4**	**$264.1**	**$230.0**	**$207.0**	**$198.4**	**$1,143.8**

The FY13 Proposed CIP FY09-13 Cap Spending

FY13 is the fifth and final year of the five-year Spending Cap. The FY13 Proposed CIP FY09-13 Cap cash flow totals $898.8 million which is $245.0 million or 21.4% lower than the approved Base-Line Cap. The FY09-13 expenditure forecast decreased by $192.7 million, contingency and inflation decreased by $48.0 million and $20.8 million, respectively from the Base-Line Cap. The lower spending is the result of schedule changes, updated cost estimates, and significantly lower awards reflecting the current competitive economic environment.

The FY13 Proposed CIP Cap for FY09-13 complies with both the annual and five-year overall Cap requirements. Please refer to Table 2 on the following page.

Table 2

		FY09	FY10	FY11	FY12	FY13	Total FY09-13
FY13 Proposed	Projected Expenditures	$182.2	$211.4	$139.3	$164.3	$191.4	$888.7
	Contingency	0.0	0.0	0.0	7.2	9.7	16.8
	Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	1.5	1.5
	Less: Chicopee Valley Aqueduct Projects	(0.6)	(0.5)	(0.9)	(0.8)	(5.4)	(8.2)
	FY13 Proposed FY09-13 Cap	**$181.6**	**$210.9**	**$138.4**	**$170.7**	**$197.2**	**$898.8**

		FY09	FY10	FY11	FY12	FY13	Total FY09-13
FY13 Proposed - Base-Line Cap	Projected Expenditures	($47.8)	($40.2)	($85.0)	($32.5)	$12.7	($192.7)
	Contingency	(15.6)	(13.8)	(12.0)	(4.9)	(1.7)	(48.0)
	Inflation on Unawarded Construction	0.0	(0.5)	(2.8)	(7.8)	(9.7)	(20.8)
	Less: Chicopee Valley Aqueduct Projects	0.6	1.4	8.3	8.8	(2.5)	16.6
	FY09-13 Cap ($ Change)	**($62.8)**	**($53.2)**	**($91.6)**	**($36.3)**	**($1.2)**	**($245.0)**
	FY09-13 Cap (% Change)	**-25.7%**	**-20.1%**	**-39.8%**	**-17.6%**	**-0.6%**	**-21.4%**

FY13 Proposed Cap Cash Flow Comparison to the FY12 Final CIP

The FY13 Proposed CIP FY09-13 Cap cash flow decreased $55.9 million or 5.9% from the FY12 Final budget reflecting decreases of $48.0 million, $3.4 million, and $4.6 million for projected spending, contingency, and inflation on unawarded construction, respectively offset by a slight increase for Chicopee Valley Aqueduct projects of $0.2 million.

Table 3

		FY09	FY10	FY11	FY12	FY13	Total FY09-13
FY13 Proposed	Projected Expenditures	$182.2	$211.4	$139.3	$164.3	$191.4	$888.7
	Contingency	0.0	0.0	0.0	7.2	9.7	16.8
	Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	1.5	1.5
	Less: Chicopee Valley Aqueduct Projects	(0.6)	(0.5)	(0.9)	(0.8)	(5.4)	(8.2)
	FY13 Proposed FY09-13 Cap	**$181.6**	**$210.9**	**$138.4**	**$170.7**	**$197.2**	**$898.8**

		FY09	FY10	FY11	FY12	FY13	Total FY09-13
FY12 Final	Projected Expenditures	$182.2	$211.4	$151.9	$165.5	$225.6	$936.7
	Contingency	0.0	0.0	0.0	8.4	11.9	20.3
	Inflation on Unawarded Construction	0.0	0.0	0.0	1.0	5.1	6.2
	Less: Chicopee Valley Aqueduct Projects	(0.6)	(0.5)	(0.6)	(0.4)	(6.2)	(8.4)
	FY12 Final FY09-13 Cap	**$181.6**	**$210.9**	**$151.3**	**$174.5**	**$236.4**	**$954.7**

		FY09	FY10	FY11	FY12	FY13	Total FY09-13
FY13 Proposed - FY12 Final	Projected Expenditures	$0.0	$0.0	($12.6)	($1.2)	($34.2)	($48.0)
	Contingency	0.0	0.0	0.0	(1.2)	(2.2)	(3.4)
	Inflation on Unawarded Construction	0.0	0.0	0.0	(1.0)	(3.6)	(4.6)
	Less: Chicopee Valley Aqueduct Projects	0.0	0.0	(0.3)	(0.3)	0.8	0.2
	FY09-13 Cap ($ Change)	**$0.0**	**$0.0**	**($12.9)**	**($3.8)**	**($39.2)**	**($55.9)**
	FY09-13 Cap (% Change)	**0.0%**	**0.0%**	**-8.5%**	**-2.2%**	**-16.6%**	**-5.9%**

Highlights of changes from FY12 Final for the FY09-13 Cap Period
(please refer to Appendix 4 for detailed project information)

Wastewater System Improvements:

Wastewater spending in the FY09-13 period decreased by $28.1 million due to the combined impact of revised schedules and cost estimates of certain projects.

Interception and Pumping (I&P): ($19.7) million

- I&P Asset Protection total project spending decreased by $17.0 million in the FY09-13 period primarily due to revised schedule and sequencing for the Headworks Upgrades projects, several schedule changes including NI Electric & Grit/Screens Conveyance Construction, Alewife Brook Pump Station Construction Rehabilitation, Mechanical and Electrical Improvements, Pump Station/CSO Condition Assessment, Caruso Pump Station Improvements, and the deletion of Section 156 Owners Representative and Interceptor Renewal #1 Design contracts. This decrease was partially offset by a higher award for Section 156 Rehabilitation Design/Build and a FY13 new project for Rehabilitation of Sections 186 and 4 Construction.

- Wastewater Meter System-Equipment Replacement project spending decreased by $1.2 million primarily due to updated schedules.

- Wastewater Central Monitoring project spending decreased by $0.6 million primarily due to updated schedules.

Treatment: ($16.4) million

- Deer Island Treatment Plant Asset Protection total project spending in the FY09-13 period decreased by $17.5 million primarily due to lower award for North Main Pump Station VFD Replacement Construction and several project schedule changes including Miscellaneous VFD Replacements, Digester & Storage Tank Rehabilitation Design/Engineering Services During Construction, LOCAT Scrubber Replacement Construction, Digester Sludge Pump Replacement, Electrical Equipment Upgrade Phase 5. These were partially offset by a FY13 new project for Roof Replacement Phase 3 and various updated cost estimates.

- Clinton Wastewater Treatment Plant project spending increased by $1.1 million due to revised scope and cost estimates for Clinton Aeration Improvements and Clinton Plant-Wide Concrete projects.

Residuals: ($1.3) million

- Residuals Asset Protection total project spending decreased by $1.3 million in the FY09-13 period primarily due to revised schedules for Residuals Facility Plan/Environmental Impact Report and Residuals Facilities Upgrade Design contracts.

Combined Sewer Overflow: $6.3 million

- Reserved Channel Sewer Separation total project spending in the FY09-13 period increased by $5.9 million due to updated spending projections.

- South Dorchester Bay Sewer Separation (Commercial Point) project spending increased by $0.8 million due to updated spending projections.

- Cambridge Sewer Separation project spending increased by $0.7 million primarily due to updated change order estimates for contract 12 and CAM400.

- CSO Support project spending decreased by $0.7 million due to successful re-negotiation of the Conley Terminal Easement Agreement.

- Brookline Sewer Separation project spending decreased by $0.5 million due to updated cost estimate for MWR010 work partially offset by additional construction services.

Other Wastewater: $3.1

- I/I Local Financial Assistance Program total project spending in the FY09-13 period increased by $3.1 million due to the timing of loan distributions and repayments.

Waterworks System Improvements:

Waterworks System Improvements spending in the FY09-13 period decreased by $15.0 million as project spending was shifted outside the Cap. This is primarily due to revised schedules and cost estimates for several projects in Drinking Water Quality Improvements, Transmission, and Distribution and Pumping programs.

Drinking Water Quality Improvements: ($5.7) million:

- Spot Pond Storage Facility total project spending decreased in the FY09-13 period by $11.6 million due to the lower award of the Design/Build contract.

- Carroll Plant project spending increased by $6.1 million due to updated cash flow for the Ultraviolet Disinfection Construction and the addition of two FY13 new projects for Technical Assistance contracts. This increase was partially offset by a revised schedule for Ancillary Modifications Construction 2 contract.

Transmission: ($6.9) million

- Winsor Station Pipeline total project spending in the FY09-13 period decreased by $7.9 million due to revised scope and schedules for Winsor Station Rehabilitation & Improvements and Hatchery Pipeline contracts.

- Metrowest Tunnel project spending increased by $3.8 million due to accelerated schedule for CP-6A Lower Hultman Rehabilitation. This was partially offset by revised schedule for CP-6B Upper Hultman Rehabilitation.

- Dam Projects project spending decreased by $1.3 million due to lower award for Dam Safety Modifications and Repairs contract.

- Long Term Redundancy project spending decreased by $1.0 million primarily due to schedule changes for Cosgrove Redundancy Pump Station Design/Engineering Services During Construction/Resident Inspection and Sudbury Aqueduct Massachusetts Environmental Protection Agency (MEPA) review contracts.

Distribution and Pumping: ($3.4) million

- Spot Pond Supply Mains Rehabilitation total project spending in the FY09-13 period decreased by $1.9 million due to revised schedule for Section 4 Webster Ave Bridge Pipe Rehabilitation Design & Construction and Section 50 Pipe Rehabilitation Design/Engineering Services During Construction/Resident Inspection contracts.

- Northern Intermediate High Redundancy & Storage project spending decreased by $1.1 million primarily due to updated schedule for Section 89 & 29 Redundancy Construction Phase 1 and lower award for Reading Stoneham Interconnections.

- Weston Aqueduct Supply Mains (WASM) project spending decreased by $0.8 million primarily due to revised schedule for WASM 3 Design/Construction Administration/Resident Inspection partially offset by revised cash flow for Section 36/Waltham Connection Design/Construction Administration/Resident Inspection.

Other Waterworks: $1.1 million

- Local Water Pipeline Improvement Program total project spending increased in the FY09-13 period by $1.4 million due to revised cash flows for Community Loan programs.

Business and Operations Support:

Business and Operations Support spending in the FY09-13 period decreased by $5.0 million.

- Alternative Energy Initiatives total project spending decreased by $1.7 million in the FY09-13 period primarily due to schedule changes for Wachusett Hydroelectric Design and Construction and Deer Island Wind Phase 2.

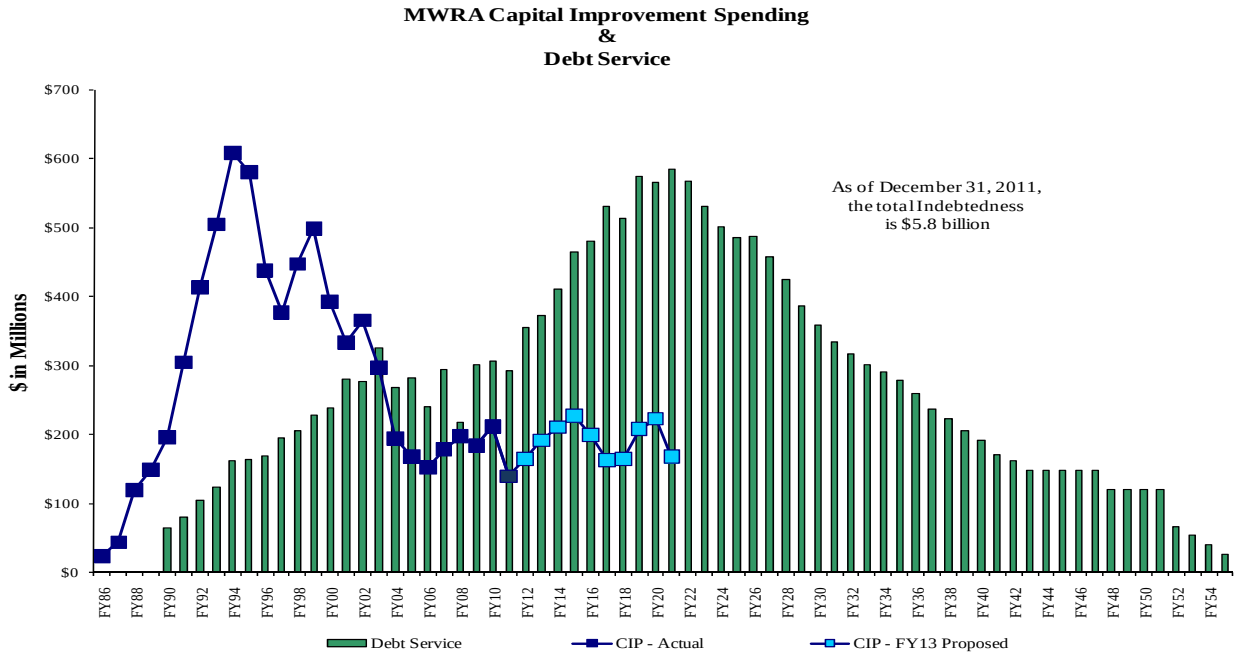
- Business Systems Plan spending decreased by $1.0 million due to reduction in budgets for the several completed phases including Phase VI and Cyber Security and revised schedule for Laboratory Instrument Data Management. This was partially offset by an increase for Information Technology Continuity future initiatives.

- MWRA Facilities Management project spending decreased by $0.9 million due to revised schedule for Deer Island Administrative Building project.

Outstanding Debt and Debt Management

Capital Spending versus Debt Service

The following graph illustrates the relationship between the MWRA's Capital Improvement Program updated with the FY13 Proposed CIP spending projections and outstanding debt as of December 31, 2011.



The $7.5 billion spent on MWRA's modernization efforts to date, has relied heavily on debt financing. Total debt as of December 2011 reached $5.8 billion consisting of senior and subordinated debt, as well as Tax-Exempt Commercial Paper. The MWRA enjoys strong unenhanced senior debt ratings of Aa1, AA+, and AA+ from Moody's, S&P, and Fitch, respectively. The MWRA expects to finance the capital expenditures identified in the MWRA CIP through the issuance of its revenue bonds as provided in the MWRA Act, and from the proceeds of federal and state grants and operating revenues. As of December 31, 2011, the MWRA's indebtedness included

$3.4 billion of senior revenue bonds, $1.2 billion of subordinated revenue bonds, $1.1 billion of loans with the SRF, and $144 million of tax-exempt commercial paper notes.
The Authority's debt service obligation as a percent of total expenses has increased from 36% in 1990 to nearly 60% in the FY12 Final Current Expense Budget.

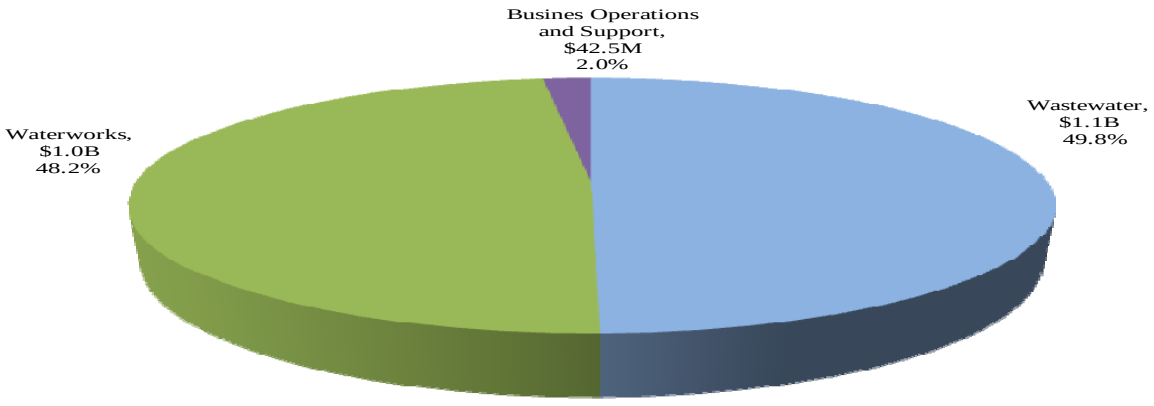
Given that the majority of the Rate Revenue Requirement is driven by debt service increases, the coming years represent significant challenges for the Authority. Through FY21, the Rate Revenue Requirement increases an average of $36 million per year of which approximately $27 million annually is related to Capital Expenses.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by the MWRA to lower borrowing costs and manage rates include maximizing use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, current and advanced refunding of outstanding debt, the use of surplus revenues to defease debt, and swap agreements. The MWRA also uses its Tax Exempt Commercial Paper program to minimize the financing cost of construction in process.

In June 2011, MWRA executed a $32.1 million defeasance to achieve debt service reductions between FY12 and FY15. These actions resulting in debt service reductions of $1.4 million in FY12 and FY13, $26.4 million in FY14 and $4.8 million in FY15.

FY13 Proposed CIP Expenditures

The MWRA's total capital budget is $5.5 billion with $3.4 billion spent through FY11 and $2.1 billion remaining to be expended. Of the remaining spending, Wastewater System Improvements represent $1.1 billion or 49.8%, Waterworks System Improvements are $1.0 billion or 48.2%, and Business and Operations Support are $42.5 million or 2%.



The FY13 Proposed CIP (without contingency) includes planned expenditures of $164.3 million and 191.4 million for FY12 and FY13, respectively, and total projected expenditures of $888.7 million for the FY09-13 timeframe.

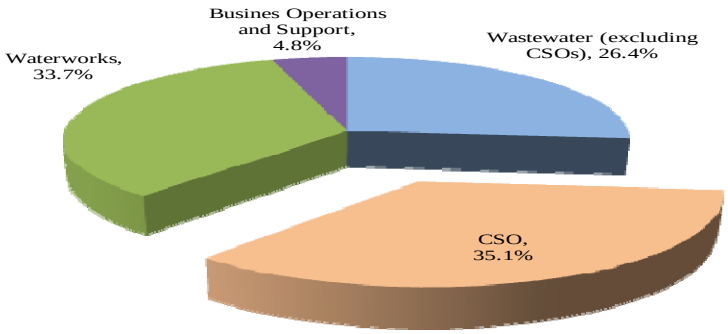
Table 4 below represents the projected spending by the major program categories for the FY09-13 timeframe:

Table 4

Program ($ in millions)	Total Contract Amount	Payments Thru FY11	Balance 6/30/11	FY09	FY10	FY11	FY12	FY13	5-Year Total FY09-13
Wastewater System Improvements	**$2,643.3**	**$1,586.0**	**$1,057.3**	**$123.7**	**$152.7**	**$92.0**	**$90.7**	**$87.7**	**$546.8**
Interception & Pumping	$819.9	$512.6	$307.3	$6.8	$2.5	$15.1	$8.0	$8.5	$41.0
Treatment	$628.1	$152.3	$475.7	$14.7	$56.0	$29.8	$27.7	$45.6	$173.8
Residuals	$211.7	$64.2	$147.6	$0.0	$0.4	($0.0)	$0.1	$0.6	$1.1
CSO	$860.7	$754.7	$106.0	$99.4	$89.3	$43.8	$50.4	$29.2	$312.1
Other	$122.9	$102.2	$20.6	$2.7	$4.5	$3.3	$4.5	$3.8	$18.9
Waterworks System Improvements	**$2,769.3**	**$1,744.2**	**$1,025.0**	**$52.9**	**$50.1**	**$38.9**	**$64.4**	**$93.2**	**$299.4**
Drinking Water Quality Improvements	$652.2	$541.3	$110.9	$17.8	$12.4	$2.4	$19.8	$41.8	$94.3
Transmission	$1,163.2	$719.5	$443.7	$6.3	$15.7	$24.6	$22.0	$19.4	$88.1
Distribution and Pumping	$910.4	$354.0	$556.4	$19.4	$16.5	$12.7	$13.3	$13.9	$75.8
Other	$43.5	$129.4	($86.0)	$9.3	$5.5	($0.9)	$9.3	$18.1	$41.3
Business & Operations Support	**$108.1**	**$65.7**	**$42.5**	**$5.7**	**$8.7**	**$8.4**	**$9.2**	**$10.5**	**$42.5**
Total MWRA	**$5,520.7**	**$3,395.9**	**$2,124.7**	**$182.2**	**$211.4**	**$139.3**	**$164.3**	**$191.4**	**$888.7**

As shown above, the Combined Sewer Overflow (CSO) program continues to drive spending in the FY09-13 timeframe, accounting for $312.1 million or 35.1% of total projected spending. Staff anticipates that by the end of the Cap period, more than 96% of the total CSO program will be completed. For the remainder of the Cap period, specifically FY12 and FY13, the largest spending is projected for the Reserved Channel, Brookline, and Cambridge CSO projects, the Carroll Water Treatment Plant Ultra-violet Disinfection, Spot Pond Design/Build, Lower Hultman (CP6A), and Deer Island's North Main Pump Station VFD Replacement and Digester Module 1&2 Pipe Replacement.

The graph below illustrates a breakdown of the major program spending percentages for the FY09-13 period.



Please refer to Attachment C for a more detailed project listing and projected cash flows.

FY13 Master Plan and the FY13 Proposed CIP

In every budget cycle, the Master Plan serves as a roadmap for inclusion of new projects. All projects included are high priority infrastructure improvement projects. During FY13, 2 new projects were added from the Master Plan totaling $1.1 million of which $0.3 million is projected to be expended in the FY09-13 timeframe.

The FY13 Proposed CIP includes a total of 116 new projects/sub-phases with an estimated cost of $1.1 billion that have been added to the CIP since the Master Plan was adopted.

Budget Cycle	Project/Sub-phase	$ in Millions
FY08 Final	67	$955.0
FY09 Final	11	$31.3
FY10 Final	14	$58.7
FY11 Final	9	$19.7
FY12 Final	13	$38.9
FY13 Proposed	2	$1.1
Total From Master Plan	**116**	**$1,104.7**

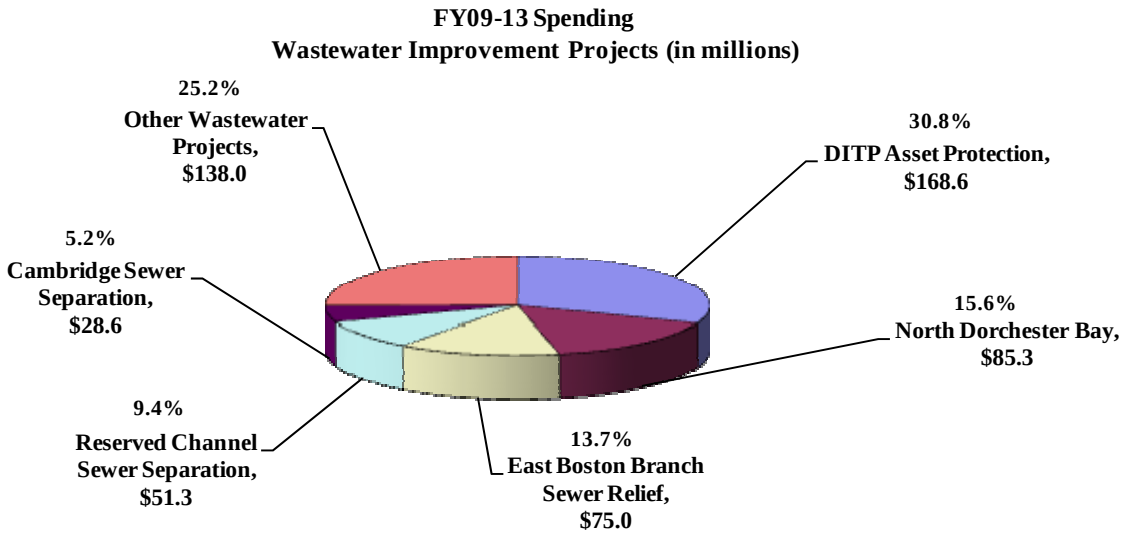
See Appendix 5 Master Plan/CIP Status for more details.

FY13 Proposed CIP FY09-13 Spending

Wastewater System Improvements spending continues to drive CIP spending with $546.8 million to be expended over the FY09-13 timeframe. The CSO program represents the largest program initiative in terms of spending, with $312.1 million, or 35.1% of total spending during the FY09-13 period. This federally mandated program is scheduled to be completed by December 2015 followed by a performance report due December 2020. Waterworks System Improvements projects expenditures total $299.4 million in the FY09-13 timeframe.

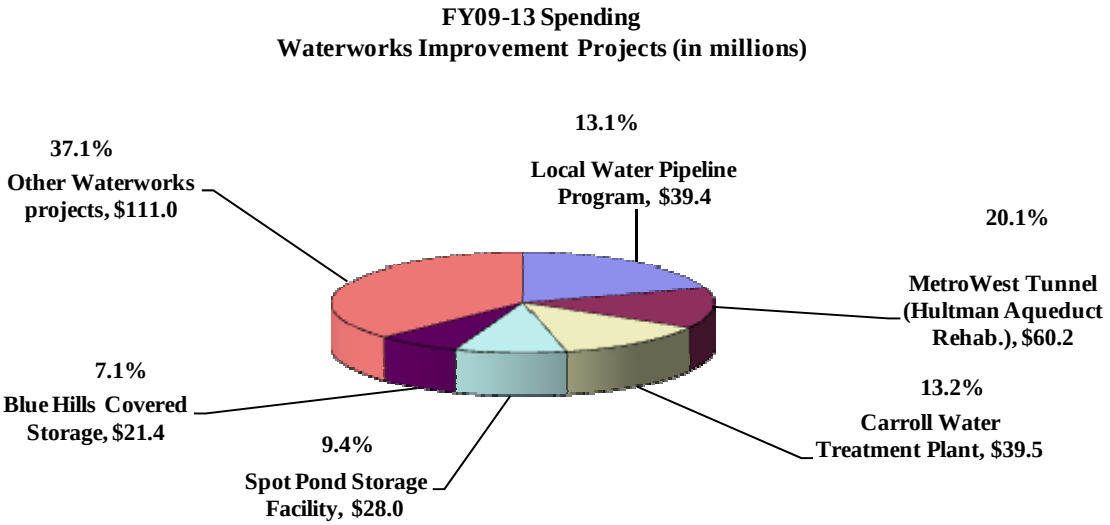
It is important to emphasize that the majority of spending within the Wastewater and Water capital programs is concentrated in several larger projects with significant spending in the FY09-13 timeframe. These projects are either currently under construction or soon to be awarded. The top five projects for the Wastewater program total $408.8 million for FY09-13 period and represent 74.8% of the $546.8 million total program.

The breakdown of the $546.8 million program by the major projects is illustrated below:



Similarly, the top five projects for the Waterworks program total $186.9 million for FY09-13 and represent 62.4% of the $299.4 million total program.

The breakdown of the $299.4 million program by the major projects is illustrated on the graph below:



Combined the Top 10 Wastewater and Water projects account for nearly 70% of total FY09-13 spending.

Major Planned Spending for Fiscal Year 2013

Capital spending in FY13 is estimated to be $191.4 million. Spending will be driven by several large projects, including the 10 projects listed below, which account for over 76% of budgeted FY12 spending:

Table 5

	Total Contract Amount	FY13 Planned Spending
206 DI Treatment Pl Asset Protection	$ 583.3	$ 43.0
542 Carroll Water Treatment Plant	428.0	19.9
550 Spot Pond Storage Facility	59.2	17.5
765 Local Water Pipeline Improvement	-	16.9
359 Reserved Channel Sewer Separation	62.3	12.9
346 Cambridge Sewer Separation	56.4	11.3
604 MetroWest Tunnel	711.6	9.9
145 Facility Asset Protection	254.7	5.0
722 NIH Redundancy & Storage	82.5	4.9
730 Weston Aqueduct Supply Mains	276.2	4.6
Top 10 Spending in FY13	**$ 2,514.2**	**$ 145.9**
FY13 Spending	**$ 5,520.7**	**$ 191.4**

Highlights of Project Changes from the FY12 Final CIP to the FY13 Proposed CIP

The FY13 Proposed CIP represents updated spending and schedules for projects contained in the FY12 Final CIP and new spending on 7 projects and sub-phases which total $10.5 million. These additional projects and sub-phases represent those capital initiatives outside of the FY12 Final CIP that staff recommends as most essential to ensure reliable service to MWRA's customers.

The total FY13 Proposed CIP increased $52.4 million or 1.0% above the FY12 Final CIP approved by the Board in June 2011, however, spending on projects in the FY09-13 Cap period decreased by $48.0 million. The increase is mainly due to updated cost and inflation estimates of $65.9 million and new project requests totaling $10.5 million mostly for Asset Protection initiatives offset by lower project awards versus budget of $29.9 million. Please refer to the next page for the highlighted FY13 new projects.

Table 6 on the following page describes the dollar and percent changes by major program between the FY12 Final and the FY13 Proposed CIP and for the FY09-13 timeframe.

Table 6

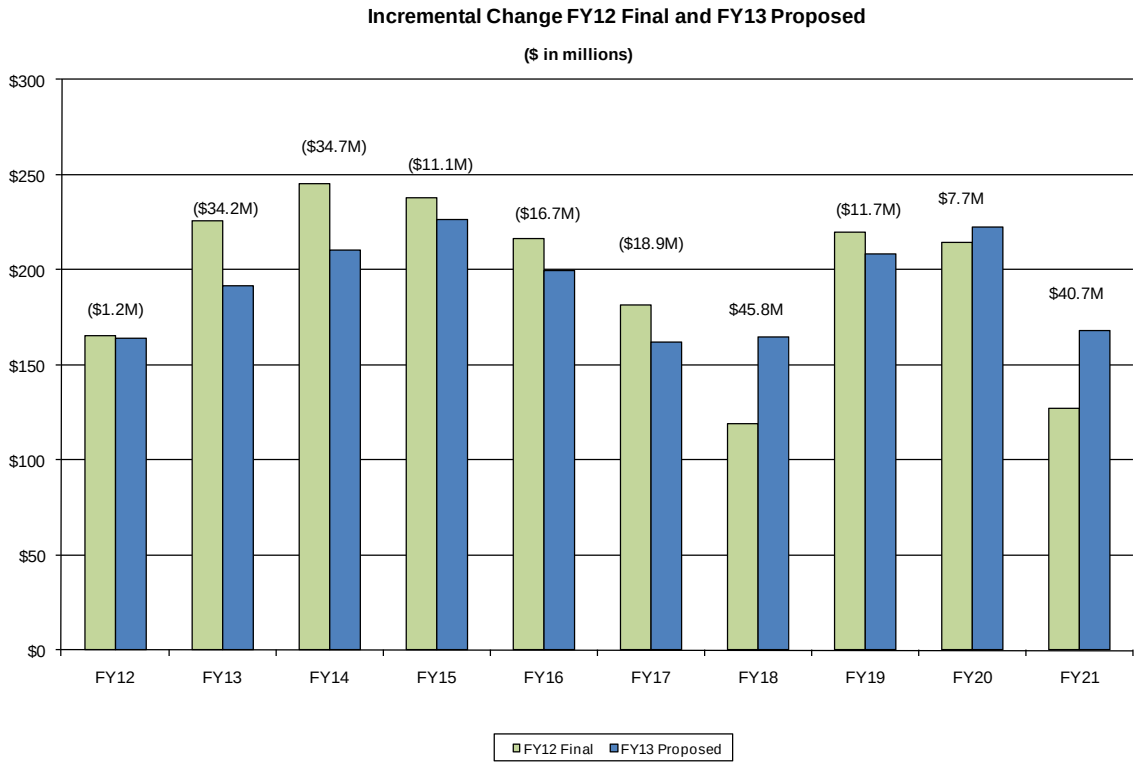
	FY12 Final	FY13 Proposed	$ change	% change	FY09-13 $ change	FY09-13 % change
Wastewater Systems Improvements	$2,625.4	$2,643.3	$17.9	0.7%	-$28.1	-4.9%
Waterworks System Improvements	$2,735.7	$2,769.3	$33.5	1.2%	-$15.0	-4.8%
Business and Operations Support	$107.1	$108.1	$1.0	0.9%	-$5.0	-10.5%
Total MWRA without contingency	$5,468.3	$5,520.7	$52.4	1.0%	-$48.0	-5.1%

The following worksheet describes the major dollar changes by project between the FY12 Final and the FY13 Proposed CIP and for the FY09-13 timeframe. The shaded projects represent the new projects added to the FY13 Proposed CIP.

Comparison of Major Changes FY13 Proposed and FY12 Final CIP

Project	FY12 Final	FY13 Proposed	Overall Impact	FY09-13 Impact	Beyond Cap	Notes
Rehabilitation of Section 4, 5, and 6 of the North Metropolitan Sewer - Design	$0.0	$1.0	$1.0	$0.0	$1.0	New FY13 project
Rehabilitation of Section 4, 5, and 6 of the North Metropolitan Sewer - Construction	$0.0	$4.0	$4.0	$0.0	$4.0	New FY13 project
Rehabilitation of Section 186 and 4 - Construction	$0.0	$3.0	$3.0	$0.4	$2.6	New FY13 project
Deer Island Roof Replacement - Phase III	$0.0	$1.0	$1.0	$0.2	$0.8	New FY13 project
Electrical Distribution Upgrade at Southboro Facility	$0.0	$0.4	$0.4	$0.0	$0.4	New FY13 project
Technical Assistance 7	$0.0	$0.6	$0.6	$0.2	$0.4	New FY13 project
Technical Assistance 8	$0.0	$0.6	$0.6	$0.2	$0.4	New FY13 project
Deer Island - North Main Pump Station VFD Replacement - Construction	$46.0	$24.1	-$21.9	-$10.5	-$11.4	Lower award vs budget
Spot Pond Design Build	$61.7	$49.4	-$12.3	-$11.5	-$0.8	Lower award vs budget
Dam Safety Modifications	$4.7	$2.2	-$2.5	-$1.3	-$1.2	Lower award/elimination of work
North Main Pump Station Harmonic Filters	$0.0	$6.0	$6.0	$0.0	$6.0	New sub-phase for VFD project
Facility Asset Protection - Headworks Upgrades Construction	$138.7	$163.7	$25.0	-$10.5	$35.5	Updated cost estimates, inflation, and revised scheduling
West Roxbury Tunnel	$46.9	$11.5	-$35.4	$0.0	-$35.4	Revised scope
DITP Fire Alarm System - Construction	$5.5	$16.0	$10.5	$0.6	$10.0	Revised scope
Schedule Shifts	$0.0	$0.0	$0.0	-$1.3	$1.5	Schedule shifts
Other	$0.0	$0.0	$72.4	-$14.4	$86.8	Updated cost, inflation, and scope changes.
TOTAL	$303.5	$283.4	$52.4	-$48.0	$100.7	

The following graph displays the variance by year of the projected spending in the FY12-FY21 timeframe between the FY12 Final CIP and the FY13 Proposed CIP, demonstrating the significant changes that occur during a year.



Contingency

Contingency for each fiscal year is incorporated into the Capital Improvement Program to fund the uncertainties inherent in construction programs. MWRA uses a contingency budget to cover these costs in the event they exceed their estimated value. The contingency budget is calculated as a percentage of budgeted expenditure outlays. Specifically, contingency is 7% for non-tunnel projects and 15% for tunnel projects. The total contingency budget for the CIP (FY13-FY22) is $123.6 million, with $16.8 million allocated to the FY09-13 timeframe.

	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	Total
Contingency	$ 9.7	$ 13.3	$ 15.5	$ 13.5	$ 11.1	$ 11.6	$ 14.4	$ 14.2	$ 13.5	$ 6.9	$ 123.6

Future Risk Factors

Due to the very nature of the Capital Improvement Program, there will be changes to projects over time due to schedule shifts, revisions to projects' scope, cost increases or decreases, environmental mandates, etc. In every budget cycle, the MWRA re-evaluates capital improvement needs and estimates project costs based on the latest available information. It is important to note that there are several risk factors which could increase spending.

There are still potential projects or required spending increases which are not yet funded as part of the FY13 Proposed CIP which are highlighted below:

- The Cross Harbor Cable may need a deeper installation or protective material as part of the harbor dredging project; additional costs could be as much as $20 million;
- The Chelsea Creek dredging initiative could cost as much as $10 million;
- Residual Asset Protection or the funding to rehabilitate or replace the existing Residuals Plant needs to be determined; and
- New regulatory mandates could represent potential risk for increased future spending.

Project Level Budget Summaries and Detail of Changes

Information on individual project budgets and detail of changes is provided in the supplemental appendices attached to this document.

Capital Improvement Program

FISCAL YEAR 2013

APPENDICES

MASSACHUSETTS WATER RESOURCES AUTHORITY

APPENDIX 1

Project Budget Summaries and Detail of Changes

Wastewater System Improvements

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. 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 and sludge pumping facilities at Deer Island were completed in April 2005. The Fore River Siphons construction contract was completed in May 2005. Construction of the Replacement Pump Station was completed in April 2008. Rehabilitation of Section 624 was completed in December 2010.

Scope

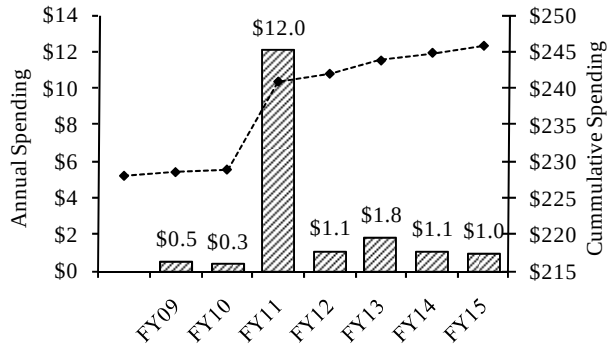
Sub-phase	Scope
Design 1/CS/RI – Tunnel & IPS	Design of the tunnel and IPS. Includes completion of design modifications for sludge pumping facilities at Deer Island and residuals filtrate facilities at Fore River.
Sediment Tests	Tests required as part of the evaluation of marine pipeline option.
Design 2/CS/RI – Surface	Design of remaining construction including siphons and replacement pump station.
Tunnel Construction & Rescue	Construction of a 2.9-mile, 12-feet 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.
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.

Sub-phase	Scope
Fore River Siphons Construction	Construction of 36-inch, 3,900-feet 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.
Rehab Section 624	Rehabilitation of 2,000 feet of Section 624 in North Weymouth.
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 Tech 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.
Mill Cove Sluice Gates Construction	Install gates which will allow staff to remotely flush out the site as needed, and will reduce odors.
Braintree-Weymouth Improvements	Several facility modifications are needed to improve facility safety, reliability, and performance. Design and construction improvements are required to address deficiencies in odor control, solids handling, and pumping operations. This project includes a study to determine deficiencies and corrections for the grinder room odor control, grinder equipment, and wastewater pumps.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$233,961	$227,932	$6,029	$1,079	$1,810	$15,789	$3,140	$0

Braintree-Weymouth Relief Facilities



Project Status 11/11	97.4%	Status as % is approximation based on project budget and expenditures. Work that is substantially complete includes the deep rock tunnel, N Weymouth Interceptor, Intermediate Pump Station and the Fore River Siphons contract. Substantial completion on the Replacement Pump Station was reached in April 2008. Rehabilitation of Section 624 was completed in December 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$234,002	$233,961	($41)	Jun-16	Jun-17	12 mos.	$15,830	$15,789	($41)

Explanation of Changes

- Schedule changed due to project priorities for the remaining Braintree-Weymouth Improvements work.

CEB Impact

- No impacts identified at this time.

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 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. This construction contract was awarded in March 2005 and was completed in March 2008. The project also includes design and construction of Section 687 to replace Section 530 which was awarded in October 2006 and completed in November 2007.

Scope

Sub-phase	Scope
Designs/CS/RI	Completion of design and provision of construction services during the construction phases.
Resident engineering & inspection	Resident engineering and inspection during construction of the two contracts
Boston Paving	Payment to the City of Boston for paving work on city streets.
Replacement Sewer Sections 685-686 construction	Installation of 15,780 feet of new sewers within public roadways to reduce overflows to adjacent residential areas and water bodies in West Roxbury.
Replacement Section 687 construction	Installation of 8,500 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$54,944	$53,777	$1,167	$67	$1,100	$1,794	$0	$0

Project Status 11/11	97.9%	Status as % is approximation based on project budget and expenditures. Construction on Sections 685 and 686 was completed in March 2008. Section 687 was completed in November 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$55,056	$54,944	($112)	Mar-08	Mar-08	None	$1,906	$1,794	($112)

Explanation of Changes

- Project cost and spending decreased due to final costs for Design and Paving contracts.

CEB Impact

- No impacts identified at this time.

S. 130 Siphon Structure Rehabilitation

Project Purpose and Benefits

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

Master Plan Project ☑ 2009 Priority Rating 2 (see Appendix 3)

Design and construction of improvements to headhouses and structures.

Project History and Background

Siphon chambers are located at the upstream and downstream ends of depressed sewers. Depressed sewers are constructed to avoid obstructions in sewer alignments such as rivers and subsurface utilities. Upstream siphon chambers allow attainment of proper water elevation so that the depressed sewer flows under pressure. Downstream chambers provide transitions between depressed sewers and downstream gravity sewers.

Connecting structures are facilities at which flows from sewers are redirected to converge with or receive flows from other sewers.

There are 92 siphon chambers and 111 connecting structures in the MWRA wastewater system. Hydraulic flows through many of these siphon chambers and connecting structures are below design capacities. The poor flow conditions, caused by irregular maintenance due to the inaccessibility of many structures, contribute to significant surcharges and overflows. Wastewater detention time at many structures also contributes to serious odor problems.

MWRA completed a study in 1998 to evaluate rehabilitation of these structures to permit greater accessibility to provide regular maintenance in order to alleviate the above problems. 83 siphon chambers and 63 connecting structures were included in the study which recommended rehabilitation and improvements to 127 of these structures. MWRA has prioritized the design and construction of improvements to these structures. Phase 1 will rehabilitate the most deteriorated structures.

Scope

Sub-phase	Scope
Planning	Identification of methods to improve accessibility and structures. Inspection of the siphon chambers and diversion structures along with recommendations for rehabilitation.
Design/CS/RI	Design, Construction Services and Resident Inspection for up to 16 sites.
Construction	Construction for up to 16 sites.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$2,671	$940	$1,731	$0	$30	$30	$1,701	$0

Project Status 11/11	35.2%	Status as % is approximation based on project budget and expenditures. Initial Planning subphase was completed in 1998.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$2,685	$2,671	($14)	Sep-15	Mar-16	6 mos.	$88	$30	($58)

Explanation of Changes

- Schedule and spending changed due to project priorities.

CEB Impact

- No impacts identified at this time.

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 FERS 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 and continued until June 2005.

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, the FERS Pump Station achieved 50% Design status, the FES tunnel achieved 30% Design status and the air treatment systems achieved 100% Design status.
FES Tunnel Rehab Design and Construction	Rehabilitation of the FES Tunnel.
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.

FES/FERS Biofilters Design & Construction	FES/FERS Corrosion Control (Biofilters) is a design and construction project to make improvements in the MWRA sewers. Three air treatment systems (biolfilters) are recommended to remove and treat hydrogen sulfide in the FES, FERS, WESR and WERS sewer systems. Rehabilitation of hydrogen sulfide meters will be included.
Nut Island Control System Evaluation and Design	Odor control is now being reliably performed using carbon. Modifications to the existing system are required to improve long term performance and ability to quickly transfer to back-up system. Odor control system should be evaluated and redesigned to ensure odor control performance in order to avoid air quality violations and odor complaints.
System-wide Odor Control	The prevalence of Hydrogen Sulfide gas in the collection system has been responsible for system wide odor complaints and infrastructure deterioration. This project will evaluate the system, identify the critical needs, and provide solutions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$16,140	$3,003	$13,137	$0	$0	$0	$5,706	$7,431

Project Status 11/11	18.6%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$16,782	$16,140	($643)	Jun-17	Jun-19	24 mos.	$275	$0	($275)

Explanation of Changes

- Cost decrease is primarily due to updated cost estimate for Framingham Extension Sewer/Framingham Extension Relief Sewer Biofilters Construction.
- Schedule and spending shift due to project priorities.

CEB Impact

- The FERS Biofilters Project is anticipated to reduce FERS chemicals (Nitrazyme and VX456) in half. The impact of this would be approximately ($100,000) in FY18.

S. 136 West Roxbury Tunnel

Project Purpose and Benefits

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

Master Plan Project ☑ Priority Rating 1 (See Appendix 3)

Investigation and rehabilitation of the West Roxbury Tunnel sewer. This sewer, built in 1964, transports flows from the Wellesley Extension Relief Sewer System through the West Roxbury portion of Boston to the High Level Sewer. A structural failure could result in surcharging and overflows.

Project History and Background

During construction of the Wellesley Extension Replacement Sewer and inspection of the tunnel in 1999, visual observations indicated that severe corrosion due to hydrogen sulfide had occurred in a portion of the sewer directly upstream of the West Roxbury Tunnel (WRT), and the tunnel entrance structure had lost cement lining, exposing the reinforcing steel. Manholes and other structures had been affected more severely.

A structural failure of the WRT would affect the tributary communities of Ashland, Brookline, Dedham, Framingham, Natick, Needham, Newton, Wellesley, and the Hyde Park and West Roxbury portions of Boston. Local failure of the tunnel could result in the discharge of 53 to 128 mgd of raw sewage into the Charles River until emergency repairs could be made, back-up of sewage into local residences and businesses, and the interruption of service to as many as 125,000 people. Section 138, immediately upstream of the tunnel, crosses beneath the VFW Parkway. Structural failure beneath this major transportation corridor would result in a severe public safety hazard.

Design for structural repairs to Section 138 and the West Portal of the tunnel was completed in June 2001. Construction of these repairs, Contract 6569, repairs to Sections 137 & 138, including the slipline of Section 138, were completed in June 2002. The design contract to rehabilitate the tunnel was awarded in February 2009 and ended in June 2011. The tunnel was inspected in August 2010 and there has been negligible deterioration since the 1999 inspection. Based on these findings and the significant reduction in hydrogen sulfide levels in the tributary sewers over the past decade, the tunnel is not in need of immediate repair. Options to monitor the conditions in the tunnel and future rehabilitation are under evaluation.

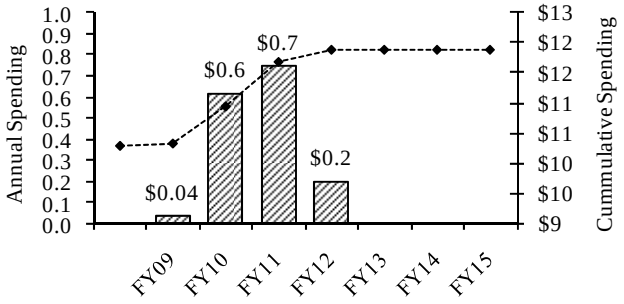
Scope

Sub-phase	Scope
Inspection	Inspection of Section 137 of the West Roxbury Tunnel, which includes 12,500 linear feet of 84-inch reinforced and unreinforced concrete tunnel. Initial inspection completed in 1999.
Design/CS/RI	Design, construction services, resident inspection for corrective actions to repair/rehabilitate 1,000 feet of Section 138 and the West Portal, and a conceptual design report for the rehabilitation of the tunnel. Design/construction completed in June 2002.
Construction	Rehabilitation of 1,000 feet of Section 138 and the West Portal. Completed in June 2002.
Tunnel Inspection	Inspection contract to monitor the conditions of the tunnel in 10 years

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$11,487	$10,285	$1,203	$203	$0	$1,608	$0	$1,000

West Roxbury Tunnel



Project Status 5/11	89.5%	Status as % is approximation based on project budget and expenditures. The design contract to rehabilitate the tunnel was awarded in February 2009 and ended in June 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$46,934	$11,487	($35,447)	Jun-19	Jun-20	12 mos.	$1,608	$1,608	$0

Explanation of Changes

- Budget and schedule change reflects revised project scope for a tunnel inspection in lieu of tunnel rehabilitation based on tunnel inspection in August 2010 which indicated negligible deterioration since previous inspection in 1999.

CEB Impacts

- No impacts identified at this time.

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. CDM has since been working to design and procure three construction packages for SCADA implementation. The construction effort on the first and most complex of two construction packages began in March 2006 and reached substantial completion in January 2008. This construction addressed SCADA needs at most pumping and CSO facilities, as well as establishing overall data communications improvements. The second construction package provided for SCADA needs at the remote headworks facilities, taking into consideration future CIP improvements at the older headworks facilities. This contract reached substantial completion in July 2009.

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, Prison Point, and Somerville Marginal. This construction package included 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 were also made to support these additional facilities.

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, Prison Point Flow meter, CSU/DSUs), and additional instrumentation and control equipment at the Arthur St. Pump Station to ensure consistency and/or compatibility with installed systems.
Technical Assistance	Technical assistance work to support all subphases.
Wastewater Redundant Communications	To study and implement redundant communications alternatives for Wastewater facilities, with an emphasis on wireless options. It is critical to have alternative communication if an important facility alarm does not reach the Operations Control Center.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$20,839	$19,782	$1,057	$157	$250	$6,242	$650	$0

Project Status 11/11	94.9%	Status as % is approximation based on project budget and expenditures. Construction 1 contract was substantially complete in December 2007. Construction 2 contract was substantially complete in July 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$20,839	$20,839	$0	Apr-13	Apr-14	12 mos.	$6,842	$6,242	($600)

Explanation of Changes

- Project schedule and spending shifted due to project priorities.

CEB Impact

- Future operating budgets will reflect further optimization beyond staffing for chemicals and utility usage as a result of SCADA implementation.

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 modifications to Outfall 023 to permit access points and diversion capabilities for future cleaning. This proportion of the project has been moved out to fiscal year 2017. Staff will continue to periodically inspect the outfall for increased sedimentation levels and report if schedule modification need to be made.

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 to enable future cleaning operations.
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 FY11	Remaining Balance	FY11	FY12	FY09-13	FY14-18	Beyond FY18
$4,939	$3,439	$1,500	$0	$0	($1)	$188	$1,313

Project Status 11/11	69.6%	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 commence in FY18.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$4,939	$4,939	$0	Dec-18	Dec-19	12 mos.	($1)	($1)	$0

Explanation of Changes

- Project schedule shifted due to project priorities.

CEB Impact

- No impacts identified at this time.

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 has evaluated several of the alternatives and has using 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 and collection system improvement 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.
Manhole Structure Flood Protection Design and Construction	Evaluate, design and construct modifications to manholes and backflows preventers at some CSO locations to prevent elevated rivers, streams and flood zones from back-flowing into the MWRA's regional collection system. During the recent March 2010 storm events, flood waters were documented well above the rim elevation of many MWRA structures that was suspected to contribute to system capacity limitations and extended periods of high flows.
North System Hydraulic Study	Review the frequency and extent of sanitary sewer overflows (SSOs) in the area tributary to Chelsea Creek Headworks and to evaluate and recommend alternatives to optimize the performance of the collection system and to eliminate or reduce SSOs or relocate them in the least potential of human health risks or environmental impacts.
Hydraulic Flood Engineering Analysis – North System	Opportunities for implementation of system optimization measures or more significant system modifications which will be identified during the initial study. Additional follow-up analysis or project implementation may be done under this phase.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$10,300	$930	$9,369	$279	$279	$558	$5,686	$3,125

Project Status 11/11	9.0%	Status as % is approximation based on project budget and expenditures. The Notice-to-Proceed for the North System Hydraulic Study was issued in November 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$10,248	$10,300	$51	Jun-18	Jun-19	12 mos.	$1,000	$558	($442)

Explanation of Changes

- Project schedule and spending changed due to project priorities.

CEB Impact

- No impacts 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 was completed in FY06.

Project History and Background

Installation of MWRA's initial 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 was replaced in 2003-2004. Lessons learned with the initial metering system was that the life expectancy of wastewater meters is approximately 7-10 years and that timely replacement of meters can be scheduled to avoid whole scale replacement. Our current system is approaching its 7th year. Plans will be developed to evaluate new wastewater metering technology for our 3rd generation of meters. Meter replacement will be phased in rather than entire system replacement. Certain key meters will be supplied electric power instead of battery resulting in more civil, electrical and construction costs.

Scope

Sub-phase	Scope
Planning	Development of a long-term plan to upgrade or replace the existing wastewater metering system (technology, hardware, software, telemetry).
Equipment Purchase/Installation	Purchase and installation of equipment.
Permanent Site Improvements Design and Constr	Supply of power and enhanced wireless communications to approximately half of the 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.
Wastewater Metering Asset Protection/Equipment Purchase	Rehabilitation, replacement and upgrades (planning, design and construction) for the Wastewater Metering System to be required every 10 years over the 40 year planning period.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$26,578	$5,138	$21,441	$141	$60	$250	$8,547	$12,691

Project Status 11/11	19.3%	Status as % is approximation on project budget and expenditures. The purchase and installation of 2nd generation of meters is complete. Planning for the next replacement will soon be underway.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$26,578	$26,578	$0	Jul-25	Jul-26	12 mos.	$1,444	$250	($1,194)

Explanation of Changes

- Project schedule and spending changed due to project priorities.

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 2011 for rehabilitation of interceptors, 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. Contract completed in September 2007.
Section 160	Rehabilitation of 11,000 linear feet of Section 160 of the Mystic Valley Sewer in Winchester due to extensive deterioration of the brick and concrete sewer. Contract awarded in April 2007. Rehabilitation of sewer completed.
93A Force Main Replacement	Replacement of 1,100 feet of 24-inch ductile iron force main due to extensive corrosion from hydrogen sulfide. Contract was substantially complete in January 2007.
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.
Interceptor Renewal #1 Design & Construction	#1 – Rehabilitation of Dorchester Sections 240, 241 and 242.
Interceptor Renewal #2 Design & Construction	#2 – Rehabilitation of portions of Sections 163 and 164 in Brighton.
Interceptor Renewal #3 Cambridge /Somerville Sections 26/27 Design & Construction	#3 – Rehabilitation of portions of Sections 26 and 27 in Cambridge and Somerville.

Sub-phase	Scope
Interceptor Renewal #4 Everett Sections 23/24/156 Design & Construction	#4 – Rehabilitation of portions of Sections 23 and 24 in Everett.
Malden & Melrose Hydraulics and Structural Study and Construction	#7 – Rehabilitation of Melrose, Malden Sections 41,42,49,54 and 65.
Melrose Sewer	Design and construct an 18-inch diameter sewer extension of an existing MWRA sewer on Melrose St. to reduce MWRA sewer overflows at the Roosevelt School. The construction contract was awarded in January 2010 and completed in September 2010.
Interceptor Renewal #5 Milton Sections 607/609/610	#5 - Rehabilitation of portions of Sections 607/609/610 in Milton.
Interceptor Renewal #6 Chelsea Sections 12/14/15/62	#6 - Rehabilitation of portions of Sections 12/14/15/62 in Chelsea.
Prison Point HVAC Upgrades, Design & Construction	The HVAC system improvements include the replacement of components for the HVAC system. The ductwork, air handling equipment, dampers, louvers, and odor control are in need of upgrade. An assessment was 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 was completed in FY05/FY06 under the CEB. The diesel engine fuel system modifications at this facility were completed under the SCADA contract and included the fuel oil delivery feed to the system boiler. The contract for Design services for the HVAC system was awarded in December 2007. The construction Notice to Proceed was issued in December 2010. Substantial completion of construction is anticipated in March 2012.
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 contract to replace the existing heating system at the Chelsea Creek Headworks was awarded in April 2005 and completed in May 2006. The systems at Ward Street and Columbus Park will be replaced under the Remote Headworks Upgrade Project.
Remote Headworks Concept Design	A Concept Design will be performed to identify the needs of the three remote headworks facilities to recommend equipment replacement and upgrades for further design and construction. The Concept Design will include a Condition Assessment of all equipment and non-equipment assets to establish a basis for improvements or upgrades to meet business goals and objectives. The contract was awarded in April 2008 and completed in September 2009.
Hingham Pump Station Isolation Gate Construction	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. This project will include the design and installation of a sluice gate in a diversion chamber, to isolate the station and bypass flow to allow maintenance to take place in the station without interruption of service. Construction bids were opened in July 2011 and a Notice to Proceed was issued in September 2011.

Sub-phase	Scope
Alewife Brook Pump Station Rehabilitation Design and Construction	The Alewife Brook Pump Station was built in 1951 and the pumps are original equipment. The rehabilitation will include replacing the larger pumps, motors, and piping, increasing pump reliability and efficiency at this facility, replacing the two climber screens and grinders, updating the HVAC system, upgrading the electrical system, and modifying the building interior to meet current building codes. The design contract was awarded in April 2010, and the preliminary design report was completed in March 2011. Proposals for Final Design/CA/REI services were received in December 2011.
Chelsea Screenhouse Sluice Gate Engineering Study	The Chelsea Screenhouse has seven hydraulic gates used to control flow within the facility, and direct flow to either the Caruso Pump Station or the Chelsea Headworks. These gates are critical to the operation of the facility. A preliminary evaluation was conducted using the As-Needed Design Services contract. The Task Order scope of services combined both the Chelsea Screenhouse and Framingham Pump Station. A report was issued that identified some maintenance and operational issues. Additional preliminary engineering evaluations were completed in November 2011 via a task order within the Remote Headworks Upgrades Design contract. A recommendation for final design and construction will be developed.
Framingham Pump Station Sluice Gates Condition Assessment	There are three 48-inch sluice gates at the Framingham Pump Station that control flow into the station and the Framingham Extension Sewer. The sluice gates have been in operation 5-6 years. A preliminary evaluation was conducted using the As-Needed Design Services contract after severe deterioration of the number 3 gravity sewer line gate and structure was discovered. The Task Order scope of services combined both the Framingham Pump Station and Chelsea Screenhouse. A report was issued to identify any maintenance and operational issues for all other gates. The report provided sufficient information about their condition, and there is no need for additional engineering studies. Corrective actions can be taken under the CEB.
Caruso Pump Station Shaft Replacement Construction	Caruso Pump Station has seven pumps that are fourteen years old, four 21 MGD pumps and three 50 MGD pumps. The vertical shafts of the four 21 MGD rated pumps are worn from use and corrosion. Of these four pumps, one was outfitted with a mechanical seal. The four (21 MGD) pumps are used 24 hours/day, 7 days/week and it is recommended that they have mechanical seals installed to replace the conventional pump packing. This project is to replace all worn, corroded shafts and sleeves and install mechanical seals to reduce operational & maintenance costs. Included in the scope will be a task to assess the pumps and rotating assemblies for potential maintenance issues.
Nut Island Headworks Fire Alarm/Wire Conduit	This project will replace the existing obsolete and problematic fire alarm system and faulty wiring at Nut Island Headworks. There have been significant repair costs over the past several years to keep the system functional and to correct deteriorated connections and ground faults. An engineering task order was used to design upgrades to the system and upgrades and replacements were completed in FY10.
Nut Island Fire Pump Building Study	Study to identify cause and offer remedy to the settlement of the Fire Pump Building at the Nut Island Headworks. Damage has occurred to the building structure and underground interconnecting utilities. This project is to fully investigate the problem and offer steps to stabilize the structure and protect utilities from future damage.
Nut Island Mechanical & Electrical Replacements	Project to identify the portions of the mechanical and electrical systems that are failing or reached the end of their useful life. Electrical systems will be evaluated through service contract maintenance, which often reveal obsolescence and/or potential for future failure. Mechanical systems have exhibited operational and maintenance difficulties that require close review for design improvement and replacement. Planning, design, and construction is recommended for the FY14-18 timeframe.

Sub-phase	Scope
NIH Electrical & Grit/Screenings Conveyance System Design & Construction	This subphase includes the design and construction of improvements to the electrical system, which is subject to groundwater infiltration, and to the grit and conveyance system which has alignment and operations problems, at the Nut Island Headworks. Based on final preliminary design reports completed in July and August 2011, recommendations have been made to improve or replace these systems. These recommendations will be included in one construction contract. Final design is scheduled to begin in early 2012.
Headworks Effluent Shaft Study	At each of the three remote Headworks, Chelsea Creek, Ward Street and Columbus Park, the wastewater is discharged into a vertical shaft connected to a tunnel that conveys the sewage to the Deer Island Treatment Plant. A past inspection of the shaft at Chelsea Creek indicated that the walls of the shaft are severely deteriorated. Failure of a shaft could incapacitate the Headworks facility. Concrete spawling from the interior of the shaft falls down into the tunnel. There is concern this may cause additional problems at Deer Island. To-date, there has been no reported issues but it is suggested that this material could be detrimental to pumps or other wastewater equipment at Deer Island. This study should also include requirements related to plant and shaft ventilation.
Chelsea Headworks Upgrades Design CA/ESDC/REI and Construction, Columbus Park Headworks Upgrades Design ESDC/REI and Construction, Ward St Headworks Upgrades Design ESDC/REI and Construction	The Remote Headworks Concept Design proposed recommendations to upgrade the Chelsea Creek, Columbus Park and Ward Street Headworks, which will be included in design and construction contracts. The recommendations include replacement/upgrade to the screens, grit collection system, grit and screenings handling systems, odor control, HVAC, mechanical, plumbing, instrumentation, and electrical systems, as well as antenna towers. The design/CA contract was awarded in June 2010. The Final Preliminary Design Report was received in September 2011. The design and construction for the Chelsea Creek Headworks Upgrade will be followed by separate design and construction contracts for Ward Street and Columbus Park Headworks in the future.
Pump Station/CSO Condition Assessment	This project would provide professional engineering services (via an RFQ/P process) including planning, design review, inventory, evaluation, identification and prioritization of rehabilitation/replacement projects and operational processes for the older pump stations and CSO facilities.
Cottage Farm Fuel System Upgrade	Replacement of existing fuel oil system to meet current code requirements, ensure reliable operation, and provide safeguards against accidental oil spills.
Somerville/Marginal Influent Gates and Stop-Log Replacement	The Somerville Marginal facility has two 5'X6' sluice gates that were installed in 1987. These 22-year old gates are used to hold wastewater in the upstream combined sewer system until the level reaches a predetermined elevation, at which point the sluice gates are opened and the facility is activated (chemicals added, screenings removed). The treated CSO is conveyed to the MWRA permitted CSO discharges MWR205 or MWR205A, upstream and downstream of the dam on the Mystic River. During October of 2009, MWRA staff discovered non-continuous, wet weather gate leakage. Repairs to the gates were made and an air barrier was created using stop planks and temporary sump pumps upstream of the gates to minimize gate leakage. However, given the age and frequent problems with these gates and need to create a more permanent and effective barrier between the CSO system and downstream receiving waters, this project was initiated. The project will replace the facility gate, as well as upstream and downstream stop planks and install permanent sump pumps downstream of the gates to create an air void to ensure CSO does not enter the receiving waters until a facility activation is required. Project design was completed under Task Order 20 (contract 7070) and construction was substantially complete in November 2011.

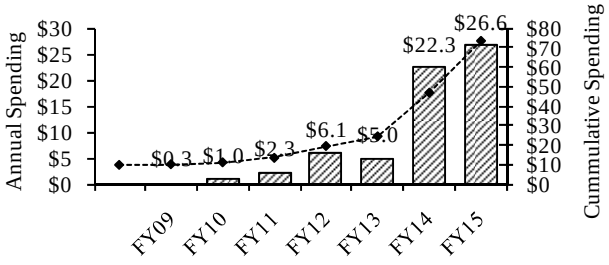
Sub-phase	Scope
Prison Point/Cottage Farm CSO Preliminary Design/Study	Preliminary design/study to replace and/or upgrade mechanical, electric, chemical feed, and instrumentation equipment. Additionally, need to replace diesel driven pumps with VFD electric pumps. This project will look to add more redundancy at Prison Point to ensure proper CSO discharge treatment. Preliminary design will be performed under a Technical Assistance As-Needed task order and is anticipated in early 2012. Final Design and Construction phases will be added to a future CIP cycle.
Pump Station Rehab Preliminary Design/Study	Preliminary design/study for upgrades at Hayes, Hingham, Caruso, DeLauri Pump Stations, Wiggins-Castle Island Terminal, and the Somerville-Marginal CSO Facility. The project is to follow contract 7162, Pump Station and CSO Condition Assessment, which may result in other facility improvements. Upgrades to the facilities will ensure design output is met. Failure of a particular piece of equipment could lead to failure of another; such as failure of a grinder could negatively impact a pump. Upgraded facilities should result in fewer corrective maintenance calls. This is a system wide project designed to upgrade multiple facilities to ensure worker safety, equipment integrity, environmental protection, and ensure service is not interrupted. Design and Construction phases will be added to a future CIP cycle.
Prison Point Dry Weather Flow & Stripping Pump Improvements	This project is designed to determine the feasibility of replacing two dry weather pumps and adding a second wetwell stripping pump to ensure facility reliability and to pump down the wetwell at a faster rate.
System Relief & Contingency Planning Study	This project will investigate what can be done to avoid serious flooding issues. Increased capacity or controlled relief points must be identified in order to address flooding issues that occur during severe wet weather. Project will be designed to create increased capacity within the collection system in order to decrease SSO discharges. Scope may also include facility specific plans for a failure at MWRA facilities.
DeLauri Pump Station Electrical Room Cooling	During wet weather conditions when multiple pumps are operating, the Variable Frequency Drives overheat causing a reduction in pumping capacity. This problem is magnified during summer months, causing undesirable high temperatures in the electrical room. An HVAC evaluation was performed and recommendations made for additional electrical room cooling to eliminate VFD overheating and protect electrical equipment from damage. With the recent installation of a 1.5 megawatt wind turbine at the facility, security related improvements were recommended. A task order was executed in September 2011 to design the proposed HVAC and security related improvements.
Caruso Pump Station Improvements	This project would replace the existing standby generator, HVAC system, and the fire detection system at the Caruso Pump Station. The standby generator is 20 years old and is one of a few existing generators of this type. The manufacturer is no longer making spare parts and there is only a limited quantity of available spare parts. The generator will be replaced with a newer model with readily available parts to ensure reliable back-up power. Technical Support evaluated the HVAC system and determined it was in need of replacement. Due to the age of the fire detection system, frequent problems, the fire protection system needs to be replaced. Design/CA/REI services will commence in 2012.
Prison Point Pump and Gearbox Rebuilds	Refurbishment of the Prison Point CSO Gearboxes based on an inspection report performed in May 2010 that indicated that the current gearbox condition could result in bearing failures. It is critical during major wet-weather events to have all four pumps operational which are driven by gearboxes to provide maximum station capacity and provide redundancy at this critical CSO facility.

Sub-phase	Scope
Section 156 Design/Build	Rehabilitation of sewer Section 156 and a portion of adjacent Sections 17 and 19, and associated structures/manholes located between Air Force Road and the Malden River in the City of Everett. The sewer is a 120-year old, 61-inch by 56-inch rounded horseshoe brick sewer, which conveys flows of up to 40 million gallons per day from Wakefield, Stoneham, Woburn, Winchester, and parts of Medford. The sewer is 1,800 feet long of which 125 feet was repaired in 2001. The design/build contract was awarded in June 2011. Cured-in-Place lining was completed in October 2011.
Sections 4,5, and 6 North Metropolitan Sewer Rehabilitation Design CS/RI and Construction	Rehabilitation of 3,300 feet (from total of 13,201 linear feet) of 108-inch sewer pipe. Rehab projects in 1991 and 1997 lined these sections with 3-inches of silica/shotcrete covered with epoxy coating. Recent video and manned inspections for the Section 186 emergency work identified the shotcrete as crumbling and the epoxy lining peeling.
Rehabilitation of Sections 186 and 4 Construction	Emergency removal of delaminated plastic liner from Section 186 was performed in June 2011. This project includes rehabilitation of Section 186 in its entirety including removal of all remaining failed lining and relining of Section 186, and rehabilitation of a portion of Section 4 just upstream of Section 186; for a total of 2,000 linear feet of 108" sewer pipe. A task order, under As-Needed Technical Assistance contract, was executed in November 2011 to begin the design of this project.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$254,743	$9,799	$244,944	$6,093	$4,977	$14,660	$117,496	$116,378

I&P Asset Protection



Project Status 11/11	5.5%	Status as % is approximation based on project budget and expenditures. The Remote Headworks Concept Design was completed in September 2009. Work on Section 160 was completed in December 2008. Melrose Sewer work was completed in February 2011. Prison Point HVAC Construction commenced in December 2010. NI Electrical & Grit/Screens Conveyance Design commenced in March 2011. Remote Headworks Upgrades Design commenced in July 2010. Somerville/Marginal Influent Gate Replacement was substantially complete in November 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$213,329	$254,743	$41,414	Jun-21	Mar-25	45 mos.	$31,672	$14,660	($17,013)

Explanation of Changes

- Budget increased primarily due revised cost estimates for Chelsea, Columbus Park and Ward St Headworks Upgrades Design and Construction, Interceptor Renewal #2 Design and Construction, Alewife Brook Pump Station Rehab Design, Caruso Pump Station Improvements, Nut Island Grit/Screens Conveyance Construction, and DeLauri Pump Station Improvements. Also, new projects added for Sections 4,5,6 North Metropolitan Trunk Sewer Rehabilitation Design/CS/RI and Construction, and Rehabilitation of Sections 186 and 4 Construction.

- Schedule and spending changed primarily due to revised schedule and sequencing for the Headworks Upgrades projects, new project for Rehabilitation of Sections 4,5,6 North Metropolitan Sewer Rehabilitation Design/CS/RI, updated cost estimates above, and several schedule changes including NI Electrical & Grit/Screens Conveyance Construction, NI Mechanical and Electrical Improvements, Pump Station/CSO Condition Assessment and Alewife Brook PS Construction contracts. Also, deleted Section 156 Owners Representative and Interceptor Renewal #1 Design contracts.

CEB Impact

- None identified at this time.

S. 146 Inspection of Deer Island Cross Harbor Tunnels

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*

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To inspect, design, and repair MWRA deep rock tunnels to ensure proper wastewater system operation.

Project History and Background

The MWRA sewer system includes three deep rock tunnels that carry wastewater from the headworks to the DITP. The MWRA currently does not have the technology and capability of inspecting deep rock tunnels.

Scope

Sub-phase	Scope
Tunnel Shaft Repairs Design & Construction	The MWRA sewer system includes three deep rock tunnels that carry wastewater from the headworks to the DITP. The MWRA currently does not have the technology and capability of inspecting deep rock tunnels. This subphase includes inspection, design, and construction of repairs.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$5,000	$0	$5,000	$0	$0	$0	$2,919	$2,081

Project Status 11/11	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$5,000	$5,000	$0	Jun-17	Jun-18	12 mos.	$0	$0	$0

Explanation of Changes

- Schedule change due to project priorities.

CEB Impact

- None identified at this time.

S. 147 Randolph Trunk Sewer Relief

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*

Master Plan Project ☑ 2009 Priority Rating 3 (see Appendix 3)

To identify system improvements to reduce sanitary sewer overflows that occur at MWRA's Sewer section 628 and Pearl Street siphon.

Project History and Background

The Randolph Trunk Sewer was constructed in 1958 and consists of three sections: 627, 628 and 628A. Section 628 is a 42-inch diameter reinforced concrete sewer located in Braintree. During extreme wet weather events, Section 628 experiences overflows, particularly at a 50-foot long double-barrel siphon located at Pearl Street next to residential property. A study will be performed to determine the best method of reducing excessive wet weather flows or to provide hydraulic relief to this section of the Randolph Trunk Sewer.

Scope

Sub-phase	Scope
Study	Study to identify system improvements at Sewer Section 628 and Pearl Street Siphon.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY11	FY12	FY09-13	FY14-18	Beyond FY18
$750	$0	$750	$0	$0	$0	$750	$0

Project Status 11/11	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$750	$750	$0	Jun-15	Jun-17	24 mos.	$0	$0	$0

Explanation of Changes

- Schedule change due to project priorities.

CEB Impact

- No additional impacts identified at this time.

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 Deer Island treatment facility by ensuring timely replacement of DI's systems, which contain more than 60,000 pieces of equipment with an approximate value of $1 billion. Based on the Master Plan developed in 2006 (and subsequent updates), MWRA expects to sequentially replace equipment and structures in the facility as they reach the end of their useful life.

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 effort (not including the cost of off-island residuals facilities) started in 1988. MWRA commenced primary disinfection at the new plant in 1995 and secondary disinfection in July 1997. With the completion of the Effluent Outfall Tunnel in September 2000 the plant 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 was expanded to include other Operations units throughout MWRA, this Deer Island project was renamed. An initial component of the program, Inventory and Evaluation phases 1 and 2 (previously a part of this project), were placed under the Capital Maintenance Planning and Development project in the *Business Operations and Support* capital budget in a prior budget cycle.

At an expansive and complex facility like the Deer Island Treatment Plant, unanticipated equipment and system failures have the potential to cause operational and maintenance crises. It is prudent industry practice to take a proactive approach by establishing programs to anticipate when equipment and systems are near the end of their reliable service lives, and then overhaul, upgrade, or replace the equipment, systems, and structures as needed. This project encompasses five major functional categories:

1. Equipment Replacement (chains, pumps, motors, control systems, discrete process equipment, etc.).
2. Architectural projects (expansion joint replacements, concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, piping, electrical wiring, heating systems, etc.).
4. Support projects (Technical Information Center projects, security projects, etc.).
5. Specialty projects (chemical pipelines and storage tanks, fuels storage tanks, etc.).

Scope

Sub-phase *Equipment Replacement:*	**Scope**
Equipment Replacement Projection (ERP)	Long-term placeholder for funding new projects and/or increases to existing projects. Funds for new projects identified during each CIP development phase are deducted from this placeholder and then shown under new sub-phases. In FY09 the funds were depleted due to cost increases in electrical projects and the primary/ secondary clarifier rehab project. Therefore, $25M was added for FY14 – FY18 to fund other projects added during this next cap period. In the FY12 Final CIP, this spending was all moved to the FY19-23 cap period.
Equipment Condition Monitoring	Installation of temperature & vibration-monitoring equipment in NMPS and Winthrop Terminal Facility (WTF). Completed in January 2005.

Sub-phase *Equipment Replacement:*	**Scope**
CEMS Equipment Replacement	Replaced the data collection computers, upgraded the software, and added PLCs to the Continuous Emissions Monitoring Systems on the two high-pressure Zurn boilers. Substantially completed by March 2006.
Pump Packing Replacement	Replace pump packing seals with mechanical seals in the North Main, South System, and Winthrop Terminal pump stations. Purchases were complete by the end of FY08 with installations completed by in-house staff in FY09.
LOCAT Scrubber Replacement Design & Construction	Replace the Thermal Power Plant's high-maintenance digester gas wet scrubber system. Work to replace the TPP boiler management systems (BMS) was pulled from this project for FY13; see the "Utilities" section.
Digester Chiller Replacement	Replaced the refrigeration-based digester gas chiller with a chilled water system that performs better at low operational loads. Completed in May 2006.
Dystor Tank Membrane Replacement	Emergency replacement of a torn gas membrane on one digester storage tank, and preventive replacement on the second. Completed both by October 2005.
Dystor Membrane Replacements	Periodic future replacement of the two gas & sludge storage tank membranes in the digester complex; added in FY08 per the Master Plan. Replaced both membranes in 2005, anticipated to be required every ten years.
Thickened Primary Sludge Pump Replacement	Design and construction to replace the thickened primary sludge pumps in order to reduce water use and maintenance costs, in FY14-15.
Digested Sludge Pump Replacement Design & Construction	The three positive displacement Abel pumps cause a great deal of pipe vibration and need frequent maintenance. Added per the Master Plan, pumps with higher flow rates are being installed to reduce the potential for grit settlement in the pipes. The first project ran from October 2009 to September 2011, to install one centrifugal pump and a flushing pump. These new pumps will be tested for at least 6 months to ensure they work before the three existing pumps are replaced. This second phase is scheduled to be completed by October 2013.
Centrifuge Back-drive Replacements	Replace the centrifuge back-drives, which have become obsolete. Scheduled to commence in FY12 and take 2 years to complete.
Grit & East/West Odor Ctrl Air Handler Unit Replacements	Replace deteriorated air handlers; added per the Master Plan. Replacements in FY09-15, then every 15 years. Grit AHU replacement was completed in June 2010. The E/W Odor Control AHU Replacements are now included as part of the HVAC Equipment Replacement project, below.
Fire Alarm System Replacement – Design & Construction and REI	Newly identified in FY08, added to the Master Plan. To replace obsolete fire alarm monitoring & control systems. Design in FY12, replace in FY13/16 and approximately every 20 years thereafter.
HVAC Equipment Replacement – Design/ESDC & Construction	Newly identified in FY08, added to the Master Plan. To replace two obsolete HVAC control systems with one manufacturer's system, reducing replacement parts and improving automation. Design in FY12, replace in FY14-17 and then every 15 years. Increased the scope to include central lab fume hoods and East/West Odor Control Air Handler replacements in FY11.
Centrifuge Replacements – Design & Construction	Replace the sludge centrifuges when the scrolls/bowls are too worn to repair, or after catastrophic failure. Units have a 20-30 year life but were exposed to a lot of grit after start-up in 1996. Included in the Master Plan; plan to replace four centrifuges every ten years beginning in FY15.

Sub-phase *Equipment Replacement:*	**Scope**
Cryogenics Plant Equipment Replacement – Design & Construction	Design and construction to replace pumps, valves, motors, sensors, switches, programmable controllers and other obsolete equipment as needed. Added in FY08 per the Master Plan. Two projects to replace 3 chillers and two compressors in FY12-14were given separate sub-phases for FY13; see below. Remaining plant overhaul work to commence in FY14-17 with future rehab and upgrade work occurring every 10 to 15 years.
Cryogenics Compressor Replacement	Project to replace large process air compressors in the oxygen generation plant, added as a separate sub-phase in the FY13 budget cycle.
Cryogenics Chillers Replacement	Project to replace failing air chillers that require frequent maintenance in the oxygen generation plant; new separate sub-phase in FY13.
South System Pump Station Pump Lube System Replacement	Change the pump lubrication system from one using grease to one using oil. Only requires routine maintenance after installation, not replacement. Included in the Master Plan. Construction is scheduled for FY14-15.
Digester Modules 1 & 2 Pipe Replacement Design & Construction	During digester pipe cleaning done in mid-2007, deterioration of the glass lining was noted. This sub-phase was not in the Master Plan; it was added in FY08. The $8M funding was taken from the Equipment Replacement placeholder, so no net CIP increase occurred. Construction is scheduled for FY12-15. Scope also includes plug valve replacements. A new project to complete additional digester storage tank rehab work was added in FY12, and given its own sub-phase in FY13; see the last project under "Specialities".
Butterfly Valve Replacements, North Main Pump Station (NMPS) & Winthrop Terminal Facility (WTF)	There are twenty 60-inch butterfly valves in NMPS and eight 36-inch plug valves in WTF, for isolating the pumps when maintenance is required. One valve in NMPS has been replaced; the removed valve was sent out for evaluation, but the condition was too poor to rebuild. Several others have begun to leak, indicating that the gaskets and seals are failing. Planning for replacements in FY12-14. Scope revisions were made in FY10 to include replacing the magnetic flow meters.

Sub-phase *Architectural:*	**Scope**
Study/Concept Design-Concrete Repairs	For installing a protective coating on concrete in secondary clarifiers and disinfection basins. Recent data indicates work not needed; dropped in FY11.
Expansion Joint Repairs	The program to periodically replace failed expansion joints in the concrete clarifier decks and/or various retaining walls. The first phase was completed in November 2003; phase 2 is scheduled to begin in FY12, phase 3 in FY15.
Eastern Seawall Design & Construction	Design and construction of repairs to the base of the eastern seawall due to tidal damage, exposing rebar. Removed in FY06, added back in FY09. Wall condition is assessed annually. Work currently scheduled for FY15-16.
Roof Replacement Phase 1	Added to the CIP in FY10, based on decision to capitalize these costs. Replaced the rubber membrane roof on the Winthrop Terminal, the Administration/Warehouse building, the Cryogenics Facility, and the lower roofs on the Digester Modules. Completed by March 2010.
DITP Roof Replacements Phase 2	Also added in FY10, project to replace roof membranes at the North & South Main Pump Stations; East & West Odor Control; the Grit Facility; and the Centrifuge Thickener building. Work completed in July 2011.
Barge Berth and Facility Replacement	Major rehabs of the barge berth & pier facilities due to damage and/or normal wear. Added per the Master Plan. Scheduled for FY13-15, on a 20-year cycle.

Sub-phase *Architectural:*	**Scope**
DITP Roof Replacement Phase 3	New project for FY13. New roofing is needed at the Grit Facility, North Main Pump Station, Main Switchgear Building, and the gravity thickeners in order to protect the equipment in these buildings. Current roofing is ~ 17 years old and is in need of repair.

Sub-phase *Utilities:*	**Scope**
Outfall Modifications	Inspection of the old outfall tunnels (decommissioned after startup of the new outfall tunnel). Inspection completed in July 2002.
Electrical Equipment Upgrades (EEU) including future cycles from the Master Plan	The program to replace substation components and bus ducts. Bus duct 2&22 replacement completed October 2001, and EEU - 2 completed by March 2007. EEU–3 began in FY08, completed by August 2011. EEU-4 is scheduled to start in FY12; Under the Master Plan, Phase 5 was added and is scheduled to start in FY14.
VFD Replacements, including future cycles from the Master Plan	The program to replace obsolete variable frequency drives (VFDs) in the North Main Pump Station (in FY12-15), South System Pump Station (done in FY07-08), Winthrop Terminal Facility (FY13-15), and miscellaneous smaller VFDs throughout the plant (on-going). Future replacements every 12-15 years.
NMPS Harmonic Filter Replacement	New sub-phase for FY13. The second phase of NMPS VFD and motor replacement is installation of new harmonic filters for the electrical system.
Power System Improvement Design & Constr. (Contracts 7061, 7061A, 7061B, 7061C, 7061D)	For modifications to DITP's electrical system as recommended in the consultant report after an FY04 power outage. Design completed in FY09-11. Completing the construction in a series of projects in FY09-14; added 7061C, dump condenser replacement and 7061D for NMPS fuel tank removal in FY11. Two awarded in FY09, two in FY11, the last in FY12.
Thermal Power Plant Modifications – REI	Project covers REI work on one of the 5 projects above, modifications in the Thermal Power Plant. Scheduled to begin in FY12.
TPP Boiler Control Replacement	New sub-phase for FY13, to replace boiler controls in the Thermal Power Plant that are becoming obsolete.
Switchgear REI for 7061 & 7061A	To provide REI services on two Power System Improvement projects (above). Removed in the FY11 CIP, the REI work will be done by in-house staff.
Switchgear Replacements including future cycles added per the Master Plan	On-going program to sequentially replace obsolete electrical switchgear. Several buildings scheduled for FY12-15, others in FY19-21. Future cycles beyond that period are not currently funded due to cost increases.
Transformer Replacements	Subphase removed in FY05, added back in FY09 due to need. Approximately 42 electrical substations and 87 transformers have been in service an average of 13 years. Transformers are replaced when the routine electrical maintenance program identifies them as being near the failure point.
PICS Replacement including future cycles from the Master Plan	Replacement or upgrade of components of the Process Information Control System (PICS) including keypads, consoles, and software due to obsolescence. To be completed in FY12 and may need to be repeated every 10-12 years.
PICS Distributed Processing Units (DPU) Replacement	Replace the system "backbone", the 26 DPU cabinets or internal components. Added per the Master Plan, now scheduled for FY21.
Sodium Hypochlorite Pipe Replacement Design, REI and Construction	Replacement of PVC piping that transports sodium hypochlorite from the storage tanks to the disinfection basins with a better-suited pipe. This project will address issues with leaks, corrosion, and safety hazards in FY14-16.
Chemical Pipe Replacement Design and Construction	Planned periodic replacement of the various chemical pipelines in the odor control and disinfection facilities due to deterioration from corrosion.

Sub-phase *Utilities:*	**Scope**
Heat Loop Pipe Replacement Construction	Rerouting heat loop piping into galleries to reduce underground corrosion and improve accessibility. Phase 1 completed in Dec. 2005, Phase 2 by February 2008. Phase 3 was completed in March 2011. Includes periodic valve replacements. No other repeat cycles are currently planned.
Fuel Transfer Pipe Replacement	Replace the diesel fuel pipeline from the barge area to the storage tanks at the Thermal Power Plant. Project currently on hold; expect to continue trucking oil instead of barging. Schedule pushed out to FY20-22.
Fuel Pipe Abandonment	New sub-phase for FY13, pulled from the project above. To cement the existing fuel pipeline in place in FY12-13 instead of removing it.
North Main Pump Station Motor Control Center (MCC) Construction	Sequential replacement of the MCC equipment that has become obsolete and unreliable. Designed under As-Needed Design task order, construction scheduled to be completed in two sequential phases in FY12-14. See Phase 2 below.
North Main Pump Station Motor Control Center (MCC) Phase 2 REI and Construction	New sub-phase for FY13, pulled from the project above. Second phase of the work, scheduled to be done in FY13-15.
CTG Rebuilds	Rebuilds of the combustion turbines in the Thermal Power Plant. Added from the Master Plan, scheduled for FY14-16 with repeat cycles every 15 years.
STG System Modifications Design & Construction	Involves adding equipment to the steam turbine generator that will produce additional electricity utilizing the current steam production more efficiently. To help the MWRA meet the energy goals set out by executive order, the project began in FY09. Substantially complete by the end of FY11.
DI Digester Flare #4 Design and Construction	Install a fourth gas flare to reduce the potential for air permit violations when an existing flare is out of service and the boilers have to be taken off-line. Construction currently scheduled for FY15-16.

Sub-phase *Support:*	**Scope**
DISC Application	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. This work is in process, and has several phases. Expect completion by the end of FY14.
As-Needed Design Phases 5 and 6	On-going technical design services and/or construction support to supplement existing engineering resources for specialized or complex engineering issues. Typically, two contracts are issued in tandem and run for two years each. Phase 6-1 and 6-2 contracts were moved here from *Plant Optimization* in FY10. Starting with Phase 6, the contract length was extended to three years each. Phases 6-1 and 6-2 are scheduled to end in 2012, followed by phases 7-1 and 7-2.
Deer Island As-Needed Technical Design	Added in FY08 as part of the Master Plan, this subphase is a placeholder, used to continue the technical design services and/or construction support in the same fashion as the contracts listed above. From FY12 through FY15, have two contracts at $900,000 per year each, and then plan to increase to $1M each for FY16 through FY25. Each series of new contracts will be deducted from this placeholder and given their own subphase numbers.

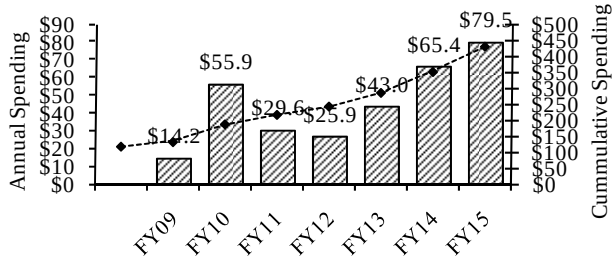
Sub-phase *Specialties:*	**Scope**
Sodium Hypochlorite Tank Liner Removal	Removed the failed lining in tank #1 of the four sodium hypochlorite storage tanks. Completed in September 2006.
Hypochlorite Tanks 1&3 Reline	Renamed the "Sodium Hypo Tank Repair 1" subphase in FY08. Included the stripping, repair and relining of tank 3. Completed in November 2007.
Hypochlorite Tanks 2&4 Reline	Added in FY08 per the Master Plan. Strip & reline the two remaining sodium hypochlorite storage tanks. Scope included removing ladders and replacing safety railings on the tanks. Work completed in October 2008.
Future Sodium Hypo Tank Rehabilitation or Replacement	Periodic stripping and relining of the four sodium hypochlorite tanks, based on historical experience to date. Included in the Master Plan. Based on condition, expect to start replacing one tank per year beginning in FY14.
Primary & Secondary Clarifier Rehab – Design (ESDC/REI)	Consultant to provide ESDC/REI services during the Primary & Secondary Clarifier rehab work described below (design done by As-Needed Design consultant). Project scope expanded to include secondary clarifiers due to deterioration in the longitudinal chains and scum collection systems. Work began once the Construction phase listed below was awarded.
Primary & Secondary Clarifier Rehab Construction	Replace longitudinal and cross collector chains and sprockets, chain drives, wear shoes; modify tip tubes, replace hose bibs; repair wall expansion joints, add more drop boxes, etc. Added the secondary clarifiers to the scope for FY09 and specified a higher-grade stainless steel, which substantially increased the project cost by $30M. Separated out the gravity thickener scope due to the need for separate, distinct schedules. Project awarded at $59.4M, increased due to change orders; work began in February 2009, to take three years to complete.
Gravity Thickener Rehab - Design	New subphase in FY09 for designing gravity thickener improvements, as discussed further below. Project staff determined that a separate design phase is needed for the major overhaul work (now denoted 6966E).
Gravity Thickener Improvements - Construction	This subphase was eliminated in FY08, and the scope was included with the Primary Clarifier Rehab work above. Made a stand-alone project again in FY09. Multiple phases needed - the first phase (6966) involves replacing some fiberglass covers in FY10-12. 6966A, B and C were added for emergency repairs to center columns in three tanks in FY11.
Gravity Thickener Rehabilitation	New sub-phase for FY13, pulled from the project above. This final phase involves installing catwalks around the perimeter of several tanks, removing concrete blocks in the effluent channels, and modifying the sludge thickener roofing to improve staff access and the operating efficiency.
Gravity Thickener Center Column Replacement	New sub-phase for FY13. Complete replacement of these center columns in all 4 tanks with a higher grade steel, due to the failures experienced in FY11.
Ancillary Modifications Design and Construction 4	Dropped the Preliminary Design phase and added ESDC/REI to the scope in FY11. The project involves modifications to the cryogenics facility and plant-wide odor control systems, including the digester gas systems and wet scrubber improvements. This project was moved here from the *Plant Optimization* project in FY10. Construction currently scheduled for FY15-18.
Clarifier W3H Flushing System	New sub-phase added in FY12, initially called Clarifier Rehab Phase 2(see project description for that work, below). The assigned contract number was used for this part of the overall project, so the sub-phase was renamed for FY13. Project to replace deteriorated water flushing lines in the clarifier batteries, scheduled to begin in FY12.

Sub-phase *Specialties:*	**Scope**
Clarifier Rehabilitation Phase 2 Design and Construction	New sub-phase for FY13, pulled from the project above. This project is needed to correct deficiencies noted during the first Primary & Secondary Clarifier project. Influent gates not sealing off tanks adequately; effluent launders and aeration systems need repair; and concrete corrosion in primary clarifiers above the water line needs repair and coating to prevent future corrosion. The sludge removal system in primary tanks and aeration/recirculation systems in secondary tanks need to be rehabilitated as well. Design is scheduled to begin in FY13.
Clarifier Tip Tube Replacement	New sub-phase for FY13, also pulled from the W3H flushing project above. Needed a separate project and schedule for replacing the scum tip tubes. Scum tip tubes not working results in scum build-up in primary tanks that has to be manually collected and transported to the gravity thickeners. Scheduled to begin in FY13.
DI Digester Storage Tank Design/ESDC and Rehabilitation	The Deer Island residuals facility includes three digester modules and two gas handling/ sludge storage tanks. During the Digester Mods Pipe Replacement contract (7055), it was noted that other digester equipment has problems and need replacement. Plugged digester recirculation pipes, mixer failures, and overflow box deterioration resulted in increasing the scope of work needed to correct all deficiencies in this area of DITP. Some steel plates in the digesters are also expected to need repair or replacement and the interior of the digesters needs to be coated.

Expenditure Forecast (in $000s) and Project Status

Total Budget	**Payments thru FY11**	**Remaining Balance**	**FY12**	**FY13**	**FY09-13**	**FY14-18**	**Beyond FY18**
$583,273	$117,067	$466,206	$25,890	$42,988	$168,584	$247,700	$149,628

DI Asset Protection



Project Status 11/11	21.6%	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 the following: As-Needed Design Phases 6-1 and 6-2, Miscellaneous VFD Replacements, TPP Dump Condenser Replacement, Primary & Secondary Clarifier Rehab Construction, and NMPS VFD Replacement Construction. Contracts for Fuel Transfer Pipe (cementing in place) and Fire Alarm System Replacement Design are also expected to start in FY12. In FY12, several of the largest projects projected to start are Electrical Equip. Upgrade 4, NMPS MCC Construction and Digester Modules Pipe Replacement.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$575,907	$583,273	$7,365	Jun-48	Jun-48	None	$186,099	$168,584	($17,514)

Explanation of Changes

- The project cost increase is primarily due to revised scope/cost estimates for Fire Alarm System Replacement +$10.5M, Restructured Clarifier Rehab Phase 2 into several sub-phases with updated cost estimates +$7.5M, new FY13 project added for Roof Replacement Phase 3 +$1M. Budget increase was partially offset by actual award for NMPS VFD Replacement(at $21.9M less than budget; however $6M was moved to the NMPS harmonic filter project for a net reduction to the overall NMPS VFD project of $15.9M)..

- Spending shifted primarily due to lower award for NMPS VFD Replacement Construction, several project schedule changes including Misc VFD Replacements, Digester & Storage Tank Rehab Design/ESDC, LOCAT Scrubber Replacement Construction, Digester Sludge Pump Replacement, Electrical Equipment Upgrade Phase 5, among others. These were partially offset by the new project added and several updated cost estimates including those listed above.

CEB Impact

- The majority of the projects are required to replace obsolete equipment and systems. Some of the projects are expected to result in decreased maintenance and/or operating costs such as the HVAC equipment replacement. However, the potential benefits from most of the projects are not quantified at this time.

- Benefits of several energy-related projects have been estimated and result in anticipated annual electrical savings of nearly $600,000. Some examples include: Electrical Equipment Upgrades 4 ($100,000 in FY15), NMPS VFDs ($187,000 in FY16), Winthrop Terminal Facility VFD Replacement ($30,000 in FY16), Transformer Replacements in ($20,000 in FY16), HVAC Equipment Replacement ($126,000 in FY17), and Future SSPS VFD Replacements ($120,000 in FY21).

- Projects that are expected to reduce maintenance time and other resources are the Gravity Thickener Rehabilitation, Cryogenic Plant Chiller Replacements, Thickened Primary Sludge Pump Replacements and Digested Sludge Pump Replacements.

S. 210 Clinton Wastewater Treatment Plant

Project Purpose and Benefits

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

Project History and Background

The Clinton Wastewater Treatment Plant Rehabilitation was completed in 1992. The plant is generally in good condition. Some equipment rehabilitation and replacement projects were recommended in the FY08, FY09 and FY10 CIP cycles. Operability of mechanical equipment and maintenance of electric/standby power systems are key elements to minimizing the risk of component failure. Any malfunction of mechanical equipment may impact wastewater treatment, particularly during large storm events that stress the hydraulic capacity of the facility. Key decision making to minimize risks includes the cost/benefit of when to replace aging equipment and which/how many spare parts to pre-purchase. Other uncertainties include technology upgrades to meet future regulatory requirements. Clinton WWTP was previously included in DITP's "Asset Protection – Specialties" program category, but was given its own discrete CIP program in FY08.

Scope: No new projects were added for the Clinton facility in the FY08 or FY09 cycle, since only projects with a priority rating of 1 or 2 were added per the Master Plan. The Clinton projects listed in the Master Plan all have a priority rating of 3 or 4. The Plant-wide Concrete Repair, Digester Cleaning & Rehab, and the Aeration Efficiency projects shown below were added for FY10 based on identified needs; three additional projects were added for FY12 to alleviate problems that occurred with the heavy rain and floods in 2010.

Sub-phase	Scope
Clinton Soda Ash Replacement	Added in the Final FY06 budget cycle. The soda ash delivery system required for pH control in the activated sludge process is obsolete and needs to be replaced. The contract was awarded in November 2007 and work was complete by August 2008.
Clinton Permanent Standby Generator	New for FY07. Install a permanent standby generator at the Clinton Wastewater Treatment Plant. Completed in November 2007.
Clinton Plant-Wide Concrete Repair	Added in FY10. The concrete walls, walkways and structural support beams across the primary clarifiers and secondary trickling filters are deteriorating to the point that rebar is exposed. The project involves repairing the walls and potentially replacing the walkways and equipment support beams that extend across the tops of the tanks.
Clinton Digester Cleaning & Rehabs	Added in FY10. Clinton's two digesters are approximately 20% filled with compacted grit which is limiting their efficiency. A new discharge permit to be issued soon includes phosphorous limits requiring both digesters to be used at all times. Need to empty, clean and rehab the tanks (replace covers, piping, valves, gas lancers and mixers) to operate under new permit. Cleaning the first digester was completed by July 2010. In FY12, the scope was expanded to include installing two new 36-inch influent gates to control flow from Clinton and Lancaster to prevent flooding and protect plant assets. These gates would allow for throttling back on the plant flow during high flow conditions. The gates would be managed so the plant wet well does not overflow, and upstream back-ups do not occur. The work is scheduled to begin in FY12.

Sub-phase	Scope
Clinton Aeration Efficiency Improvement (and Auxiliary Pumps)	Added in FY10. A study completed by FS&T recommended installing fine bubble diffusers in three of the six secondary aeration tanks instead of using mechanical mixers to obtain a better oxygen transfer rate while reducing electricity consumption. In FY12 this project scope was expanded to include the installation of four permanent submersible auxiliary pumps to increase pumping capacity during high flow conditions in the plant. These are needed to avoid the cost of renting additional pumps which was required four times in the past two years. Work is scheduled to begin in FY12.
Phosphorous Removal Design/ESDC and Construction	Added in FY12. Latest draft NPDES permit requires phosphorous removal to 0.15 mg/l. The Authority expects the permit to be issued in FY12 with four years allowed to achieve compliance. Current treatment system does not reduce phosphorous to required levels and this new process equipment is needed to achieve this limit. Design is scheduled to begin in late FY12.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$9,044	$649	$8,395	$642	$2,575	$3,521	$5,178	$0

Project Status 11/11	7.2%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$7,298	$9,044	$1,746	Jan-16	Jun-15	(7) mos.	$2,430	$3,521	$1,091

Explanation of Changes

- Project cost spending changed due to revised scope and cost estimates for Clinton Aeration Improvements, +$996K and Clinton Plant-Wide Concrete Repair projects, +$750K.
- Project schedule changed due to revised plan for Phosphorous Removal (compressed the schedule).

CEB Impact

- The projects are required to replace obsolete equipment and systems. The aeration efficiency project is projected to reduce Clinton's electricity usage. Assume ($17,500) in incremental avoided costs as of FY14. The concrete repair, digester rehab, and phosphorous work may result in decreased maintenance and/or operating costs although the potential benefits have not been quantified at this time.

S. 211 Laboratory Services

Project Purpose and Benefits

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

Project History and Background

The Central Laboratory at the Deer Island Treatment Plant began operating in 1995. The infrastructure needs to be maintained so that the laboratory operation can keep samples uncontaminated and the staff safe. It is prudent industry practice to take a proactive approach by establishing programs to anticipate when equipment and systems are near the end of their reliable service lives, and then overhaul, upgrade, or replace the equipment, systems, and structures as needed.

Scope: These are specialty projects, all related to laboratory modifications. In the Proposed FY09 cycle, these sub-phases were moved from the DI Asset Protection Project and set up as a separate project. No new projects are added at this time.

Sub-phase	Scope
Metals Lab Fume Hood Replacement Design & Construction	Replace six metals lab fume hoods. Scope not included in other lab projects. Expanded the project to include a design & construction phase in FY09; previously expected the design to be done by As-Needed task order. Design began in January 2009, and the construction Notice to Proceed was issued in March of 2011, with a completion date of February 2012.
Metals Lab Modification Construction	Build-out of a laboratory room to house the new ICP/MS instrument. This trace metal analyzer needs clean space to function properly. Also, replace a failed fume hood and an obsolete TKN digestion unit in the Wet Chemistry lab. Contract was awarded in April 2007 and work was complete by September 2008.
Central Lab Renovations 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; to capture fumes from sample containers and bottle-wash process; and replace deteriorated lab cabinets, sinks and counters, etc. Scope and funding was added to the DITP "HVAC Equipment Replacement" project in FY12.
Central Lab Fume Hood Replacements Construction	Replacement of approximately 35 fume hoods in the Lab at Deer Island not included in other projects above. This scope of work was added to the "HVAC Equipment Replacement" project under the Deer Island Treatment Plant Asset Protection program in FY11; the project costs were added to that project in the Final FY12 CIP. Construction work is scheduled to begin in FY14.
Central Lab Fume Hood Replacements Design	This project was to provide the design services for the project shown above; this scope (and associated funding) was added to the DITP Asset Protection program under the "HVAC Equipment Replacement Design" project, expected to commence in FY12.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
2,293	$1,173	$1,120	$1,120	$0	$1,364	$0	$0

Project Status 11/11	54.1%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$2,315	$2,293	($22)	Feb-12	Feb-12	None	$1,385	$1,364	($22)

Explanation of Changes

- Project cost and spending changed due to credit change order for the Metals Lab Fume Hood Replacement Construction contract.

CEB Impact

- The projects are required to replace obsolete equipment and systems. Some of the projects are expected to result in decreased maintenance and/or operating costs, however the potential benefits are not quantified at this time.

S. 271 Residuals Asset Protection

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*

Master Plan Project ☑ 2008 Priority Rating 1 (see Appendix 3)

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems. MWRA expects to replace equipment and structures in the facility as they reach the end of their useful life.

Project History and Background

The Residuals Asset Protection program was created in FY08 as part of the Master Plan. The program consists of the anticipated contracts for maintaining and improving the operations and infrastructure of the biosolids processing plant in the long term. MWRA's Biosolids Processing Facility (aka the "pellet plant") was built in 1991 and expanded in 2001. By 2015, the major pieces of processing equipment will be 20 - 25 years old. The facility is currently in good condition, but significant reinvestment is anticipated in the FY14-18 timeframe. For this facility, operability of mechanical equipment and maintenance of electric/standby power systems are key elements to minimizing the risk of component failure. Key decisions to minimize risk hinge on results from cost/benefit analyses, to determine when to replace equipment. The residuals pelletizing process is also currently energy-intensive; future uncertainties include long-term energy costs and supply.

Under the terms of the contract for operation of the biosolids processing facility, NEFCO is responsible for all facility operation and maintenance including any necessary capital improvements until December 2015. They are obligated to turn the facility back over to the MWRA in an operable condition. The Asset Protection phase is intended to provide a dual-track planning approach addressing: (1) the existing facility capital improvement needs beyond the year 2015, if the Authority continues with pelletization, and (2) the option of assessing alternative technologies prior to the current contract expiration date; culminating in a decision point sometime in FY12-13.

A comprehensive Residuals Condition Assessment/Reliability Study begun in May 2009 was completed in July 2010 (with a study to assess the latest technology and regulatory trends planned as a second phase starting in FY12) followed by a Facility Plan/EIR project. These projects will review the adequacy of existing facility components and processes, to provide replacement recommendations based upon the latest existing or alternative technologies. Information developed by these projects will be used by MWRA to produce a prioritized list of recommended design and construction projects that will be scheduled over an 8-year period (FY13-20). Scheduling of upgrade projects will be based on equipment failure risk, construction sequencing to maintain facility operations, and capital expenditure planning.

For the residuals biosolids processing facility, proposed spending of $180.3 million on eighteen projects is identified in the 40-year master plan timeframe of FY07 through FY48. Fifteen projects (equaling $148.6M) out of the eighteen were included in the FY08 CIP. The other three (addressing the rehabilitation of the polymer system, building envelope, and thermal oxidizers) have a priority rating of 3, and therefore are not yet included in the CIP.

Scope

Sub-phase	Scope
Condition Assessment/ Reliability Study (1)	Evaluate the condition of the entire facility at the mid-point of the current contract and then assess other residuals processing options and regulatory changes which may provide cost-saving opportunities. First phase work (present condition assessment) began in May 2009 and finished in July 2010. Work on implementing any short-term recommendations from this phase began in FY11. The 2nd phase, Technology & Regulatory Assessment is scheduled to begin in late FY12.
Residuals Plant Facility Plan/EIR (1)	The design and construction of improvements to the plant utilities infrastructure (electric, water, sanitary, and drainage) may be necessary. This CIP project slated to start in FY14 will address issues identified during the initial study.
Residuals Plant Upgrades - Design & Constr (1)	Select a consultant to design and oversee implementation of equipment replacements (all of the individual replacement projects listed below) to coincide with the end of the operations contract. The total project is estimated at $4M for the designs and $10M for ESDC/REI services during construction of all other subphases, for the duration of 8 years.
Six Rotary Dryer Replacements- Construction (1)	Replace the rotary dryers. Estimated at $20M over three years beginning in FY15, with repeat cycles every 15 years. The dryers are core equipment, and the most expensive items at the facility in terms of acquisition, installation, and operational costs.
Six Air Scrubber Replacements - Construction (1)	Replacement of the air scrubbers/packed towers. Estimated at $3M to be spent over two years beginning in FY17, with repeat cycles every 15 years.
Plant MCC Construction (1)	Replacement of the motor control center (MCC) equipment. Estimated at $1.5M over two years starting in FY18 with repeat cycles every 15 years.
FRSA Pier Rehab Design & Construction (2)	To complete a study, and then design for rehabilitation (or demolition) of piers at the Biosolids Processing Facility. This $700k project was deleted in the FY10 cycle.
Rail System Rehab Construction (2)	To rehabilitate portions of the rail system. Estimated at $1M over two years beginning in FY18, with repeat cycles every 15-20 years for $1M each.
Replace 9 Pellet Storage Silos - Construction (2)	To replace the pellet storage silos at the end of their expected useful life of 15 years. The project is estimated at $2M with a duration of 2 years beginning in FY17. Based on the Master plan, the replacement cycle repeats every 15 years.
Sludge Feed Conveyor Replacement - Construction (2)	Replacement of the sludge feed conveyors and weigh scales (from the centrifuges to the rotary dryers). The project is estimated at $1M with a duration of one year beginning in FY15. Based on the Master plan, the conveyors and weigh scales may need to be replaced again in every 15-20 years.
Sludge Storage Tank Rehab (2)	Rehabilitation of the sludge storage tanks and related valves. Estimated at $1M over one year beginning in FY17, with repeat cycles every 15-20 years.
Pumping Systems Upgrade - Construction (2)	For the replacement or rehabilitation of the sludge, centrate, and chemical pumps. Cost estimate of $2M with a duration of 2 years beginning in FY16. Future replacement or rehab cycles recur in 15-20 year intervals, at $2M per cycle.
Replace 12 Centrifuges – Construction (2)	To replace the sludge thickening centrifuges at the end of their expected 18-year useful life. The project is estimated at $18M with a duration of two years beginning in FY17. Based on the Master plan, the centrifuges may need to be replaced again in FY35.
Utility Upgrades - Construction (2)	Upgrades to the water, sewer, electrical, and telephone systems. Estimated at $2M over two years beginning in FY18. Repeat cycles every 15-20 years.
Odor Control System Upgrade - Construction (2)	Replacement of the pipelines and odor control equipment for treating the off-gases from the sludge storage tanks prior to release to the atmosphere. Estimated at $500k over one year beginning in FY19, with repeat cycles every 15-20 years.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$147,930	$345	$147,585	$143	$572	$1,060	$57,495	$89,375

Residuals Asset Protection

Project Status 11/11	0.2%	Status as % is approximation based on project budget and expenditures. The Residuals Plant Condition Assessment/Reliability Study was completed in July 2010. Award of the Technology & Regulatory Review contract is anticipated to occur in FY12.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$147,930	$147,930	$0	Jun-48	Jun-48	None	$2,335	$1,060	($1,276)

Explanation of Changes

- Spending changed due to revised schedules for Residuals Facility Plan/EIR and Residuals Facilities Upgrade Design and Construction contracts.

CEB Impact

- The majority of the projects are required to replace obsolete equipment and systems. Some of the projects are expected to result in decreased maintenance and/or operating costs, however the potential benefits are not quantified at this time.

Introduction to Combined Sewer Overflow (CSO) Program

In 1987, MWRA entered a stipulation in the Federal District Court Order in the Boston Harbor Case ("First Stipulation") by which it accepted responsibility for developing and implementing a long-term CSO control plan for all combined sewer overflows hydraulically connected to MWRA's system, including the outfalls owned and operated by the communities of Boston (BWSC), Cambridge, Chelsea and Somerville (the "CSO communities"). In response to the First Stipulation, MWRA conducted site-specific and watershed based planning both to meet short-term CSO control requirements pursuant to federal regulations, including EPA Nine Minimum Controls ("NMC"), and to develop a long-term control plan to bring Boston area CSOs into compliance with the Federal Clean Water Act and Massachusetts Surface Water Quality Standards. MWRA developed these plans in conformance with federal and state CSO policies and associated guidance documents, which evolved during MWRA's nearly 20-year planning period to 2006.

EPA's National CSO Policy (April 1994) requires CSO permitees to develop and implement a set of system optimization measures and reporting procedures intended to quantify and minimize CSO discharges in the short term, in part using detailed system characterization, easily implemented and less expensive system improvements, and optimized operations and maintenance. In compliance with the policy, MWRA submitted its NMC compliance documentation by January 1, 1997, as required. While most of the reported compliance measures involve operations, maintenance and regulatory functions of MWRA that are funded through the Current Expense Budget, system characterization and hydraulic optimization measures described below were funded through the CIP.

The National Policy also requires permitees to develop and implement a long-term control plan in accordance with the provisions of the policy. In the CIP, MWRA undertook two major planning efforts: one in the period 1986 through 1990, which produced the 1990 CSO Facilities Plan primarily in accordance with the EPA CSO Strategy of 1989, and a second and final planning effort in 1992-1997 (and subsequent modifications), which produced a revised long-term plan for CSO control in April 2006.

MWRA's CSO planning efforts were primarily conducted under the System Master Planning phase of the CIP and produced the following components of a broad plan to control CSO discharges and meet water quality standards:

- Through extensive inspections, system monitoring and modeling, MWRA developed a detailed, field-calibrated assessment of its planned collection and treatment system performance in advance of developing a long-term CSO control plan. The performance assessment incorporated major capital investments in the sewer system already underway or planned by MWRA, including upgrades to the transport system, pumping stations, headworks and Deer Island treatment plant. Together with MWRA's and the CSO communities' efforts in the late 1980's and the 1990's to operate and maintain their respective systems more efficiently, these improvements were shown to effectively maximize the system's capacity to control wet weather flows and markedly reduce CSO discharges system-wide. In the period 1988 through 1992, total annual CSO discharge predicted for a typical rainfall year dropped from 3.3 billion gallons to 1.5 billion gallons, with approximately 51% of the remaining discharge treated at five MWRA CSO screening and disinfection facilities. The Charles River especially benefited from these improvements.

- In 1993-1994, MWRA presented a System Optimization Plan ("SOP"), which recommended approximately 160 low cost, easily implemented system modifications to maximize wet weather storage and conveyance. The SOP projects, which were fully implemented by MWRA and the CSO communities by 1997, further reduced CSO discharge by about 20 percent.

- MWRA recommended an extensive set of larger projects covering a range of control technologies to achieve long-term, site-specific CSO control goals using watershed-based assessments of receiving water impacts and uses. MWRA presented a conceptual plan of these improvements in 1994 and refined the recommendations in a facilities plan and environmental impact report it issued in 1997. The long-term plan received initial federal and state approvals in early 1998, allowing MWRA to move the projects into design and construction.

- As MWRA proceeded with implementation of the projects, it evaluated and recommended several adjustments and additions to the long-term plan in the period 1998 through 2006. These adjustments and additions responded to regulatory inquiries seeking higher levels of control (Charles River) or to new information that raised concerns about construction requirements, cost or CSO control performance (North Dorchester Bay, Reserved

Channel, East Boston, and Alewife Brook). A final, comprehensive long-term control plan was approved by EPA and DEP in March 2006 and accepted by the Federal Court in April 2006. This plan and its predicted level of CSO control for each outfall was formally amended in May 2008 to revise the long-term CSO discharges at the Prison Point Facility, based on hydraulic optimization MWRA incorporated into the operations of the facility pursuant to milestones in Schedule Seven. MWRA predicts that the long-term plan, scheduled to be completed in December 2015, will reduce total annual CSO discharge in a typical rainfall year to 0.4 million gallons (an 88% reduction from the 1988 level), with 93% of the remaining discharge to be treated at four MWRA screening and disinfection/dechlorination facilities.

On April 27, 2006, Federal District Judge Richard G. Stearns approved a joint motion of the U.S. Department of Justice (DOJ), EPA and MWRA that provides a comprehensive resolution of outstanding issues related to MWRA's CSO program. Under the approved motion, MWRA entered a Second CSO Stipulation by which it agreed to implement its previously recommended plans for Alewife Brook/Upper Mystic River and East Boston and to undertake additional work to further reduce CSO discharges to the Charles River from its Cottage Farm CSO Facility. The Cottage Farm facility had been the subject of discussions between EPA and MWRA and related investigations by MWRA since MWRA first issued its long-term control plan in 1997. The additional Charles River work is predicted to reduce CSO discharges from Cottage Farm to 2 activations and 6.3 million gallons in a typical year, from the previous goal of 6 activations and 23.6 million gallons. The scope, milestones and performance goals of other CSO projects remain unchanged.

The Federal Court ordered schedule had also contained three unmet milestones related to completion of the CSO control plans for Alewife Brook/Upper Mystic River, East Boston, and region-wide floatables control and outfall closings. The accepted joint motion and the Schedule Seven it created revised milestones and also added milestones for the revised Charles River CSO control plan.

In exchange for MWRA agreeing to implement its revised long-term control plan, DEP agreed to issue a series of five (5), three-year extensions to the water quality variances for the Lower Charles River Basin and the Alewife Brook/Upper Mystic River through 2020. As they relate to MWRA, the terms and conditions of the variance extensions would be limited to the requirements of the Court Order (i.e. MWRA's responsibility is to implement the long-term control plan contained in the revised Schedule Seven). The most recent set of variance extensions was issued by DEP in September 2010 (for Alewife Brook/Upper Mystic River) and October 2010 (for Lower Charles River Basin). These extensions are in effect until September and October 2013, respectively, when it is expected that DEP will issue new three-year extensions.

The Second CSO Stipulation replaces the stipulation entered in 1987 which established MWRA's responsibility to develop and implement a region-wide CSO long-term control plan. The Second CSO Stipulation states that once MWRA has implemented the recommended plan and demonstrated that it meets the specified goals for activation frequency and discharge volumes, each CSO community will be solely responsible for the CSO outfalls it owns and operates. These important conditions provide much greater certainty to the MWRA and its ratepayers relative to the scope and cost of the CSO program through 2020. The elements of the final long-term CSO control plan and the control goals for each receiving water segment, including the Prison Point Facility amendment of May 2008, are presented in Table 1.

The CSO project schedules in Schedule Seven are aggressive and reflect project-specific design, permitting and construction requirements. The program has and will continue to face cost and schedule challenges, including the general uncertainty associated with construction of tunnels or micro-tunnels and related shafts, such as with the Brookline Sewer Separation project, potential conflicts with other projects in the urban areas, and the need to manage traffic and community impacts in historical, densely populated neighborhoods. Notwithstanding these challenges, MWRA, working in cooperation with the Boston Water and Sewer Commission (BWSC), the Town of Brookline and the City of Cambridge, will continue to manage the CSO program with the goals of controlling project costs, maintaining schedule, and fully achieving the projects' CSO control objectives.

MWRA commenced implementation of the long-term CSO control plan in 1996. Updated project schedules are presented in Table 2. By December 2011, MWRA and the CSO communities had completed 29 of the 35 projects in the plan, and four projects were in design or construction. MWRA plans to commence design of the two remaining projects, both associated with Alewife Brook, by April 2012. With this level of completion, MWRA has achieved significant progress in reducing CSO discharges to Boston Harbor and tributary rivers. The completed CSO projects, together with improvements to MWRA's wastewater conveyance and treatment systems, including the upgraded Deer Island Treatment Plant and associated pump stations, have reduced the total annual volume of CSO discharge in a typical rainfall year from 3.3 billion gallons in 1988 to 0.5 billion gallons today, an 85% reduction,

with 85% of the remaining overflow receiving treatment at MWRA's four long-term CSO facilities. The remaining projects are scheduled to be complete by December 2015.

eceiving Water	CSO Discharge Goals (typical rainfall year) Activations	Volume (million gallons)	Projects*	Capital Cost* ($ million)
Alewife Brook/Upper Mystic River	7 untreated and 3 treated @ Somerville Marginal	7.3 3.5	• Cambridge/Alewife Sewer Separation • MWR003 Gate and Rindge Siphon Relief • Interceptor Connections/Floatables • Connection/Floatables at Outfall SOM01A • Somerville Baffle Manhole Separation • Cambridge Floatables Control (portion)	61.5
Mystic River/Chelsea Creek Confluence and Chelsea Creek	4 untreated and 39 treated @ Somerville Marginal	0.6 60.6	• Somerville Marginal CSO Facility Upgrade • Hydraulic Relief at BOS017 • Chelsea Trunk Sewer Replacement • Chelsea Branch Sewer Relief • CHE008 Outfall Repairs • East Boston Branch Sewer Relief (portion)	77.8
Charles River (including Stony Brook and Back Bay Fens)	3 untreated and 2 treated @ Cottage Farm	6.8 6.3	• Cottage Farm CSO Facility Upgrade • Stony Brook Sewer Separation • Hydraulic Relief at CAM005 • Cottage Farm Brookline Connection and Inflow Controls • Brookline Sewer Separation • Bulfinch Triangle Sewer Separation • MWRA Outfall Closings and Floatables Control • Cambridge Floatables Control (portion)	90.5
Inner Harbor	6 untreated and 17 treated @ Prison Point	9.1 243.0	• Prison Point CSO Facility Upgrade • Prison Point Optimization • BOS019 Storage Conduit • East Boston Branch Sewer Relief (portion)	61.8
Fort Point Channel	3 untreated and 17 treated @ Union Park	2.5 71.4	• Union Park Treatment Facility • BOS072-073 Sewer Separation and System Optimization • BWSC Floatables Control • Lower Dorchester Brook Sewer Modifications	62.6
Constitution Beach	Eliminate		• Constitution Beach Sewer Separation	3.8
North Dorchester Bay	Eliminate		• N. Dorchester Bay Storage Tunnel and Related Facilities • Pleasure Bay Storm Drain Improvements • Morrissey Blvd Storm Drain	260.8
Reserved Channel	3 untreated	1.5	• Reserved Channel Sewer Separation	62.3
South Dorchester Bay	Eliminate		• Fox Point CSO Facility Upgrade (interim improvement) • Commercial Pt. CSO Facility Upgrade (interim improvement) • South Dorchester Bay Sewer Separation	126.8
Neponset River	Eliminate		• Neponset River Sewer Separation	2.4
Regional			• Planning, Technical Support and Land Acquisition	50.4
TOTAL **Treated**		**413.3** **384.8**		**860.7**

*Floatables controls are recommended at remaining outfalls and are included in the listed projects and capital budgets.

MWRA's capital program includes temporary flow metering and other efforts to gather and evaluate new data to track system performance. The performance of the sewerage system is continuously improving as CSO and non-CSO projects are completed. Updated assessments of the system's hydraulic performance and updated estimates of CSO discharges using actual field data and model simulations are essential to verify the predicted benefits of the CSO-related improvements as they are completed, to ensure the system hydraulic model reflects updated conditions, and to support continuing CSO design efforts and long-term goal tracking.

MWRA's NPDES permit and the variances for the Charles River and Alewife Brook/Upper Mystic River require MWRA to estimate CSO discharges at each permitted outfall for all storm events on an annual basis. This is accomplished by MWRA staff using the InfoWorks collection system model and data from permanent and temporary meters located in the interceptor system, at CSO treatment facilities and at other CSO outfalls. In addition, the Federal Court schedule requires MWRA to conduct a system-wide performance assessment after completing the implementation of the CSO plan in 2015, with a required assessment report due by December 2020.

Project (Shading indicates completed project)		Commence Design	Commence Construction	Complete Construction
North Dorchester Bay Storage Tunnel and Related Facilities		Aug 97	Aug 07	May 11
Pleasure Bay Storm Drain Improvements		Sep 04	Sep 05	Mar 06
Hydraulic Relief Projects	CAM005 Relief	Aug 97	Jul 99	May 00
	BOS017 Relief		Jul 99	Aug 00
East Boston Branch Sewer Relief		Mar 00	Mar 03	Jul 10
BOS019 CSO Storage Conduit		Jul 02	Mar 05	Mar 07
Chelsea Relief Sewers	Chelsea Trunk Sewer Relief	Jun 97	Sep 99	Aug 00
	Chelsea Branch Sewer Relief		Dec 99	Jun 01
	CHE008 Outfall Repairs		Dec 99	Jun 01
Union Park Detention/Treatment Facility		Dec 99	Mar 03	Apr 07
CSO Facility Upgrades and MWRA Floatables Control	Cottage Farm Upgrade	Jun 96	Mar 98	Jan 00
	Prison Point Upgrade		May 99	Sep 01
	Commercial Point Upgrade		Nov 99	Sep 01
	Fox Point Upgrade		Nov 99	Sep 01
	Somerville-Marginal Upgrade		Nov 99	Sep 01
	MWRA Floatables Control and Outfall Closings		Mar 99	Mar 00
Brookline Connection and Cottage Farm Overflow Interconnection and Gate		Sep 06	Jun 08	Jun 09
Optimization Study of Prison Point CSO Facility		Mar 06	Mar 07	Apr 08
South Dorchester Bay Sewer Separation		Jun 96	Apr 99	Jun 07
Stony Brook Sewer Separation		Jul 98	Jul 00	Sep 06
Neponset River Sewer Separation			Apr 96	Jun 00
Constitution Beach Sewer Separation		Jan 97	Apr 99	Oct 00
Fort Pt Channel Conduit Sewer Separation and System Optimization		Jul 02	Mar 05	Mar 07
Morrissey Boulevard Storm Drain		Jun 05	Dec 06	Jul 09
Reserved Channel Sewer Separation		Jul 06	May 09	Dec 15
Bulfinch Triangle Sewer Separation		Nov 06	Sep 08	Jul 10
Brookline Sewer Separation		Nov 06	Nov 08	Jul 13
Somerville Baffle Manhole Separation			Apr 96	Dec 96
Cambridge/Alewife Brook Sewer Separation	CAM004 Stormwater Outfall and Detention Basin		Apr 11	Apr 13
	CAM004 Sewer Separation	Jan 97	Jul 98/Sep 12	Dec 15
	CAM400 Manhole Separation	Oct 08	Jan 10	Mar 11
	Interceptor Connection Relief/Floatables Control at Outfalls CAM002, CAM401B and CAM001	Oct 08	Jan 10	Oct 10
	MWR003 Gate and Rindge Ave. Siphon Relief	Apr 12	Aug 14	Oct 15
	Connection Relief/Floatables Control at SOM01A	Apr 12	Sep 13	Jun 14
Region-wide Floatables Control and Outfall Closings		Sep 96	Mar 99	Dec 07

(1) (2)

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

The following projects are court mandated, are recommended in MWRA's approved long-term CSO control plan, and are required to meet DEP water quality standards.

Project	Purpose
MWRA Managed	
North Dorchester Bay & Reserved Channel	Eliminate CSO discharges (25-year storm control) and provide a high level of separate stormwater control to minimize beach closings along North Dorchester Bay in South Boston.
Hydraulic Relief	Eliminate hydraulic restrictions between local and MWRA systems at two locations, in Boston (Outfall BOS017) and Cambridge (Outfall CAM005) to improve collection and conveyance of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles Rivers, respectively.
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, Chelsea Creek and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments.
BOS019 Storage Conduit	Control CSO discharges at Outfall BOS019, which discharges to the Little Mystic Channel in Charlestown, by storing most of the overflows and pumping them back into the interceptor system after storms.
Chelsea Trunk Sewer Relief	Control CSO discharges at Outfalls CHE002, CHE003, CHE004, and CHE008, which discharge to the Mystic/Chelsea Confluence and Chelsea Creek, by relieving a local trunk sewer and the MWRA Chelsea Branch Sewer and by repairing Outfall CHE008. The Chelsea Branch Sewer relief project also provides relief to the lower portion of the Revere Extension Sewer to improve service and control surcharging.
Union Park Detention Treatment Facility	Reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station, which discharges into the Fort Point Channel at Outfall BOS070, by providing fine screening, disinfection, dechlorination and a level of detention and solids removal.
Upgrade Existing CSO Facilities and MWRA Floatables Control	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 at MWRA CSO outfalls along the Lower Charles River Basin that are not associated with treatment facilities.
MWR003 Gate, Rindge Ave. Siphon Relief and SOM01A	Minimize CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan and provide sewer system flood control in extreme storms with a control gate at outfall MWR003 and relief of MWRA's Rindge Ave. Siphon. Upgrade local connection capacity and provide floatables control at the City of Somerville's Outfall SOM01A.
Charles River CSO Controls	Bring the MWRA's "Brookline Connection" into service and implement Cottage Farm influent gate controls and other facility inflow controls to minimize treated discharges to Lower Charles River Basin at the Cottage Farm facility.
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Fox Point CSO Facility.

Project	Purpose
South Dorchester Bay Sewer Separation (Commercial Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Commercial Point CSO Facility.
Stony Brook Sewer Separation	Minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Lower Charles River Basin, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of this project is intended to reduce the number of overflows to the Stony Brook Conduit from as many as 22 to 2 in a typical year and reduce annual CSO discharge volume by 99.7%.
Neponset River Sewer Separation	Eliminate CSO discharges to the Neponset River and protect 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.
Constitution Beach Sewer Separation	Eliminate CSO discharges at the Constitution Beach CSO Facility, allowing decommissioning of the facility, by separating combined sewer systems in parts of East Boston.
Cambridge Alewife Brook Sewer Separation	Minimize CSO discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge and upgrading local system connections to MWRA's Alewife interceptors. Close certain outfalls.
BWSC Floatables Control	Limit the discharge of floatable materials from five BWSC combined sewer outfalls along Boston Inner Harbor and Fort Point Channel.
Cambridge Floatables Control	Limit the discharge of floatable materials from Cambridge CSO outfalls that will remain following completion of MWRA's CSO control plan.
Fort Point Channel Sewer Separation	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. Also, relocate a CSO regulator and perform limited sewer separation to reduce CSO discharges from the Lower Dorchester Brook Sewer to Fort Point Channel with a MWRA funding cap of $2.03 million to BWSC.
Morrissey Boulevard Drain	Reroute stormwater away from the Outfall BOS087 tributary area and the North Dorchester Bay storage tunnel to Savin Hill Cove in large storms, to increase the level of stormwater control along the South Boston beaches provided by the tunnel.
Reserved Channel Sewer Separation	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.
Brookline Sewer Separation	Separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce treated CSO discharges to the Lower Charles River Basin at the Cottage Farm Facility.
Bulfinch Triangle Sewer Separation	Separate the combined sewers in a 61-acre area of Boston bounded by North Station, Haymarket Station, North Washington St., and Cambridge St. The project is intended to reduce CSO discharges to the Lower Charles River Basin and Upper Inner Harbor, reduce overflows to the Prison Point CSO Facility, and close outfall BOS049.

Project	Purpose
CSO Support	
CSO Planning and Support	The goals of the CSO Program are to minimize CSO discharges, greatly 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 that support these goals. 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, easements and construction permits required for CSO project implementation.

Expenditure Forecast (in $000s) and Program Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$860,683	$754,703	$105,980	$50,362	$29,237	$312,085	$25,944	$436

Program Status 11/11	90.0%	Status as % is approximation based on project budget and expenditures. MWRA and the CSO communities continue to make significant progress towards completing the remaining CSO projects in compliance with Schedule Seven. (See individual project status and background information).

Changes to Program Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$857,089	$860,683	$3,593	Dec-15	Dec-15	None	$305,765	$312,085	$6,319

Explanation of Changes

- **MWRA Managed +$4.1M**
  Project Changes: North Dorchester Bay CSO +$3.6M, MWR003 Gate & Siphon +$0.5M.

- **Community Managed +$0.2M**
  Project Changes: Cambridge Sewer Separation +$0.7M, Brookline Sewer Separation ($0.5M).

- **CSO Planning & Support ($0.7M)**
  Project Changes: Land/Easement ($0.7M).

CEB Impact

- Completion and start-up of these projects will result in a total net increase of $350,000 in FY17 for periodic cleaning of the tunnel. Also, $30,000 in FY14 for bathymetric survey and dive inspection of four outfalls.

S. 339 North Dorchester Bay CSO Project

Project Purpose and Benefits

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

The project will eliminate CSO discharges and provide 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 filed with MEPA in 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. where swimming and/or shell fishing occur).

Project History and Background

Under MWRA's original (1997) recommended plan for CSO control in South Boston, CSO flows along North Dorchester Bay and the Reserved Channel would be captured by two consolidation conduits (near-surface tunnels). In small storms, the tunnels would hold all CSO and stormwater flows and be dewatered, after each storm, to the South Boston Interceptor for transport to the Columbus Park Headworks and Deer Island. In storms when flows exceed the tunnel storage 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, adjacent to the Massachusetts Bay Transportation Authority (MBTA) power plant. This proposed site and facility was designated "Site J."

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 suspended design work on all elements of the project 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 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 calls for a larger diameter tunnel along the North Dorchester Bay beaches, sized to provide storage of 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 will be dewatered with a 15 mgd pumping station to be located at Massport's Conley Terminal. At the upstream end of the tunnel, a ventilation building to provide tunnel ventilation will be constructed adjacent to CSO outfall BOS087 and the State Police building. Surface piping, diversion chambers and control gates will 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 Hill Cove (South Dorchester Bay) in storms greater than the one-year design storm, to further increase the level of stormwater control afforded by the project to the beaches and to dedicate the tunnel to CSO control in the largest storms. 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 that discharges into Pleasure Bay Beach to the Reserved Channel, which does not support primary contact recreation.

MWRA began design of the revised plan for North Dorchester Bay in August 2004. In June 2005, MWRA filed a motion with the Federal District Court seeking revisions to the court milestones to substitute the original plan and schedule for North Dorchester Bay and the Reserved Channel with the new plans and a new schedule. The Court allowed the motion on June 30, 2005. In compliance with the revised court milestones, MWRA commenced construction of the North Dorchester Bay tunnel in August 2006 and completed construction of the Pleasure Bay storm drain improvements in March 2006. MWRA completed the North Dorchester Bay tunnel and related facilities (including dewatering pumping station, sewers and ventilation building) in May 2011, in compliance with Schedule

Seven. For the Morrissey Boulevard storm drain, the revised milestones required MWRA, in cooperation with BWSC, to commence design by June 2005, commence construction by December 2006, and complete construction by June 2009.

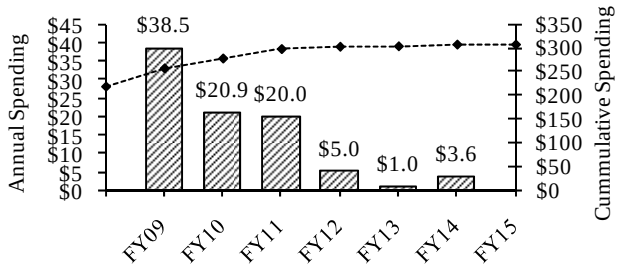
Scope

Sub-phase	Scope
Design/ESDC: Tunnel and Pleasure Bay	Design and engineering services during construction for the North Dorchester Bay tunnel and CSO/stormwater control structures and the Pleasure Bay drainage improvements; preliminary design for the dewatering pump station, sewers and ventilation building.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater control structures.
Dewatering Pump Station & Sewers Construction	Construction of the 15 mgd dewatering pump station at Conley Terminal and connecting sewers.
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, including final design review and assistance during facilities start-up and optimization. Start-up activities for the CSO tunnel and facilities are included.
Pleasure Bay Construction	Construction of Pleasure Bay drainage improvements.
Final Design ESDC/CSO Facilities	Final Design and engineering services during construction for the dewatering pump station, sewers and ventilation building.
Ventilation Building Construction	Construction of the ventilation building on DCR land at the upstream end of the tunnel.
Communications Systems	Installation of communications systems at the Dewater Pumping Station and Ventilation Building to include antennas, repeaters and radios.
North Dorchester Outfall Dredging/Cleaning Study/Design and Construction	This project includes cleaning/dredging the remaining four outfalls that can discharge to the beaches of North Dorchester Bay to maintain service for the North Dorchester Bay CSO Project in the long-term.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$227,854	$218,375	$9,479	$4,959	$960	$85,252	$3,560	$0

North Dorchester Bay



Project Status 11/11	96.9%	Status as % is approximation based on project budget and expenditures. The CSO storage tunnel, dewatering pump station & sewers and ventilation building were substantially complete and brought into full environmental service in May 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$224,252	$227,854	$3,602	Feb-13	Feb-13	None	$85,205	$85,252	$47

Explanation of Changes

- Project cost changed primarily due to updated cost estimate for North Dorchester Outfall Dredging, final cost adjustments for Tunnel & Facilities Construction Management Services and final change order estimates for Dewater Pump Station & Sewers and Ventilation Building contracts. Project cost increase partially offset by final change order estimates for Tunnel Construction.

CEB Impact

- Estimate of $350,000 in FY17 for periodic cleaning of the tunnel. Also, $30,000 in FY14 for bathymetric survey and dive inspection of four outfalls.

S. 347 East Boston Branch Sewer Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *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 using a combination of construction methods including microtunneling, pipe bursting and open cut. Some were rehabilitated using relining method. The rehabilitation construction contract commenced in March 2003 and was substantially completed in May 2004. Other design and construction was delayed pending completion of a project reassessment to assure cost benefit. Regulatory agreement that the original hydraulic relief project is the appropriate plan for East Boston CSO control was achieved in March 2006. In June 2006, Design 2/CS was awarded for completion of design and construction administration for the microtunneling and pipebursting contracts. In July 2008, the East Boston Branch Relief Sewer contract (microtunneling) was awarded. In April 2009, Sections 38 & 207 Replacement contract (pipebursting) was awarded. Construction of the project attained substantial completion in July 2010.

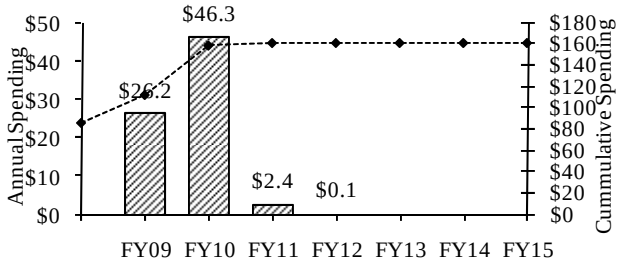
Scope

Sub-phase	Scope
Design/CS/RI	Design, project reassessment, and construction administration/resident inspection for rehabilitation contract.
Design 2/CS	Completion of design for replacement of sewers by microtunneling and pipebursting contracts, and construction administration for these contracts.
Resident Inspection Services	Resident Inspection Services for the Design 2 construction contracts.
East Boston Branch Relief Sewer Construction	Construction of 13,500 feet of replacement sewers primarily by microtunneling.
East Boston Branch Sewer Rehab Construction	Rehabilitation of 5,400 feet of existing sewer.
Sections 38 & 207 Replacement Construction	Replacement of 6,000 feet of existing sewers by pipe bursting.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
85,710	$85,599	$111	$111	$0	$75,004	$0	$0

East Boston Branch Sewer Relief



Project Status 11/11	99.8%	Status as % is approximation based on project budget and expenditures. The rehabilitation contract was substantially complete in May 2004. Design 2/CS was awarded in June 2006. East Boston Branch Relief Sewer and Section 38 & 207 construction contracts were substantially complete in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY11	FY12	Chge.	FY12	FY13	Chge.
$85,715	$85,710	($5)	Jul-10	Jul-10	None	$75,009	$75,004	($5)

Explanation of Changes

- Project cost and planned spending decrease due to final cost for Design 2 contract.

CEB Impact

- No impacts identified at this time.

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 that conveys overflows from the Alewife Brook Sewer to MWR003; and floatables control consisting of an in-line net in outfall MWR003. In 2009, MWRA moved the recommended interceptor connection relief and floatables control at Somerville Outfall SOM01A to this project from the Cambridge Floatables Control project in the CIP. 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 are required by the Court Order and by conditions in the Alewife Brook/Upper Mystic River CSO Variance extension, last issued by DEP on September 1, 2010, and expected to be sequentially reissued through 2020.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction.
Construction 1	Interceptor connection relief and floatables controls at outfall SOM01A.
Construction 2	MWR003 Rindge Ave siphon upgrades (150 feet), floatables control, hydraulic lift gate and controls.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$4,169	$0	$4,169	$60	$370	$430	$3,739	$0

Project Status 11/11	0.0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded by April 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$3,682	$4,169	$487	Nov-15	Oct-15	(1) mos.	$430	$430	$0

Explanation of Changes

- Revised cost estimate for additional construction management services and construction estimate for floatables controls at outfall SOM01A.

CEB Impact

- No impacts identified at this time.

S. 357 Charles River CSO Controls

Project Purpose and Benefits

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

Implements wastewater system optimization measures, including structural and operational improvements, to further reduce CSO discharges to the Charles River Basin at and near the Cottage Farm CSO Facility. Also, evaluates the cost and benefit of making additional hydraulic interconnections within the interceptor systems related to Cottage Farm. This project is required to minimize CSO discharges to the Charles River Basin in accordance with the long-term control plan accepted by EPA, DEP and the Federal Court in April 2006.

Project History and Background

In response to the long-term CSO control plan MWRA 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, and required MWRA to identify and evaluate additional measures that could further reduce CSO discharges to the Basin. In August 2005, MWRA recommended a series of optimization measures and investigations to further lower CSO discharges, including 1) bringing into operation the existing but unutilized 54-inch "Brookline Connection" that crosses beneath the Charles River from the Cottage Farm influent chamber (Cambridge side) to an improved connection with the South Charles Relief Sewer (Boston side); 2) developing gate controls and a control system to optimize and potentially automate the operation of the existing Cottage Farm influent gates; 3) providing a piped interconnection between the two overflow chambers outside the Cottage Farm facility and optimizing overflow weir settings within each chamber; 4) investigating and recommending a strategy for optimizing the transfer of flows between the Charles River Valley Sewer and the South Charles Relief Sewer using, if appropriate and beneficial, existing gates located at three connections between these interceptors; and 5) evaluating the feasibility of improving hydraulic performance along the North Charles Metropolitan Sewer and the North Charles Relief Sewer by creating new connections or modifying existing connections between these interceptors and by adjusting overflow regulators along these interceptors.

The Cottage Farm Brookline Connection Inflow Controls construction contract reached substantial completion in June 2009.

Scope

Sub-phase	Scope
Cottage Farm Brookline Connection Inflow Controls Design CA	Design/CA services to bring the 54-inch Brookline Connection into operation; develop controls and operational strategy for the existing Cottage Farm influent gates and provide a piped interconnection between the two overflow chambers outside the Cottage Farm facility.
Cottage Farm Brookline Connection Inflow Controls Construction	Construction and implementation of the above improvements and controls, as recommended in design.
Interceptor Optimization Evaluations and Design CS/RI	Study, Design and CS/RI to implement an operational strategy for optimizing the transfer of flows between the Charles River Valley Sewer and the South Charles Relief Sewer using existing gates and to evaluate the feasibility of improving hydraulic performance along the North Charles Metropolitan Sewer and the North Charles Relief Sewer by creating new connections or modifying existing connections between these interceptors and by adjusting overflow regulators along these interceptors.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$3,633	$3,633	$0	$0	$0	$2,532	$0	$0

Project Status 11/11	100%	Status as % is approximation based on project budget and expenditures. Design/CA contract for the Brookline Connection/Cottage Farm was completed in June 2010. Interceptor Optimization Engineering/Design was completed in January 2011. Cottage Farm Brookline Connection and Inflow Controls Construction was completed in June 2009 and wetlands restoration completed in June 2011. Construction to optimize interceptor gate controls was deleted from the CSO plan and Schedule Seven by the Federal District Court in April 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$3,633	$3,633	$0	Oct-11	Oct-11	None	$2,532	$2,532	$0

Explanation of Changes

- Project completed.

CEB Impact

- No impacts identified at this time.

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 71,000 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 and commenced construction in April 1999. BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007, and MWRA decommissioned the Fox Point CSO Facility in November 2007

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of 71,000 feet of new storm drains and appurtenant structures, managed by BWSC. 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, individual building downspout removal and street paving are also included.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$54,187	$53,763	$425	$425	$0	$425	$0	$0

Project Status 11/11	99.9%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$54,171	$54,187	$16	Nov-06	Nov-06	None	$409	$425	$16

Explanation of Changes

- Project cost changed due to revised estimate for Design/Construction Services.

CEB Impact

- Impacts absorbed within the current year's CEB.

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 and commenced construction in April 1999. BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007, and MWRA decommissioned the Commercial Point CSO Facility in November 2007. BWSC is conducting flow monitoring and hydraulics evaluations to verify sufficient inflow has been removed from the sewer system, that the project performance objectives for the sewer system have been achieved, and that the CSO regulators can remain closed permanently. Downspout disconnection and inflow removal are expected to continue through June 2013.

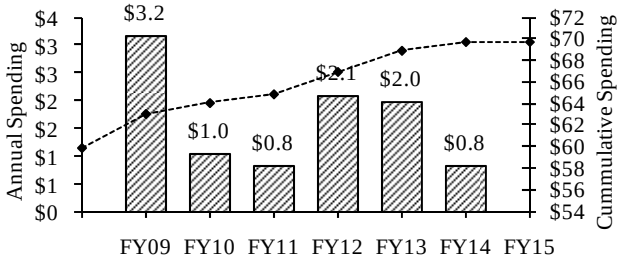
Scope

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, managed by BWSC. 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, individual building downspout removal and street paving are also included.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$64,725	$59,871	$4,855	$2,076	$1,965	$9,021	$814	$0

South Dorchester Bay
Sewer Separation -Commercial Point



Project Status 11/11	93.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$64,725	$ 64,725	$0	Jun-14	Jun-14	None	$8,207	$9,021	$814

Explanation of Changes

- Spending changed due to updated spending projections from Boston Water & Sewer Commission.

CEB Impact

- Impacts absorbed within the current year's CEB.

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 managed by BWSC with MWRA funds and oversight. The CIP reflects the 1997 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 and completed the sewer separation work in September 2006, in compliance with Schedule Seven. Street paving, flow metering and analyses to verify the project's intended hydraulic performance and level of CSO control was performed in 2007 and 2008.

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$44,333	$44,198	$134	$134	$0	($721)	$0	$0

Project Status 11/11	99.7%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$44,333	$44,333	$0	Sep-06	Sep-06	None	($719)	($721)	($2)

Explanation of Changes

- N/A

CEB Impact

- No impacts identified at this time.

S. 346 Cambridge 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 and upgrading local connections to MWRA's interceptors. 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. The City of Cambridge executed a contract for design services in January 1997, and completed the first four, early construction contracts in 2002.

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 common manholes in 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 the 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. In April, 2006 the court schedule was amended to incorporate milestones for each of the components of the revised recommended plan.

Cambridge 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. However, Cambridge was unable to move forward with construction of the new stormwater outfall and constructed stormwater wetland of Contract 12 due to delays in obtaining relief from the citizens' appeal of the Superseding Order of Conditions that was issued by Massachusetts Department of Environmental Protection ("DEP") in March, 2005, pursuant to the Wetlands Protection Act. The stormwater outfall and constructed stormwater wetland are critical early components of the long-term CSO control plan for the Alewife Brook and are necessary to support planned sewer separation in the CAM004 area and the closing of the CAM004 regulator. Administrative law decisions were issued in the spring

of 2007, allowing DEP to issue a final superseding order of conditions. On June 1, 2007 the Acting DEP Commissioner issued a final decision sustaining the earlier superseding order DEP had issued. On June 12, 2007, the citizens group that had appealed the earlier orders filed a request for reconsideration of the DEP final decision, but DEP formally declined this request on October 16, 2007. On November 14, the appellants appealed this final DEP decision to Superior Court. Notwithstanding the Superior Court filing, the City of Cambridge now has wetlands approval to construct Contract 12. Design and construction activities related to the revised Alewife Brook CSO control plan were delayed by at least 27 months beyond the Schedule Seven milestones due to the wetlands appeals.

On July 16, 2008, MWRA's Board of Director's approved full funding of MWRA's estimated cost share for the Alewife Brook (CAM002-004) Sewer Separation project and Cambridge Floatables Control at $60 million and authorized the City of Cambridge to move forward with design and construction. In October 2008, the City of Cambridge resumed design of the CAM004 stormwater basin and outfall, commenced design of CAM400 manhole separation, and commenced design of the interconnections relief and floatables control work. The City of Cambridge commenced construction of the CAM400 manhole separation project and the interconnections relief and floatables project under one construction contract in January 2010 and completed all work in March 2011. Cambridge issued notice to proceed with Contract 12, stormwater basin and outfall, in April 2011.

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Four early construction contracts for CAM004 sewer separation work were completed in 2004. The remaining construction scope of work for this project is outlined above.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$56,391	$28,189	$28,202	$7,618	$11,260	$28,616	$9,324	$0

Project Status 11/11	55.2%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$55,702	$56,391	$689	Dec-15	Dec-15	None	$27,926	$28,616	$690

Explanation of Changes

- Project cost and spending changed primarily due to change orders and expected change orders for contract 12 partially offset by revised estimated change orders for CAM400.

CEB Impact

- No impacts identified at this time.

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 outfall BOS073 and implementing system optimization measures at BOS072. 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 (1997 FEIR recommended plan) 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 the Federal Court Order in the Boston Harbor Case. On February 27, 2004, MWRA's motion to revise the court schedule was approved by the Federal Court.

MWRA and BWSC agreed that this project, like other sewer separation projects in the CSO control plan, would 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.

The project is intended to eliminate CSO discharges in a typical year at outfalls BOS072 and BOS073. On March 30, 2007, BWSC substantially completed construction of the project, in compliance with Schedule Seven. BWSC installed 4,550 linear feet of new storm drain and completed weir raising and floatables controls at the related CSO regulators. BWSC is conducting flow monitoring and hydraulics evaluations to verify that the CSO control goals have been met.

To reduce CSO discharges from the Lower Dorchester Brook Sewer to Fort Point Channel and to bring CSO discharges to the Fort Point Channel in line with the long-term level of control an additional phase was added to this project. BWSC has agreed to relocate a CSO regulator and perform limited sewer separation with a MWRA funding cap of $2.03 million.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of approximately 4,550 linear feet of new storm drains and appurtenant structures tributary to outfalls BOS072 and BOS073, managed by BWSC. 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 are also included.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$12,047	$11,933	$114	$114	$0	$3,756	$0	$0

Project Status 11/11	99.7%	Status as % is approximation based on project budget and expenditures. Construction reached substantial completion in March 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$12,047	$12,047	$0	Dec-10	Dec-10	None	$3,756	$3,756	$0

Explanation of Changes

- N/A

CEB Impact

- No impacts identified at this time.

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 2001, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating the 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 revised recommended plan included rerouting stormwater away from the North Dorchester Bay storage tunnel to Savin Hill Cove in storms greater than the 1 year design storm, in order to provide a 5-year level of stormwater control along the South Boston beaches. BWSC began design in June 2005 and commenced the first construction contract in December 2006. BWSC awarded a second and much larger construction contract in July 2007. BWSC substantially completed all work associated with this project in July 2009.

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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$32,899	$35,585	($2,686)	($2,896)	$209	$18,223	$0	$0

Project Status 11/11	98.2%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in July 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$32,899	$32,899	$0	Jun-09	Jun-09	None	$18,197	$18,223	$26

Explanation of Changes

- Spending changed due to updated spending projections from Boston Water & Sewer Commission.

CEB Impact

- No impacts 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 the Reserved Channel by separating combined sewer systems in an area of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to the 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

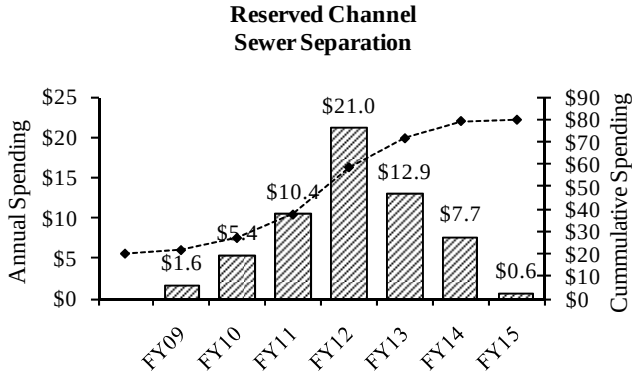
In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and the Reserved Channel. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, which recommended a new plan for controlling CSO discharges to the Reserved Channel, by separating sewers in a 355 acre drainage area tributary to the Channel. Schedule Seven in the Federal District Court Order requires MWRA, in cooperation with BWSC, to commence design by July 2006, commence construction by May 2009 and complete construction by December 2015. In May 2009, BWSC issued the Notice to Proceed for the first of nine planned construction contracts for this project and has since issued notices to proceed for four additional construction contracts.

Scope

Sub-phase	Scope
Design CS/RI	Design services managed by BWSC for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of new storm drains and appurtenant structures within a 355-acre area tributary 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$62,323	$20,094	$42,229	$21,045	$12,923	$51,345	$8,261	$0



Project Status 11/11	40.0%	Status as % is approximation based on project budget and expenditures. BWSC began design in July 2006 and completed the first of nine construction contracts (Contract 2) in December 2010. BWSC awarded contracts 2, 3A, 3B, and 7 in FY11.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$62,323	$62,323	$0	Dec-15	Dec-15	None	$45,425	$51,345	$5,920

Explanation of Changes

- Project spending changed due to updated spending projections from BWSC.

CEB Impact

- No impacts identified at this time.

S. 360 Brookline Sewer Separation

Project Purpose and Benefits

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

To minimize CSO discharges to the Charles River by separating combined sewer systems in several areas of Brookline. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Charles River. 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

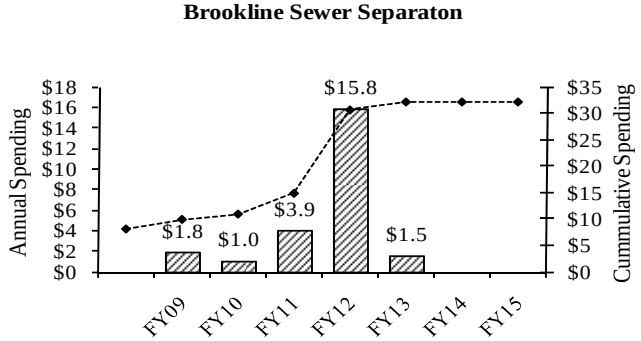
In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance 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. This project will separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce discharges to the Charles River at the Cottage Farm facility.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by the Town of Brookline.
Construction	Construction of new storm drains and appurtenant structures within a 72-acre tributary to MWRA's Charles River Valley Sewer, managed by the Town of Brookline.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$25,413	$8,037	$17,376	$15,845	$1,532	$24,142	$0	$0



Project Status 11/11	80.3%	Status as % is approximation based on project budget and expenditures. The Town of Brookline began design in November 2006, completed the first of two construction contracts in November 2009 and commenced Contract 2 in January 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$25,930	$25,413	($517)	Nov-12	Nov-12	None	$24,659	$24,142	($517)

Explanation of Changes

- Project cost and spending changed primarily due to updated cost estimate for MWR010 work partially offset by additional construction services.

CEB Impact

- No impacts identified at this time.

S. 361 Bulfinch Triangle Sewer Separation

Project Purpose and Benefits

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

To minimize CSO discharges to the Charles River by separating combined sewer systems in several areas of Boston, bounded by North Station, Haymarket Station, North Washington Street, and Cambridge Street. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Charles River. 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 response to the long-term CSO control plan MWRA 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 the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance 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. In 2005, MWRA identified and recommended a set of system optimization measures and inflow removal projects to further reduce treated CSO discharges at Cottage Farm. This project will separate the combined sewers in the area of Boston bounded by North Station, Haymarket Station, North Washington St, and Cambridge St. The project is intended to reduce discharges to the Charles River, reduce overflows to the Prison Point CSO facility and allow BWSC to permanently close outfall BOS049. BWSC attained substantial completion of this project in July 2010.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction to separate the combined sewers in the area of Boston including North Station, Haymarket Station, North Washington St, Cambridge St and immediate environs, managed by BWSC.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$9,986	$9,857	$128	$128	$0	$9,489	$0	$0

Project Status 11/11	98.7%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$9,986	$9,986	$0	Jul-10	Jul-10	None	$9,489	$9,489	$0

Explanation of Changes

- N/A

CEB Impact

- No impacts 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 and their impacts, eliminate beach closings caused by CSOs, and maximize the beneficial use of CSO receiving waters, in accordance with national and state CSO policies and in compliance with state water quality standards. 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 were completed in 1994, and a Final CSO Facilities Plan and Environmental Impact Report 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 and has extended this variance several times. DEP issued a three-year variance for Alewife Brook and Upper Mystic CSOs in March 1999 and has extended the term of the variance several times. Consultant services have included assistance to 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 in the 1990s, 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 MWRA's 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.

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; assessment of Cottage Farm CSO Facility performance: 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 (through 2003), in compliance with provisions in MWRA's new NPDES permit.

This project also supports land and easement acquisitions and funds permit costs for all MWRA managed projects in the long-term CSO Control Plan.

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. Development of the 1997 Facilities Plan/EIR and subsequent reassessments of, and revisions to, that plan.
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. Also includes funding for Somerville Baffle Manhole Separation in the long-term control plan.
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 design and construction contracts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$50,449	$49,007	$1,442	$742	$18	$4,679	$246	$436

Project Status 11/11	98.3%	Status as % is approximation based on project budget and expenditures. Master Planning was substantially complete in September 2004. On September 14, 2005, the MWRA Board of Directors approved an MOU with Massport that will govern the Authority's construction on land owned by Massport, including the tunnel mining shaft and the dewatering pump station.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$51,128	$50,449	($679)	Dec-20	Dec-20	None	$5,348	$4,679	($669)

Explanation of Changes

- Project cost and spending decreased due to re-negotiation of the terms of the temporary lease for the Conley Terminal Easement Agreement.

CEB Impact

- No impacts 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 over 5,000 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 Phase1 and 2 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 June 24, 1998, an additional $40 million for Phase 4 on June 13, 2001, an additional $40 million for Phase 5 on June 23, 2004, an additional $40 million for Phase 6 on June 28, 2006, an additional $40 million for Phase 7 and an additional $40 million for Phase 8 on June 24, 2009. The grant/loan ratio was revised for Phases 3 through 8 to 45% grants and 55% interest-free loans. All program funds are allocated to the 43 member 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 FY2021.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$122,585	$101,943	$20,642	$4,546	$3,839	$18,928	$18,636	($6,379)

Project Distribution Status 11/11	70.5%	Through November 2011, MWRA has distributed $82.6 million in grants and $129.2 million in interest-free loans to fund over 415 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Project Repayment Status 11/11	60.7%	Through November 2011, a total of $108.0 million has been repaid by member communities receiving interest-free loans.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$122,585	$122,585	$0	Jun-26	Jun-26	None	$15,859	$18,928	$3,069

Explanation of Changes

- Spending increased due to the timing of loan distributions and repayments.

CEB Impact

- No impacts identified at this time.

Waterworks System Improvements

Integrated Water Supply Improvement Program

MWRA's Integrated Water Supply Improvement Program is a 10-year, $1.7 billion initiative consisting of a series of projects to protect reservoir watersheds, build new water treatment and transmission facilities, and upgrade distribution storage and MWRA and community pipelines. The program improves each aspect of the water system from the watersheds to the consumer to ensure that high quality water reliably reaches to MWRA customers' taps. The program began in 1995 and the principle components have been completed by 2005. The main program components are as follows:

Watershed Protection The watershed areas around Quabbin and Wachusett Reservoirs are pristine areas with 85% of the land covered in forest or wetlands and about 75% protected from development by direct ownership or development restrictions. MWRA works in partnership with the Department of Conservation and Recreation (DCR) to manage and protect the watersheds. MWRA also finances all the operating and capital expenses for the watershed activities of DCR, including CIP funding for a completed sewer project and on-going land acquisition activities.

MetroWest Water Supply Tunnel The 17-mile-long 14-foot diameter tunnel connects the new John J. Carroll Water Treatment Plant at Walnut Hill in Marlborough to the greater Boston area. It is now the main transmission line moving water into the metropolitan Boston area. Once inspection, repairs and interconnections are complete, the old Hultman Aqueduct will be used in parallel as the back-up transmission link. Construction began on the tunnel in 1986 and the completed tunnel placed in service in October 2003.

John J. Carroll Water Treatment Plant The new water treatment plant in Marlborough began operating in July 2005 and it has a maximum day capacity of 405 million gallons per day. This project consolidates all treatment steps into one plant which uses ozone for primary disinfection because ozone is a strong disinfection agent against pathogens such as *Cryptosporidium* while reducing levels of chlorine disinfection byproducts. Ultraviolet light treatment is being added as a second primary disinfection process. The plant also provides corrosion control by adding carbon dioxide and sodium carbonate to raise the water's pH and alkalinity and thus control lead leaching from home plumbing fixtures. The treatment process concludes with fluoridation and residual disinfection with chloramines. A 45 million gallon storage tank on the site allows for daily variation in demand and flexibility in plant operation.

Water Storage Tanks As required by Massachusetts Department of Environmental Protection (DEP) rules, MWRA is building covered storage tanks to replace open distribution storage reservoirs near cities and towns to lessen the risk that contaminants will get into the tap water. A 20 million gallon tank in Stoneham replaced the open Fells Reservoir, two 12.5 million gallon circular tanks in Ludlow replaced the Nash Hill Reservoir and the 20 million gallon Loring Road tank replaced the Weston Reservoir. The largest tank, the 115 million gallon Norumbega Covered Storage Facility replaced the open Norumbega Reservoir in Weston and was placed in full service in 2004. In 2009, MWRA completed construction of a 20 million gallon tank to replace the currently off-line Blue Hills Reservoir in Quincy. MWRA's Water Master Plan also identifies additional storage facilities, including the Spot Pond Storage Facility, that are currently scheduled to be built beginning in FY12.

Pipeline Rehabilitation An important component of the overall Integrated Water Supply Improvement Program is focus on the long-term rehabilitation of older, unlined cast iron water mains in the MWRA and community systems. Water in direct contact with the iron surface corrodes through both biological and chemical processes resulting in tuberculation, thus narrowing the pipes and providing surfaces for bacteria growth. These processes also often result in consumer complaints about rusty water. To reap the full value of the other investments in the water system, MWRA decided to replace or rehabilitate the poor quality pipe particularly given that as of 1993, more than 80 percent of MWRA pipes were unlined. Since then, MWRA has been proceeding with a program of replacing or rehabilitating (normally through cleaning and lining) unlined cast iron mains. Furthermore, in 1998, almost half (47%) of community pipes were unlined. In 1999, MWRA created a $250 million zero-interest loan program to encourage and facilitate rehabilitation of local mains.

S. 542 Carroll 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 was 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. Ultraviolet light disinfection facilities will be added to comply with new drinking water regulations.

Project History and Background

MWRA provides drinking water to 2.3 million people in 44 metropolitan Boston communities. The source water supply comes from the Quabbin and Wachusett reservoirs; two large, high quality water bodies in Central Massachusetts. About 50% of the water flowing from the Wachusett Reservoir comes first from the Quabbin Reservoir, the larger reservoir to the west. MWRA received a waiver from filtration requirements for the Quabbin Reservoir in 1991 from the Massachusetts Department of Environmental Protection (Mass DEP), the agency granted primacy to enforce the SDWA by the United States Environmental Protection Agency (USEPA) in Massachusetts.

In June 1993, MWRA negotiated an administrative consent order with DEP setting forth the steps needed to comply with the Surface Water Treatment Rule (SWTR). The consent order required MWRA to find a site, design a filtration plant, and build it, unless MWRA along with MDC could demonstrate to Massachusetts DEP no later than 1998 that the system met the criteria for avoiding filtration and therefore that filtration was not required. After an extensive research and decision-making process, the MWRA Board of Directors voted in October 1998 to request a waiver of the filtration requirements from Mass DEP and 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. 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 when the plant was complete.

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 sued under its SDWA "overfiling" rights, seeking to require MWRA to build a filtration plant and contending that the SDWA allowed no other option. After an extended trial, on May 5, 2000 Judge Stearns issued his decision that MWRA currently complies 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 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.

The new Carroll Water Treatment Plant (formerly Walnut Hill Treatment Plant) was placed in service in July 2005. It provides treatment necessary to fully comply with all current drinking water regulations. EPA issued new regulations in January 2006 for microbial protection (Long Term 2 Enhanced Surface Water Treatment Rule) and disinfection byproduct control (Stage 2 Disinfectants/Disinfection Byproducts Rule). MWRA will not need to make

changes to comply with the Stage 2 D/DBP rule, but the LT2ESWT rule will require a second primary disinfectant and a somewhat more stringent inactivation of cryptosporidium than the plant's current design. This project includes the addition of an ultraviolet light disinfection treatment process at the plant to meet requirements of the LT2ESWT rule.

Scope

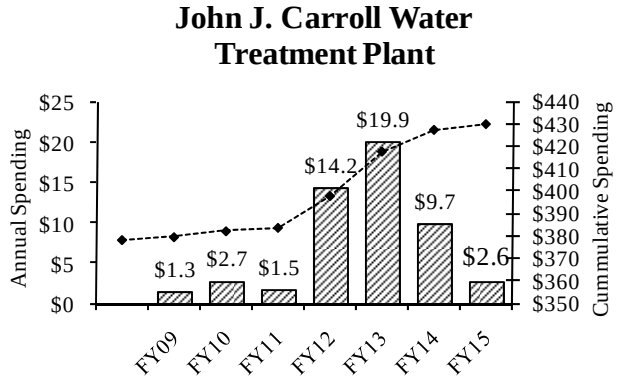
Sub-phase	Scope
Study 1	Investigation of the potential impacts of SDWA amendments on the MWRA system and evaluation of the need, feasibility, and benefits of improved treatment processes.
Study 2	Evaluation of alternative filtration, disinfection, and corrosion control processes to determine the most 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.
Cryptosporidium Inactivation Study	Determination of the site-specific efficacy of inactivating *Cryptosporidium* 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. These buildings will be converted from water treatment/quality uses to expanded maintenance shops, SCADA emergency OCC facilities for the new water treatment plant. In addition, the contract includes demolition of old electrical building, some miscellaneous items at Cosgrove Intake Building and replacement of the roof and HVAC system for Water Quality Lab at Southboro. Also, buildings rehab will incorporate achievable LEED (Leadership on Energy & Environmental Design) goals during detail design.
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 CWTP.
Professional Services	As needed legal, insurance, design, and construction specialty services for the Carroll Water Treatment Plant.
Marlborough MOA	Agreement to mitigate the impacts of the construction of the Carroll Water Treatment Plant on Marlborough.
WHWTP – MECo	Relocation of electric power lines.
Site Security Services	Site security services at the Carroll Water Treatment Plant.
CSX Crossing	Railroad track improvements adjacent to CWTP.
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 occurred 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 Carroll 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 CWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the CWTP including electrical engineering, HVAC engineering, mechanical engineering, civil engineering and a variety of geotechnical, environmental, and architectural technical assistance.
Ancillary Modifications Construction 1	Follow-up construction from the As-Needed Technical Assistance contracts.
Ancillary Modifications Construction 2	Address improvements in reliability, optimization of plant performance and/or reduce plant operating costs.
Ancillary Mods Design 3 and 4	Additional As-Needed design services as a follow-up for additional improvements at the Carroll Water Treatment Plant.
Technical Assistance #5 and #6	Continuation of as-needed engineering technical assistance for ancillary modifications design and plant optimization.
Carroll Water Treatment Plant Storage Tank Roof Drainage System Repair	Investigate the cause of the trench drainage system's poor performance. Design and construct a solution that addresses the cause. Poor roof drainage could possibly result in water quality problems.
Technical Assistance #7 and #8	The next two phases of as-needed engineering technical assistance for ancillary modifications design and plant optimization.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$427,971	$378,178	$49,792	$14,167	$19,855	$39,488	$15,771	$0



Project Status 11/11	89.3%	Status as % is approximation based on project budget and expenditures. The Ultraviolet Design contract was awarded in April 2008. Closed Loop Cooling System, a contract of Ancillary Modifications Construction 2 subphase, was substantially complete in April 2010. Technical Assistance contracts 5 and 6 commenced in September 2010. Second Gaseous Oxygen Line was awarded in February 2011. Carroll Ultraviolet Disinfection Facility Construction was awarded in April 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$426,797	$427,971	$1,174	Jan-16	Dec-16	12 mos.	$33,424	$39,488	$6,064

Explanation of Changes

- Project cost increase due to new projects added for Technical Assistance phases 7 and 8.
- Schedule shifted for updated schedule for Wachusett Algae Construction due to project priorities.
- Spending increased due to updated cash flow for the Carroll Water Treatment Plant Ultraviolet Disinfection Construction and new projects noted above. This increase was partially offset by revised schedule for Ancillary Modifications Construction 2 contract.

CEB Impact

- Expect $200,000 in FY14 for utilities and chemicals and $105,000 for operating costs for UV in FY15. Expect $25K for Wachusett Algae Facility in FY17 and $25K in FY18 for utilities.

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. This project also includes the addition of ultraviolet treatment as a second primary disinfectant.

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. MWRA and DEP signed a consent order covering activities to support the continuation of the filtration waiver under the Surface Water Treatment Rule (SWTR) in December 1991. It required new disinfection facilities and the 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. In February 1994, MWRA submitted to DEP a consent order schedule for design and construction of permanent disinfection facilities, which were needed to comply with the federal and state drinking water standards. 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 (Enhanced Surface Water Treatment Rule (ESWTR) and Disinfectant/Disinfection By-Products Rule (D/DBPR)), and discussions regarding a possible *Cryptosporidium* rule raised questions regarding the long-term efficacy of these treatment technologies and whether future modifications would be required. A life cycle cost analysis performed in 1995 as part of an action plan for the CVA system 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. MWRA issued the notice to proceed for construction of the chlorination and chloramination facilities in November 1998. After commencement of field construction activities in March 1999, citizen opposition arose relative to the sitting of the secondary disinfection facility resulting in the cancellation of construction of the secondary disinfection facility in Ludlow. Instead, MWRA built a CT monitoring station 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, which is now closed out.

EPA issued new regulations in January 2006 (LT2ESWTR and Stage 2 D/DBP, see Carroll Water Treatment Plant project description) that will require cryptosporidium inactivation and the addition of a second primary disinfectant to the CVA system. MWRA conducted an evaluation of the application of ultraviolet technology and determined it was the most cost-effective and efficient upgrade for the system. Design and construction of the addition of UV treatment to the existing Ware Disinfection Facility are included in this project.

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 CS/RI, and Construction	Evaluation and implementation of ultraviolet technology at the Quabbin Disinfection Facility to meet new regulations requiring cryptosporidium inactivation and two primary disinfectants for unfiltered systems.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$17,667	$10,767	$6,899	$306	$4,367	$5,297	$2,226	$0

Project Status 5/11	61.1%	Status as % is approximation based on project budget and expenditures. Completed disinfection and contact time monitoring facilities in September 2000. The Quabbin Study/Pilot was completed in December 2005. Quabbin UVWTP Design CS/RI was awarded in September 2008 with the notice-to-proceed issued in December 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$17,686	$17,667	($20)	Aug-13	Aug-13	None	$5,443	$5,297	($146)

Explanation of Changes

- Project cost and spending changed primarily due to revised cost estimate and cash flow for Quabbin Ultra Violet Disinfection Construction.

CEB Impact

- Annual incremental operating costs for UV treatment are estimated at $22,000 in FY14.

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 has a capacity of 20 million gallons.

Project History and Background

Blue Hills Reservoir was constructed in the 1950's and was removed from active service in 1981 due to contamination from birds and animals. The reservoir is currently used as non-potable emergency supply. 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 surface mains and the Chestnut Hill emergency pump station to supply water to the Southern High service area in the event that the Dorchester Tunnel requires repairs. Two 10 million-gallon buried drinking water storage tanks are proposed to be constructed in the east end of the existing Blue Hills Reservoir. 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 was formed to participate in the EIR/Conceptual Design process.

The Blue Hills Working Group was formed in 1997 to review alternatives and met periodically for 3-1/2 years to provide input to the MWRA. MWRA has worked closely with various interested parties to include features that will mitigate environmental impacts and improve the look of the finished site.

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. The wetlands appeal was dismissed by the Superior Court in October 2006 and MWRA awarded a Design/Build contract in November 2006 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.
Roadway Resurfacing Design & Construction	Design and Construction for Roadway paving adjacent to the site.
Design/Build Field Oversight	Field oversight and administration of the Design/Build contract will be performed by in-house staff.
Design/Build	Design/Build of a 20 million gallon covered storage facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$40,680	$39,970	$710	$291	$23	$21,395	$396	$0

Project Status 5/11	98.3%	Status as % is approximation based on project budget and expenditures. Design/Build contract was awarded on November 15, 2006. The new tanks were put into service in August 2009. Construction contract reached substantial completion in April 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$40,695	$40,680	($15)	Jan-14	Jan-15	12 mos.	$21,457	$21,395	($62)

Explanation of Changes

- Project cost changed due to expected credit change order partially offset by inflation adjustments.
- Spending and schedule changed due to Roadway Resurfacing work being pushed out one year and expected credit change order.

CEB Impact

- The storage facilities will require periodic inspection, maintenance, and water quality testing.

S. 550 Spot Pond Storage Facility

Project Purpose and Benefits

☑ *Contributes to improved public health* ☑ *Improves system operability and reliability*

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

A new storage facility is required to meet the state and federal drinking water guidelines and MWRA's goal of providing a one-day supply of storage. With the Weston and Spot Pond Reservoirs removed from service, MWRA no longer meets the one-day supply goal.

Project History and Background

The Low Service System, which supplies 25% of the total metropolitan area demand, formerly had Weston Reservoir at its western end, where water was introduced into the system, and Spot Pond as its terminal reservoir at the northeast extremity. Due to transmission problems caused by old, corroded pipe with significantly reduced carrying capacity, this system gradually ceased to function properly and it became necessary, as a makeshift measure, to break this system into segments and transfer water from high service in order to serve large portions of the Low Service area.

The principal low service mains (Weston Aqueduct Supply Mains, Boston Low, and East and West Spot Pond Mains) have been rehabilitated and their capacity has been restored to as-new condition. Once Spot Pond is replaced with a covered distribution reservoir it will be possible to operate the system as it was originally designed. The new Weston Covered Storage Facility at Loring Road (constructed as part of the MetroWest Tunnel project) replaced the open Weston Reservoir. Spot Pond Storage Facility will replace Spot Pond Reservoir.

The new Spot Pond Storage Facility will be approximately 8 feet lower in elevation than the Weston Facility. At night, when water demand is low, the capacity of the Low Service transmission mains will be used to fill the Spot Pond tanks by gravity. During peak demand periods of the day, water will flow into the Low Service System from both Loring Road and Spot Pond storage tanks.

At 20 million gallon capacity, the Spot Pond Storage Facility will be the same size as that at Loring Road. Just as pressure reducing valves allow the tanks at Loring Road to be filled from the high service Norumbega Covered Storage, the Spot Pond Storage tank will be filled with water reduced in pressure from the WASM 4 Transmission Main.

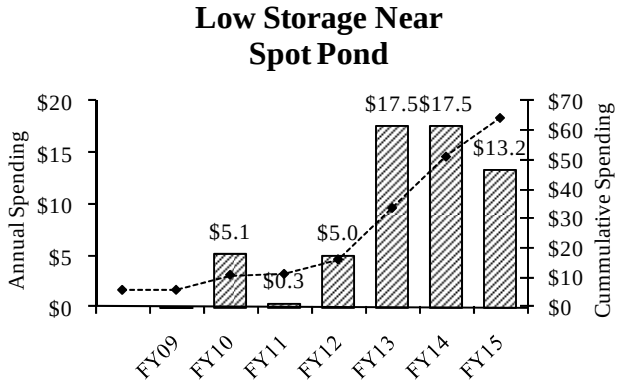
The Spot Pond Storage Facility will also include a buried backup pump station to provide redundancy to the Gillis Pump Station supplying the Northern High and Northern Intermediate High service areas.

Scope

Sub-phase	Scope
Environmental Reviews and Conceptual Design	Preliminary engineering for tank siting, environmental reviews and conceptual design.
Design/Build	Design and construction by a single contractor of a 20 million gallon water storage tank and pump station.
Owner's Representative	Provision of technical program management for the design/build contract procurement, monitoring, and administration.
Easements/Land Acquisition	To provide adequate land for construction of the water storage tank.
Early Construction Water Connection	Construction of piping and meter connection to replace existing water supply to be removed as part of tank construction.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$59,175	$5,702	$53,473	$4,992	$17,546	$28,007	$30,935	$0



Project Status 11/11	11.2%	Status as % is approximation based on project budget and expenditures. Design/ Build NTP was issued in November 2011. Early Construction Water Connection was awarded in June 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$71,696	$59,175	($12,521)	Sep-14	Nov-14	2 mos.	$39,564	$28,007	($11,557)

Explanation of Changes

- Project cost and spending decreased primarily due to actual award for the Design/Build being less than budget.

CEB Impact

- The storage facilities will require periodic inspection, maintenance, and water quality testing.

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 John J. Carroll 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

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 were deficient in several respects. First, the transmission system was 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. Enhancements and improvements to the reliability of the City Tunnel and the City Tunnel Extension are being planned as part of the Long term Redundancy 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 Directors 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.

In September 2005, the Board of Directors authorized an engineering services contract to rehabilitate the existing Hultman Aqueduct and to interconnect the MetroWest Tunnel with the Hultman Aqueduct. In the interim, Valve Chamber E-3 at Southborough was constructed in order to facilitate system operations and the demolition of an existing chlorine building was completed in preparation for construction of the interconnections.

In September 2009 construction began on Contract CP6A to interconnect the MetroWest Tunnel with the Hultman Aqueduct and to rehabilitate the Hultman Aqueduct from Shaft 4 in Southborough to Shaft 5 of the City Tunnels and to Shaft W of the MetroWest Tunnel in Weston. A second construction contract will be bid (CP6B) to rehabilitate the remainder of the Hultman Aqueduct from Shaft C of the Cosgrove Tunnel to Shaft l of the Southborough Tunnel, and to rehabilitate the top-of-shaft facilities at Shaft 4 of the Southborough Tunnel in Southborough.

Program Elements

The MetroWest Tunnel is 17.6 miles long with a 14-feet 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.

With the MetroWest Tunnel and the John Carroll Water Treatment Plant now in service, 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-feet 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.

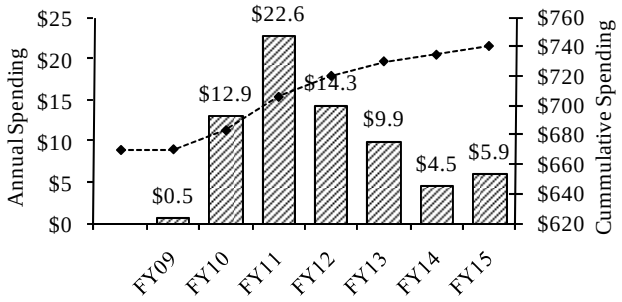
Sub-phase	Scope
Construction: Eastern Tunnel Segment – CP3A	Construction of the eastern portion of the tunnel. An approximately 4,400-feet long, 12-feet finished diameter tunnel was constructed from the Shaft 5A bottom through the "WYE" where it meets the Middle Tunnel Segment and on to Shaft W where 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.
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-feet 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 Town 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.

Sub-phase	Scope
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 of the Southboro Tunnel and rehabilitation of the Hultman Aqueduct.
Construction: Hultman CP9	Construction of Valve Chamber E-3.
Interim Disinfection	Temporary disinfection related to CP-7 sub-phase.
Equipment prepurchase	Pre-purchased one 10-foot diameter butterfly valve for installation in Valve Chamber E3.
Construction CP6ALower Hultman Rehab. and 6B Upper Hultman Rehab.	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 more than 70 years of service without an overhaul.
Construction 6A Demolition	Demolition of existing chlorine storage building to allow for construction of a new valve chamber on the Hultman Aqueduct.
CP6 Easements	Easements for CP-6 Contract.
Valve Chamber and Storage Tank Access Improvements	Provide better and safer access to valve chambers for Water Quality and Maintenance personnel. Provide secure hatches at Loring Road Tanks.
Valve Chamber Modifications	Design and construction of an additional isolation valve on the Hultman Aqueduct to improve operational flexibility and reliability; and security hardening of key valve chambers.
Shaft 5A/5 Surface Piping Inspection/Restor-ation	Internal inspection of surface piping in the Shaft 5A / Shaft 5 area. Restore pipe coating systems, cathodic protection systems, thrust restraint, and drainage system.
Shaft 5 Electrical Upgrade	Upgrade of electrical service, switchgear, and motor control centers. Existing electrical system is approaching the end of its useful life and will need to be replaced. Maintenance of the current system will become increasingly more difficult due to the lack of available spare parts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$711,616	$669,795	$41,821	$14,255	$9,928	$60,177	$16,639	$1,000

Metro West Tunnel



Project Status 11/11	95.0%	Status as % is approximation based on project budget and expenditures. Placed MetroWest Tunnel into service in November 2003. Awarded Hultman Interconnect Final Design/CA contract in September 2005. CP6A Lower Hultman Rehab began in September 2009. Expect Upper Hultman CP6B contract to be awarded in 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$710,719	$711,616	$897	Jan-20	Jan-20	None	$56,375	$60,177	$3,802

Explanation of Changes

- Project cost increase is primarily due to additional change orders for CP6A Lower Hultman Rehabilitation construction. Also, inflation adjustment for Valve Chamber Modifications Construction.

- Spending changed due to accelerated schedule for CP6A Lower Hultman Rehabilitation This increase was partially offset by revised schedule for Upper Hultman Rehabilitation – CP6B.

CEB Impact

- 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. If supply through the CVA were shut off upstream of Nash Hill Covered Storage, 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 Covered Storage, Chicopee would be immediately without water supply.

New construction under this project consists of a 8,100 feet long second barrel of the CVA from Nash Hill Covered Storage to Chicopee of 30-inch diameter pipe; 3,100 feet of 16-inch redundant pipeline between the Nash Hill Covered Storage and the South Hadley takeoff; and 2,400 feet of 20-inch redundant pipeline between the Route 21 Valve Chamber and the Wilbraham takeoff, new fire tanker hookups within the three host communities of Ludlow, Ware, and Belchertown, and two emergency mutual aid interconnections between the CVA system and the Springfield Water & Sewer Commission system in Ludlow. With these new pipelines in place, the three communities will be connected to Quabbin Reservoir, Nash Hill Covered Storage, 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 Valve Chamber. This project will also provide additional mainline valves along the aqueduct that will help isolate manageable segments of the CVA; and rehabilitate appurtenances such as meters, air valves, and blow-off valves.

Scope

Sub-phase	Scope
Pipeline Redundancy – Planning	In-house planning of redundant pipelines and aqueducts for Chicopee, South Hadley Fire District # 1, and Wilbraham.
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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$8,667	$8,667	$0	$0	$0	$95	$0	$0

Project Status 11/11	100%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in April 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$8,667	$8,667	$0	Apr-08	Apr-08	None	$95	$95	$0

Explanation of Changes

- Project completed.

CEB Impact

- None identified at this time.

S. 597 Winsor Station/Pipeline Improvements

Project Purpose and Benefits

☑ *Extends current asset life* ☑ *Results in a net reduction in operating costs*

Master Plan Project ☑ 2008 Priority Rating 1 (See Appendix 3)

To investigate the licensing and rehabilitation of the turbine generator at the Winsor Station in Belchertown to produce hydroelectric power to be used to sell to the electric grid, or to potentially provide power to other MWRA facilities. Also, to consider station piping improvements which would allow water to go to the Swift River without going through the isolation valve and determine means to control flow in the Quabbin Aqueduct. Quabbin Release Pipeline work is also included.

Project History and Background

Winsor Dam impounds the Quabbin Reservoir. At the dam, an intake feeds two conduits that are interconnected at a powerhouse below the dam. One conduit discharges to the Chicopee Valley Aqueduct; the other conduit feeds a hydroelectric turbine/generator unit that is inoperative due to a fire in 1991 that destroyed the electrical switchgear. A bypass valve at the Winsor Station house also allows flow to be discharged directly to the Swift River.

Around the time that the fire occurred, hydropower re-development was not a priority given the low value of energy and the capital costs of station rehabilitation (in addition to switchgear replacement, turbine/generator repairs were also required). Another factor that forestalled hydropower development was that the Winsor dam hydroelectric facilities were never licensed by the Federal Energy Regulatory Commission (FERC). Shortly before the fire occurred, FERC directed MWRA to license the facilities. Given that the Swift River hosts a valued trout fishery, fishery concerns promised to complicate an already onerous federal licensing process.

Efforts to rehabilitate the Winsor Station facilities began in 1995 when MWRA obtained a preliminary permit from FERC, the first step in the FERC process. The FERC preliminary permit secures the applicant a priority position to file a license application for development - it does not authorize development, however. The permit's conditions required MWRA to consult with resource agencies and to conduct environmental and engineering studies to assess the project's feasibility and to support a license application. Therefore, MWRA consulted with resource agencies and conducted a number of environmental studies required for a license application. Some specialized fisheries studies were conducted by a consultant; various other studies were prepared in-house by MWRA with assistance from MDC staff.

Engineering and economic feasibility studies and concept design were also required to develop information to satisfy FERC's license requirements and to develop preliminary cost information to support financial analysis and decisions regarding whether or not to proceed with hydropower re-development. Accordingly, in 1997, MWRA procured the services of Duke Engineering and Services (DE&S) to conduct certain technical evaluations.

The first phase of work was completed in mid-1998. DE&S evaluated two alternatives for redeveloping Winsor Dam hydropower facilities. The study found that it would be feasible to 1) rehabilitate the existing turbine/generator; or 2) install a new turbine generator that would operate at higher efficiencies due to modern technology and a design optimized for minimum flow conditions and 24-hour/day operations.

Funding of the hydroelectric sub-phase for an updated feasibility study to address permitting and energy economics at the Winsor Station has been deleted.

The water supply infrastructure within the Winsor Station is in need of major repair and upgrade as much of it is over 75 years old. Several other subphases are needed to address the extensive work on the Quabbin Transmission System and the Swift River bypasses. These subphases include:

- Winsor Station Chapman Valve Repair & Purchase of Sleeve Valves: Immediate replacement of the existing damaged Chapman Valve with sleeve valves.
- Pipeline Replacement Phase 1 – To repair and upgrade large-diameter piping and valving in the basement of the Winsor Station including the bypasses.
- Quabbin Aqueduct and Winsor Station Upgrades - To replace the antiquated and unreliable shutter system with a sluice gate to control flow in the Quabbin Aqueduct and inspect the Quabbin Tunnel and recommend maintenance or repairs.
- Hatchery Pipeline- To convey cold, well-oxygenated hypolimnetic water from Quabbin Reservoir to the downstream trout hatchery via a new pipeline. A hydro turbine will be located in a vault near the connection of the pipeline to the CVA that would capture some of the hydraulic energy contained in the pipeline as the water is conveyed to the hatchery. The power generated will be utilized at the Ware Disinfection Facility and surplus power will be sold back to the grid.

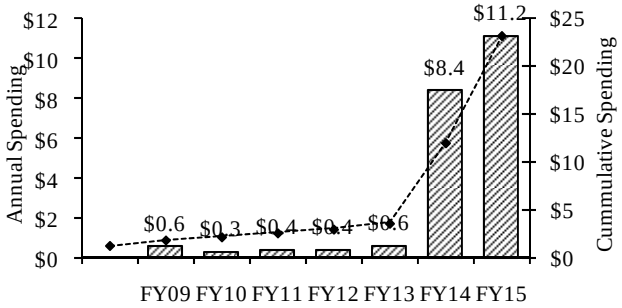
Scope

Sub-phase	Scope
Preliminary Permit Study	Study to determine project feasibility.
Design and Construction Quabbin Aqueduct and Winsor Station Upgrades	Design to address station piping improvements for water supply and Swift River discharge. The work also includes rehabilitation and improvements at Shafts 2 and 12, and inspection of the Quabbin Aqueduct. Installation of a roller gate to control flow at Shaft 12, the intake to the Quabbin Aqueduct, thereby improving safety and reliability of the transmission system. Construction to address piping improvements and building rehabilitation for water supply and Swift River discharge.
Hatchery Pipeline Design and Construction	Design and construction of approximately 5,000 feet of pipeline to convey 6 MGD of water from the CVA to the downstream trout hatchery. The project would provide a consistent and reliable source of high quality cold water to the hatchery, as well as supplement flows to the Swift River. The project will also include a hydro turbine that would capture some of the hydraulic energy contained in the pipeline as the water is conveyed to the hatchery for use at the Ware Disinfection Facility and surplus sold back to the grid. The hydro turbine portion is funded under the Alternative Energy Initiatives project.
Winsor Station Chapman Valve Repair	Construction of replacement valving for the existing 36” Chapman Butterfly Valve (design by Technical Assistance consultant).
Purchase of Sleeve Valves	For replacing the damaged Chapman Butterfly Valve.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$26,196	$1,347	$24,850	$397	$609	$2,315	$23,843	$0

Winsor Station/Pipeline Improvements



Project Status 11/11	5.3%	Status as % is approximation based on project budget and expenditures. Winsor Station Chapman Valve Repair was completed in November 2009. Design for Quabbin Aqueduct and Winsor Station Upgrades Notice-to-Proceed was issued in February 2010. Hatchery Pipeline Design/ESDC/RI expected to commence in January 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$26,082	$26,196	$114	Jun-14	Oct-15	16 mos.	$10,231	$2,315	($7,916)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments for Hatchery Pipeline Design and Construction contracts.
- Planned spending shift due to revised schedules for Winsor Station Rehabilitation and Hatchery Pipeline contracts.

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 of the aging transmission system. Many of the transmission facilities and structures were constructed in the 1930s and 1940s and are in need of repair, routine maintenance, updating, and modifications for code compliance, health and safety, and security. Based on the findings and recommendations of this inspection phase, MWRA has and will continue to add design and construction phases to the CIP.

Project History and Background

This project provided an engineering assessment of key water transmission facilities, structures and operations. Many of the 44 facilities were constructed in the 1930s and 1940s and are in need of repairs, routine maintenance, and modifications for code compliance, health and safety, and security. The facilities and structures include dams and spillways, structures on tops of shafts, hydraulic diversion facilities, gatehouses, intake buildings, service buildings, and garages. The facilities are spread over a large geographic area ranging from Quabbin Reservoir eastward to the Boston Metropolitan area.

The engineering assessment utilized existing information and site visits to inventory the condition of each facility. The work yielded a facility report that identifies existing conditions and provides recommendations for needed improvements, rehabilitation, and repairs. The project resulted in the development of a conceptual design for each facility including alternatives, basic design criteria, cost estimates, required permits, and schedules. MWRA uses the final conceptual design reports to develop a detailed scope of work for the future procurement of engineering services for subsequent design, construction administration, and resident inspection services. Staff will integrate and coordinate project findings with MWRA's current master planning efforts.

One critical component of the Quabbin Tunnel, the pressure-reducing valves at the Oakdale Power Station, was targeted for immediate replacement. These valves were 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 was a high priority.

Scope

Sub-phase	Scope
Facilities Inspection	Assessment of existing conditions; update of infrastructure rehabilitation evaluation; identification of improvements/repairs/upgrades, 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.
Oakdale Phase 1A Design & Construction	Upgrade the 60 year old Oakdale facility and electrical control systems & the switchyard which are antiquated and unsafe to personnel. Will lower the voltage from 2,200 to 480.

Ware River Intake Valve Replacement	Replace oil-actuated valves currently underwater and inaccessible for maintenance with electric actuated valves. Also, replace siphons with hard piped intakes and automate equipment with remote control capabilities.
CVA Intake Motorized Screen Replacement	Replace current motorized screens on the CVA Intake which are nearing the end of their useful life. The screens keep debris from entering CVA.
Wachusett Lower Gatehouse Rehabilitation	Replace the leaking roof, gutters, and repair/seal masonry and degraded windows and doors. Sealing of the building will allow more efficient heating of building space to prevent further deterioration.
Rehabilitation of Oakdale Turbine	Rehabilitate turbine. Turbine was last rehabilitated in 1986 and we will be approaching thirty years which is the expected life of an overhaul.
Geo-thermal Heat Wachusett Gatehouse	Convert from propane fueled boilers to geo-thermal heating utilizing the internal water in the piping located in the building. The existing heating isn't sufficient to keep building warm enough and therefore remaining moisture contributes to accelerated deterioration.
Rehabilitate Wachusett Gatehouse Chamber 4 Piping	Rehabilitate the piping in chamber 4 of the Lower Gatehouse. Investigate the possibility of simplifying the layout and reducing the number of valves. Existing piping and valves are of poor quality. Other piping and valves of the same age in this facility have already been replaced.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$13,589	$4,744	$8,845	$1,533	$1,134	$2,988	$3,698	$2,480

Project Status 11/11	35.0%	Status as % is approximation based on project budget and expenditures. Valves were received in February 2006 and Phase I Design was substantially complete in June 2007. Phase 1A Design phase began in October 2009 and construction is scheduled to commence in January 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$13,547	$13,589	$42	Jan-21	Jan-21	None	$2,981	$2,988	$7

Explanation of Changes

- Project cost and changed due to inflation adjustment.

CEB Impact

- None identified at this time.

S. 617 Sudbury/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 Aqueduct in preparation for future repairs. This aqueduct is 120 years old and is in need of renewal and upgrade. This is a critical back-up facility for the City Tunnel and the Sudbury Reservoir emergency supply. The inspection phase of the Sudbury Aqueduct was conducted in 2006. The Inspection Report identified several short-term repairs required to better prepare the aqueduct for short-term use. This project will also fund inspections of the Weston Aqueduct which is more than 100 years old. The results of the inspection will allow MWRA to evaluate and prioritize future construction and repair work for this aqueduct.

Scope

Sub-phase	Scope
Hazardous Materials	Remove contaminated sediment from aqueduct.
Sudbury Aqueduct Inspection	Inspection of the Sudbury Aqueduct to identify need for future repair work.
Ash Street Sluice Gates	Construct (rehabilitate) a means to isolate the Weston Reservoir from a break west of Ash Street. Investigate Ash Street and Happy Hollow Siphon. Existing gates in siphon are in need of repair.
Sudbury Short-Term Repairs Phase 1 and 2 Construction	Repairs needed in order to better prepare the Sudbury Aqueduct for short-term use (flow test and emergency activation).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$4,308	$660	$3,648	$0	$0	$25	$3,648	$0

Project Status 11/11	15.3%	Status as % is approximation based on project budget and expenditures. Inspection of Sudbury Aqueduct was completed in October 2006. Short Term Repairs Phase 1 is expected to begin in July 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY12**	**Chge.**
$4,288	$4,308	$20	Jan-16	Jan-16	None	$310	$25	($285)

Explanation of Changes

- Project cost and spending changed due to inflation adjustment and schedule change for Sudbury Short-Term Repairs Phase 1.

CEB Impact

- None identified at this time.

S. 620 Wachusett Reservoir Spillway Improvements/Winsor Dam Repair

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 replacing the existing flashboards with motorized gate for regulating the reservoir water level and improving its storage capacity. This project will also repair the Winsor Dam drainage system to include upgrading the existing 24" corrugated metal pipe (CMP) and the 24" clay tile pipe to improve surface drainage and its water quality discharged into the Swift River.

Project History and Background

The Winsor Dam (Quabbin Reservoir) and the Wachusett Reservoir Dam are more than 60 and 100 years old respectively. Previously they were 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 at the Wachusett reservoir, and rehabilitate the existing drainage system at the downstream of Winsor Dam.

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 DCR 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, DCR postponed this project due to difficulty in issuing bonds to finance the work.

The scope of the Wachusett Reservoir Spillway portion of this project includes 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, and review of the existing Hydraulics & Hydrology study. Based on the H&H study results it will ensure that the auxiliary spillway channel will, together with the existing spillway, be able to pass the maximum probable flood (MPF). Also, included is design for the installation of the crest gate and piezometers. It also covers 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.

The Winsor Dam Repair portion of this project provides a review of the completed existing design specifications and drawings that were produced by the DCR. Work includes repair or replacing the drainage system and installing piezometers for monitoring any dam seepage.

During preparations for improvements at the Wachusett Dam and Spillway in early 2007, samples of caulk and concrete mortar from the exterior concrete construction joints on Wachusett Dam crest and its downstream dam face were collected and analyzed. Results of analyses conducted on the caulk and efflorescence samples indicated the presence of polychlorinated biphenyls (PCBs) in the exterior caulking materials in concentrations higher than limits allowable by the United States Environmental Protection Agency in accordance with the Toxic Substance Control Act.

Results of samples taken at the nearby Cosgrove Intake Building and Shaft A structure, which were constructed under a single contract in the mid-1960s, also confirmed the presence of PCB-containing caulk. Three separate PCB-removal contracts were developed based on the locations, potential PCB impacts and the structural functions of

the impacted facilities. The first contract removed PCBs at the Cosgrove Intake Building and Shaft A, and the second contract removed PCBs from the crest of the Wachusett Dam. The third and final contract provided removal of PCBs that had migrated through run-off into the efflorescence mortar joints on the downstream side of the Wachusett Dam face and the soil at the toe of the dam.

Scope

Sub-phase	Scope
Design and Construction	Covers inspection and reassessment of the design and including Engineering Services during Construction (ESDC) and Resident Inspection (RI) for the rehabilitation of the spillway and dike at the Wachusett Reservoir and the drainage system at the Quabbin Reservoir.
Equipment Pre-Purchase	Pre-purchase the Wachusett Crest Gate so that it will be fabricated and delivered in time for installation by the construction contractor.
Cosgrove and Shaft A PCB Removal	Phase 1 covers remediation of PCB contaminated materials at the Cosgrove Intake and Shaft A.
Wachusett Dam PCB Removal	Phase 1 also covers remediation of PCB contaminated materials on the dam crest, and providing new water proofing and new concrete top slab of the dam.
Phase 2 PCB Material Remediation	Phase 2 has remediated PCB material that has migrated to the downstream dam face and into the soil at the toe of the dam.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$9,287	$9,287	$0	$0	$0	1,237	$0	$0

Project Status 11/11	100%	Status as % is approximation based on project budget and expenditures. Design contract was awarded in January 2006. Construction reached substantial completion in November 2008. Cosgrove and Shaft A PCB Removal work reached substantial completion in October 2008. Wachusett Dam PCB Removal work reached substantial completion in November 2008. Phase 2 PCB Material Remediation reached substantial completion in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$9,498	$9,287	($211)	Jul-10	Jul-10	None	$1,448	$1,237	($211)

Explanation of Changes

- Project cost and spending decrease due to costs reclassification of costs to comply with GASB 49 (Pollution Remediation).

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. MWRA also makes Payments In Lieu of Taxes (Pilot) to each watershed community for the land owned for water supply protection.

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 15, 2004 meeting, the MWRA Board of Directors approved the use of MWRA bond proceeds for such purpose.

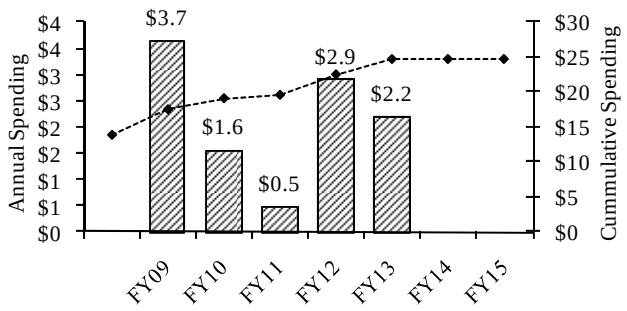
Scope

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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$19,000	$13,900	$5,101	$2,909	$2,192	$10,793	$0	$0

Watershed Land



Project Status 11/11	77.7%	Status as % is approximation based on project budget and expenditures. MWRA began purchasing land in FY07.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$19,000	$19,000	$0	Jun-12	Jun-12	None	$10,793	$10,793	$0

Explanation of Changes

- N/A

CEB Impact

- None identified at this time.

S. 623 Dam Projects

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*

Master Plan Project ☑ 2008 Priority Rating 2 (See Appendix 3)

To evaluate, design, and make necessary safety modifications and repairs to dams for proper operation as a result of the 2004 MOU between MWRA and DCR.

Project History and Background

Massachusetts Dam Safety Regulations, 302 CMR 10, require modifications to the Framingham Reservoir No. 3 (Foss) Dam and the Weston Reservoir Dam to provide a spillway system capable of passing the applicable Spillway Design Flood (SDF) or safely storing this same flood within the reservoir without a spillway or other emergency overflow structure. Based on existing Hydraulics and Hydrology studies for these two dams, Foss Dam will require spillway modifications and a parapet wave wall to pass the SDF while at the much smaller Weston Reservoir, the dam will only require the parapet wave wall to safely contain the SDF.

Additionally, all earthen dams and masonry dams under MWRA responsibility were built in the late 1800s to early 1900s and are in need of repairs. Based on ongoing inspections, immediate repairs such as riprap re-setting and replacement, mitigation of erosion features, and addressing mortar loss and consequent minor leakage at gatehouses are necessary at Foss, Weston, Chestnut Hill, Sudbury and Wachusett Open Channel Lower dams.

Scope

Sub-phase	Scope
Dam Safety Modifications and Repairs	Provide Design and ESDC for required Dam Safety Modifications and Repairs. Equip Framingham Reservoir No. 3 (Foss) Dam's existing spillway with a reliable non-mechanical gate system capable of passing Massachusetts' regulatory spillway design flood (SDF). Construct parapet wave walls on dam crests to safely contain the SDF at the Foss and Weston Reservoir Dams. Design required repair measures at the Foss, Weston, Sudbury, Chestnut Hill and Wachusett Open Channel Lower dams and associated gatehouses. At present, alternatives are being evaluated at Foss.
Oakdale Dam Design/ESDC/RI and Construction	Provide final design, ESDC/RI and construction for the removal of the Oakdale Dam adjacent to the Oakdale Pump Station. The removal of the dam will help landlocked fish in the Wachusett Reservoir to reach spawning grounds in the Quinapoxet River.
Goodnough Dike Drainage Improvement	Restoring proper drainage to the downstream discharge location of the Goodnough Dike toe drain system. Continued flooding of the toe drain system due to downstream conditions could lead to internal problems within the dam and overall dam safety concerns. Recent inspection of the flooded drain system and downstream conditions indicate water is backing-up into the toe drain system. 302 CMR 10:00 Dam Safety Regulations require proper correction of deficiencies identified by licensed dam safety engineers. This is a High-Hazard-class-Dam for the largest reservoir in MWRA system. Proper functioning of the overall drain system is critical to maintenance of this earthen dam.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$5,729	$719	$5,010	$1,592	$1,203	$3,515	$2,214	$0

Project Status 5/11	33.4%	Status as % is approximation based on project budget and expenditures. Design phase for Dam Safety Modifications and Repairs began in September 2009. Dam Safety Modifications and Repairs Construction was awarded in June 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$8,181	$5,729	($2,452)	Dec-15	Dec-16	12 mos.	$4,797	$3,515	($1,282)

Explanation of Changes

- Project cost and spending changed due to actual award for Dam Safety Modifications & Repairs was less than original estimate.
- Schedule changed for Oakdale Dam Removal Construction due to project priorities.

CEB Impact

- No impacts identified at this time.

S. 625 Long Term Redundancy

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*

Master Plan Project ☑ 2008 Priority Rating 1 (See Appendix 3)

To plan, design and construct the recommended redundancy improvements to the City Tunnel, the City Tunnel Extension, the Dorchester Tunnel and the Cosgrove Aqueduct.

Project History and Background

This project includes the study, permitting, design and construction of redundancy improvements to critical elements of the water transmission system. The study phase evaluated alternatives and developed conceptual designs and cost estimates to provide redundancy for the metropolitan tunnel system and the Cosgrove Tunnel.

The metropolitan tunnel system was evaluated first with emphasis on providing redundancy for Shaft 7 of the City Tunnel. Historically, the plan for providing redundancy for the metropolitan tunnel system was based on one or more proposed parallel deep rock tunnel loops from the terminus of the Hultman Aqueduct and MetroWest Tunnel in Weston into the metropolitan area. The focus of this study was to develop and evaluate alternative surface pipe improvements, in addition to revisiting previously proposed tunnel loops, to achieve an acceptable level of redundancy at a lower cost.

The tunnels in the Metropolitan Boston area, i.e. the City Tunnel, City Tunnel Extension and Dorchester Tunnel remain a weak link in the water transmission system. While the integrity of the underground tunnel sections is believed to be good based on very low, unaccounted for water levels in the MWRA transmission system, there is still risk of failure mainly due to pipe and valve failures at the surface connections to the distribution system or due to major subsurface failures as a result of earthquakes or geological faults. A rupture of piping or a valve failure at surface connections points on any of the metropolitan area tunnel shafts would cause an immediate loss of pressure throughout the entire High Service area and would require difficult emergency valve closures and lengthy system repairs. The assumption is that tunnels have a useful life of 100 years but these subsurface structures have not been inspected and their actual condition is unknown because they cannot be shut down for inspection. Facilities at the top of tunnel shafts have been examined and a number of hardening measures are needed for risk reduction at these sites. Completion of planned distribution system storage projects like the Blue Hills and the Spot Pond Storage Facilities also assist in mitigating the effects of local pipe ruptures.

In the event of a failure of the City Tunnel, a limited amount of water could be transferred through the WASM 3 line (scheduled for major rehabilitation) and WASM 4 and the Sudbury Aqueduct would need to be brought on-line. Extensive use of the Sudbury Aqueduct/Chestnut Hill Emergency Pump Station and open distribution storage at Spot Pond and Chestnut Hill would be required. Supply would be limited and a boil order would be put in place. Failure of the City Tunnel Extension would be similar with reliance on WASM 3 and open storage at Spot Pond.

If the Dorchester Tunnel were to experience a problem, flow could be routed to the south through surface mains. However, this relies on the completion of the Chestnut Hill Connecting Mains project.

This study was undertaken to recommend a phased program which could be implemented over a period of years. The study reviewed currently proposed MWRA pipeline improvement projects and recommendations as to changes in size and/or alignment to contribute to the objective of transmission redundancy within the metropolitan system. The recommendations of the study now form the basis for subsequent projects for MEPA environmental review,

permitting, design and construction. On June 9, 2010 and June 30, 2010, staff presented to the Board of Directors the findings and redundancy recommendations for the metropolitan tunnel system.

For the western system, the Board of Directors approved the construction of a new pump station to provide redundancy for water supply to the John J. Carroll Water Treatment Plant and to support the shutdown and repair of the Cosgrove Tunnel.

For the Metropolitan system, the recommended plan includes both northern and southern components. The southern components are identified below in the Sudbury Aqueduct Design/CA/RI and Construction. The northern components are addressed in the Weston Aqueduct Supply Mains (WASM) 3 project.

Subsequent Design, Permitting and Construction phases will follow-up on the recommendations of the study. The Design and Construction costs have been updated based on the recommendations of the study.

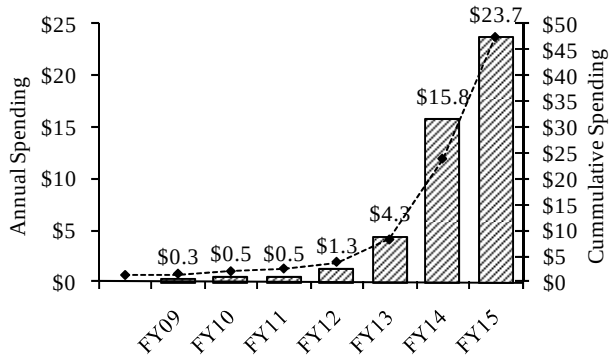
Scope

Sub-phase	Scope
Water Transmission Redundancy Plan	Redundancy Study/Tunnel Alternatives for long term redundancy.
Cosgrove Tunnel Redundancy Pump Station Design/ESDC/RI and Construction	Design and construction of an emergency pump station to pump water from the Wachusett Aqueduct to the Carroll Water Treatment Plant. Pump station will provide redundancy in the event of failure at the Cosgrove Tunnel or Intake and for the inspection/rehabilitation of the Cosgrove Tunnel. During a planned or emergency shutdown of the Cosgrove Tunnel, the existing gravity Wachusett Aqueduct with the proposed emergency pumping station could deliver approximately 240 million gallons per day (mgd) of raw water to the CWTP for full treatment. The 240-mgd capacity would allow for unrestricted supply for at least eight months during the lower-demand fall/winter/spring period. This project, along with the completion of the on-going Hultman Aqueduct rehabilitation and interconnections project, will provide fully treated water transmission redundancy from the Wachusett Reservoir to the beginning of the metropolitan distribution system in Weston.
Sudbury Aqueduct Preliminary Design/EIR, Design CA/RI; MWWST/Sudbury Aqueduct Connection Construction; Sudbury Aqueduct Slipline Construction; Chestnut Hill Final Connections Construction	Design and construction for providing redundancy for the Southern Metropolitan area. The southern component consists of pressurizing the Sudbury Aqueduct from Needham to Chestnut Hill and connecting it to the Chestnut Hill Emergency Pump Station, constructing an emergency generator for the Chestnut Hill Emergency Pump Station, and constructing a tunnel or surface pipe from the Sudbury Aqueduct to either Shaft 5/5A or the Norumbega site of the Metro West Supply Tunnel/Hultman Aqueduct system.
Tops of Shafts Rehab Design CA/RI and Construction	Design and construction of rehabilitation/replacement of connecting pipes and valves at the top of tunnel shafts throughout the metropolitan tunnel system.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$355,681	$1,260	$354,421	$1,302	$4,346	$6,908	$104,459	$244,314

Long Term Redundancy



Project Status 11/11	0.4%	Status as % is approximation based on project budget and expenditures. An engineering services contract for the Water Transmission Redundancy Plan was completed in September 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$338,053	$355,681	$17,628	Jun-21	Dec-21	6 mos.	$7,952	$6,908	($1,044)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments on unawarded contracts.
- Schedule and spending changed due to additional time needed to complete long term concept design and prepare document for two step procurement.

CEB Impact

- No impacts 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 1,109 blow-off valves and 1,246 main line valves. Some blowoff valves are cross-connected into sewers or drainage piping. To ensure there is no chance of contamination, DEP requires retrofiting 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.

Scope

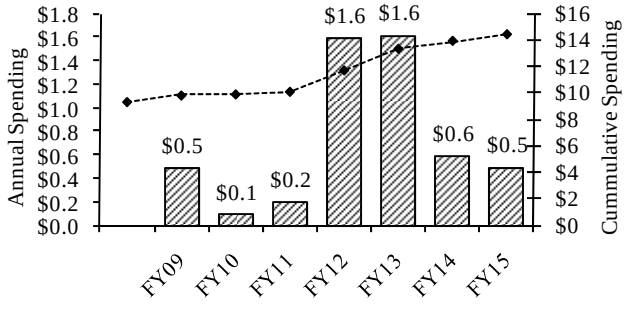
Sub-phase	Scope
Design/Phase 1	Design of valve replacements, setting priorities based on the level of urgency or risk associated with each valve and scheduling work on valves that would not otherwise be replaced during upcoming pipeline rehabilitation projects.
Construction - Phase 1	Purchase and installation 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 as well as rehabilitation of two meters.
Construction - Phases 4, 5 & 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 included 10 blow-off valve retrofits and 13 main line valve replacements. Phase 6 includes 4 blow-off valve retrofits, 8 main line valve replacements and 9 globe valves (tank isolation).
Construction Phases 7, 8 & 9	For each phase, purchase and installation of blow-off valve retrofits and main line valve replacements and rehabilitation of miscellaneous meters. Each phase includes approximately ten blow-off valve retrofits and ten main line valve replacements.

Sub-phase	Scope
Design CA/RI Phases 8 & 9	Design/Contract Administration/Resident Inspection for Construction 8 and 9.
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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$22,104	$9,338	$12,766	$1,584	$1,606	$3,950	$4,365	$5,210

Valve Replacement



Project Status 11/11	48.2%	Status as % is approximation based on project budget and expenditures. Phases 1-6 are complete. Phase 7 commenced in April 2011. Design CA/RI for Phases 8 and 9 will commence in FY16 and FY18, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$20,032	$22,104	$2,072	Jun-17	Jun-21	48 mos.	$3,550	$3,950	$400

Explanation of Changes

- Project cost increased due to new sub-phases added for Design CA/RI for Phases 8 and 9, expected change orders for Construction 7, and inflation adjustments due to new ENR index.
- Schedule change reflects updated schedule as a result of adding new Design CA/RI phases above.
- Project spending changed due to expected change orders listed above partially offset by revised cash flow for equipment purchases.

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 68miles or 24% 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 50 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 2 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$1,527	$141	$1,386	$0	$0	$0	$0	$1,386

Project Status 11/11	9.2%	Status as % is approximation based on project budget and expenditures. Project Planning phase is complete. Test Station Installations 2 is expected to commence in FY19.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$1,458	$1,527	$69	Jun-22	Jun-22	None	$0	$0	$0

Explanation of Changes

- Project cost increased due to inflation adjustments due to new ENR index.

CEB Impact

- None identified at this time.

S. 730 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 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 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-ft 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 extends from the Hultman Aqueduct branch in Weston northeast to the Shaft 9 line in Medford and supplies 200,000 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. Supply to the Spot Pond Supply Mains from WASMs 3 and 4 was maintained 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.

The rehabilitation of WASMs 1 and 2 is now complete. WASM 1 and WASM 2 now connect to the new Loring Road tanks in Weston and 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, is now 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 a new Waltham Connection to the Northern Extra High system is complete. 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 Waltham Connection project will provide redundancy so that the main can be rehabilitated/replaced in phases. Based on the recommendations of the Transmission Redundancy Study, approximately 8 of the 11 miles of WASM 3 will be replaced with a larger 72-inch main. The remaining 3 miles will be rehabilitated.

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 included 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 WASM 4 is complete.

WASM 4, since 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 also has the capability to operate completely as a low service main. This flexibility in operating conditions allows WASM 4 to best support the system. When one or more of the Metropolitan tunnels is shut down, WASM 4 will operate in tandem with the West Spot Pond Supply Main as a high service line to supply the communities north of the city tunnel.

Scope

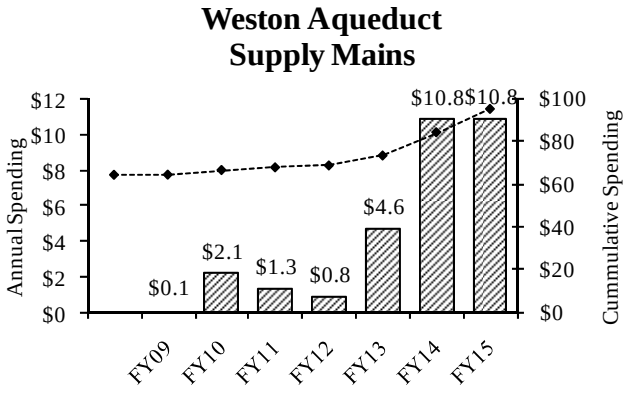
Sub-phase	Scope
Design/CA/RI – WASMs 1 & 2 (6142)	Design, construction administration, and resident inspection for the rehabilitation of WASM 1 and WASM 2 (construction contracts 6280 and 6281).
Design/CA/RI - WASM 4 (5147)	Design, construction administration, and resident inspection for the rehabilitation of WASM 4 (construction contracts 6203, 6175, 6312, 6176, and 6313).
Construction - Newton WASMs 1 & 2 (6280)	Construction work on WASM 1 and WASM 2 along Commonwealth Avenue and WASM 1 through Centre Street to the Newton Commonwealth Golf Course.

Sub-phase	Scope
Construction - Boston WASMs 1 & 2 (6281)	Construction on the remaining lengths of WASMs 1 and 2 consists of rehabilitation of 8,640 linear feet of Section 4 of WASM 1 through the Newton Commonwealth Golf Course to Gatehouse #1, rehabilitation of 11,450 linear feet of Sections 7 and 8 of WASM 2 between Grant Avenue and Cleveland Circle, and installation of 650 linear feet of 36-inch pipe from Shaft 7 to Section 47.
Design/CA/RI WASM 3 (6539)	Design, construction administration and resident inspection for construction phases CP2, CP3 and CP4.
Construction - Waltham WASM3 CP2 (6543)	Replacement of the westerly portion of WASM 3 with a new 72-inch pipe generally located between the Hultman Branch and the Watertown Branch and valve improvements on the Spot Pond Supply Main West to allow it to be used under High Service pressure in an emergency..
Construction – Belmont WASM 3 CP3 (6544)	Replacement of the middle portion of WASM 3 with a 72-inch pipe generally located between the Watertown Branch and the Spring Street Pumping Station.
Construction - Arlington WASM 3 CP4 (6545)	Rehabilitation of the easterly portion of WASM 3 and a short segment of Section 51 generally located between the Spring Street Pumping Station and the Shaft 9 line.
Construction - Arlington Section 28 CP1 (6546)	Rehabilitation of Section 28, the suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station.
Construction - Auburndale WASMs 1, 2 & 4 (6175)	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.
Construction - Newton WASMs 2 & 4 (6312)	Cleaning and cement lining of 21,200 linear feet of 60-inch pipe on WASM 4 (Sections 13 & 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 as well as rehabilitation of Meters 104 and 105.
Construction - Allston WASM 4 & W. Ave Sewer (6313)	Replacement of the Nonantum Road PRV and sliplining of 1,600 linear feet of pipe from Brooks Street to North Beacon Street, 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 South 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.
Construction – WASM 3 PCCP SPL12 (7000)	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 a mainline butterfly valve with chamber and separate air release manhole.
Design CA/RI WASM 3 PCCP SPL12 (7001)	Design, construction administration and resident inspection services for the replacement of the PCCP pipe portion of WASM 3 (construction contract 7000).

Sub-phase	Scope
Design CA/RI Section 36/ WS/Waltham Connection (6540)	Design, construction administration and resident inspection services for the replacement of Section 36, rehabilitation of the Watertown Section, a new 11B interconnection to WASM 3, and a new connection to Waltham from the Northern Extra High service area (construction contract 7222).
Construction Section 36/WS/Waltham Conn. (7222)	Replacement of approximately 5,200 linear feet of 1911 vintage 16-inch diameter cast-iron pipe from the Brattle Court pumping station to the Arlington Heights Standpipe, rehabilitation of approximately 5,795 linear feet of the Watertown Section, a new 11B interconnection to WASM 3, and construction of 8,800 linear feet of a new connection to Waltham from the Northern Extra High Service Area.
Design CA/RI Section 28 (7083)	Design, construction administration, and resident inspection services for the rehabilitation of Section 28, suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station (construction phase CP1, contract 6546).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$276,166	$64,378	$211,788	$841	$4,647	$8,965	$112,117	$94,184



Project Status 11/11	23.5%	Status as % is approximation based on project budget and expenditures. Newton WASMs 1 & 2, Boston WASMs 1 & 2, Auburndale WASMs 1, 2 & 4, Newton WASMs 2 & 4, Allston WASM 4 & W. Ave Sewer, and WASM 3 PCCP SPL12 are complete. Section 28 Arlington CP-1 was substantially complete in February 2011. Design CA/RI Section 36/Watertown Section/Waltham Connection commenced in January 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$265,772	$276,166	$10,394	Sep-21	Feb-22	5 mos.	$9,745	$8,965	($780)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments due to new ENR index.
- Project schedule extended to account for changes in project sequencing.
- Spending decreased primarily due to revised schedule for WASM 3 Design/CA/RI partially offset by revised cash flow for Section 36/Watertown Section/Waltham Connection Design/CA/RI.

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.

Construction of the first two contracts for Section 22 South was completed by June 2005. The contract for Section 107 Phase 1 was completed in January 2009. The contract for Section 107 Phase 2 was awarded in December 2009.

Scope

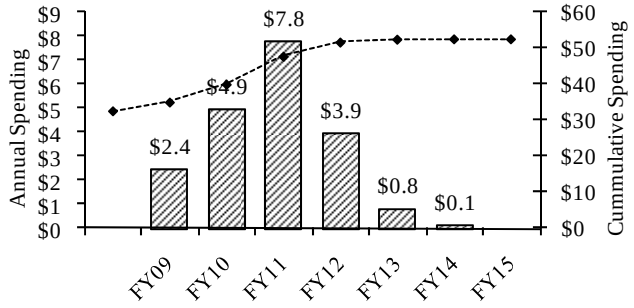
Sub-phase	Scope
Sections 21,43, 22 Design/CS/RI	Design, construction services, and resident inspection for five construction contracts in Phase 1, including rehab of 32,000 linear feet of 24- to 48-inch main, and installation of 17,000 linear feet of 36- to 48-inch main. Rehabilitation to consist of cleaning and cement mortar lining, 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 South, 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 Facility Plan/EIR	Facility Plan/EIR for Section 22 North.
Section 22 North Design/ESDC	Design/ESDC for Section 22 North.
Section 22 North Construction	Rehabilitation of 17,300 linear feet of existing 48-inch Section 22 North.

Sub-phase	Scope
Section 107 Phase 1 Construction	Construction of 4,400 linear feet of new 48-inch water main from East Milton Square to Furnace Brook Parkway in Milton and Quincy.
Section 107 Phase 2 Construction	Replacement of existing Sections 21 and 43 with 9,200 linear feet of new 48-inch water main from Dorchester Lower Mills in Boston to East Milton Square, and cleaning and lining of 4,000 feet of existing water mains.
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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$72,509	$32,755	$39,755	$3,949	$803	$19,897	$1,118	$33,884

Southern Spine
Distribution Mains



Project Status 11/11	48.9%	Status as % is approximation based on project budget and expenditures. Construction of Contracts 1 and 1A for Section 22 South is completed. Section 107 Phase 1 Construction was substantially complete in January 2009. Section 107 Phase 2 Construction was awarded in December 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY12	Chge.	FY12	FY13	Chge.
$70,668	$72,509	$1,841	May-22	Jan-23	8 mos.	$19,466	$19,897	$451

Explanation of Changes

- Project cost increased primarily due to inflation adjustments for Section 20 & 58 Design & Construction and Section 22 North Construction. Also, additional change orders for Section 107 Phase 2 Construction.
- Schedule shifted for Section 22 North Construction due to project priorities.

CEB Impact

- None identified at this time.

S. 727 Southern Extra High Redundancy & Storage

Project Purpose and Benefits

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

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To provide redundancy to Section 77 and 88 to the single spine mains serving Canton, Norwood, Stoughton and Dedham-Westwood by construction a redundant pipeline. Also, to increase distribution storage within the service area to improve system operation and reliability.

Project History and Background

This project will provide redundancy to Sections 77 and 88, which are currently single spine mains serving Canton, Norwood, Stoughton and Dedham-Westwood, through construction of a redundant pipeline. The project will also increase distribution storage within the service area to improve system operation and reliability.

MWRA's Southern Extra High pressure zone serves Canton, Dedham, Norwood, Stoughton, Westwood, portions of Brookline, Milton, and Newton, and the Roslindale and West Roxbury sections of Boston. Water is pumped to this pressure zone from the Dorchester tunnel through three pump stations.

The Southern Extra High pressure zone is currently deficient in distribution storage and lacking in redundant distribution pipelines. The average day water use of the Southern Extra High communities from MWRA's system is 11.6 million gallons per day (mgd); the maximum day use is 24 mgd. MWRA maintains two distribution storage tanks (Bellevue Tank 1 and Bellevue Tank 2) totaling 6.2 million gallons of storage for the entire Southern Extra High service area, which is significantly below the goal of one day of storage. Further highlighting the deficiency is the fact that the overflow elevation for the 2.5-million-gallon Bellevue Tank 1 is 25 feet lower than the overflow elevation for the newer 3.7-million-gallon Bellevue Tank 2, limiting its useful capacity.

The five communities in the southern portion of the service area (Canton, Norwood, Dedham, Westwood and Stoughton) are served by a single MWRA 36-inch diameter transmission main (Section 77), which is five miles long. Canton and Stoughton are served by a branch (Section 88) off of Section 77. Although several of these communities are partially supplied by MWRA, the loss of this single transmission main would result in a rapid loss of service in Norwood and Canton, and water restrictions for Stoughton and Dedham/Westwood.

In addition, the Southern Extra High service area has expanded during the past several years with the addition of the partially-supplied Town of Stoughton and the Dedham-Westwood Water District. This growth has been concentrated to the south while the Bellevue tanks are located at the northern end of the service area. Although several of these communities are partially supplied by MWRA, the Town of Norwood is fully supplied by this line and has no back-up source of supply. There have been several instances when the water supply to Norwood has been interrupted due to valve and/or pipe failures.

Scope

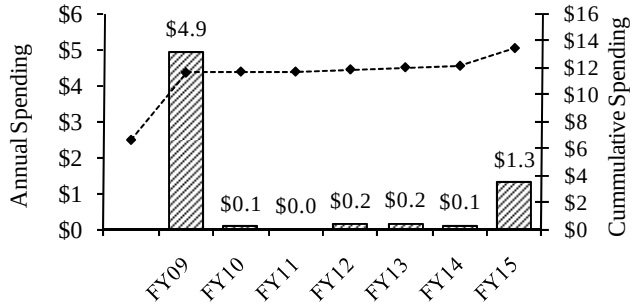
Sub-phase	Scope
Concept Plan	A study to assess storage, capacity and condition of existing distribution pipes, new pipeline routing options and tank sites will be identified.
University Ave Water Main	Initial phase to provide redundant pipeline on University Avenue in Norwood. Project broken out from the larger SEH redundancy and storage projects. This work has been completed.

Sub-phase	Scope
Redundancy Pipeline/Storage Design & Construction Ph 1	The first phase to provide redundancy to Sections 77 & 88 through design and construction of a redundant pipeline and single storage tank with the location and volume to be determined by the Concept Study.
Redundancy Pipeline Design & Construction Phase 2	The second phase to provide redundancy to Sections 77 & 88 through design and construction of additional redundant pipeline.
Design & Construction Phase 3 Pump Station	Third construction phase to include a new pump station.
Design & Construction Phase 4 Second Tank	Fourth phase to include a second storage tank.
Section 77/88 Des/Con	Rehab of Sections 77 & 88 after redundant pipeline is in place.
Des/CA/RI and Construction Short-term Improvements	This phase will cover the design and construction of short-term measures identified in the conceptual plan.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$101,849	$6,664	$95,184	$160	$156	$5,313	$23,495	$71,373

SEH
Redundancy & Storage



Project Status 11/11	6.5%	Status as % is approximation based on project budget and expenditures. Conceptual Design began in February 2007. University Ave Water Main was substantially complete in November 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$97,179	$101,849	$4,670	Jun-27	Jun-28	12 mos.	$5,471	$5,313	($158)

Explanation of Changes

- Project cost increased due to inflation adjustments on unawarded redundancy and storage sub-phases.
- Schedule shift due to updated schedule for SEH Redundancy/Storage Final Design CA/RI after completion of the concept plan.
- Project spending shifted due to updated schedule for Easements and Short Term Improvements Design CA/RI.

CEB Impact

- The proposed storage facilities will require periodic inspection, maintenance, and water quality testing.

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 pipelines, sliplining, abandoning 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, Northern Intermediate High System and the Northern Extra 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 the Chestnut Hill 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 are presently in normal use, and a 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 discolored 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. Future design efforts will relocate the reservoir level control functions and provide an emergency electric generator for the pump station. 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.
Chestnut Hill Emergency Pump Station Emergency Generator Final Design CA/RI and Construction	Final Design CA/RI services and construction for the Chestnut Hill Emergency Pump Station Emergency Generator.
Design and Construction Shaft 7 Building	Design and construction of a new access building above the Shaft 7 Top of Shaft structure including new electrical service, HVAC equipment, piping corrosion protection, PRV replacement, new flow meters, and structural and access improvements to the facility.
Chestnut Hill Underground Pump Station Electrical Rehabilitation	The Chestnut Hill Underground Pump Station groundwater is extremely high and has entered the electrical equipment and caused electrical equipment to fail. This project is to relocate electrical conduits out of the concrete slab to prevent further failures.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$29,906	$17,487	$12,420	$0	$0	$25	$6,046	$6,374

Project Status 11/11	58.5%	Status as % is approximation based on project budget and expenditures. Preliminary engineering for the final pipe connections reached substantial completion in April 2006. Chestnut Hill Emergency Pump Station Emergency Generator Final Design CA/RI is expected to commence in July 2014.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$29,361	$29,906	$545	Jul-17	Jul-19	23 mos.	$447	$25	($422)

Explanation of Changes

- Project increased due to inflation adjustments due to new ENR index.
- Schedule shift and spending changed due to additional time to complete the MEPA review of siting the new emergency generator.

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 includes a future phase to rehabilitate Gillis, Newton Street, Lexington Sreet, and Commonwealth Ave pumping stations.

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 was completed several years ago.

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. The second construction contract was awarded in October 2006 and was substantially complete in June 2010.

The next phase will be to rehabilitate the Gillis, Newton Street, Lexington Street, and Commonwealth Avenue pumping 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, instrumentation, and security 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.

Sub-phase	Scope
Pump Station Rehabilitation	Rehabilitation of the Commonwealth Avenue, Gillis, Lexington Street, and Newton Street pump stations. The pumps in these stations will be over 20 years old and maintenance of the existing units will be an issue mostly due to availability of replacement parts. More efficient units will be installed based upon age and life of the equipment. Commonwealth Avenue, Gillis, and Lexington Street are the only pump stations for their respective service areas.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$55,144	$30,058	$25,086	$86	$0	$12,158	$0	$25,000

Project Status 11/11	54.5%	Status as % is approximation based on project budget and expenditures. Construction rehabilitation of 5 pump stations (Belmont, Brattle Court, Spring Street, Hyde Park, and Reservoir Road) was substantially complete in June 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$55,144	$55,144	$0	Jun-24	Jun-24	None	$12,158	$12,158	$0

Explanation of Changes

- N/A.

CEB Impact

- None identified at this time.

S. 722 Northern Intermediate High (NIH) Redundancy and Covered Storage

Project Purpose and Benefits

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

Master Plan Project ☑ 2008 Priority Rating 1 (see Appendix 3)

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.

Project History and Background

This system serves Reading, Stoneham, Wakefield, Wilmington, Winchester and Woburn, with an average day demand of 9.9 million gallons. The population served is approximately 150,000. The current six million gallon capacity of MWRA's Bear Hill Tank in Stoneham is both insufficient to meet MWRA's 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 109 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.

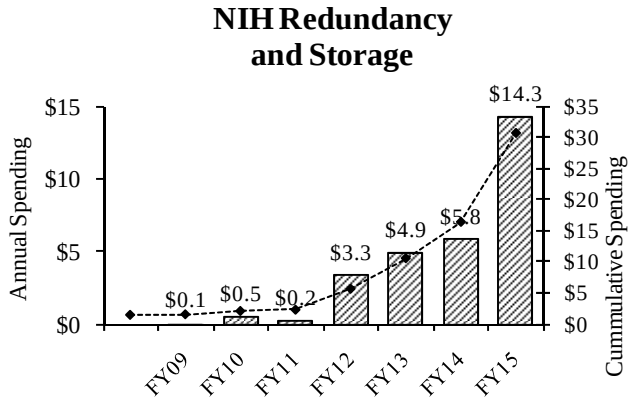
Scope

Sub-phase	Scope
Concept Plan, ENF, and Mobile Pump Unit	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, improved community interconnections, pipeline redundancy, targeted emergency response plans, additional storage or other improvements that can be implemented within the NIH system. Concept planning work included environmental review of the recommended plan and specification and purchase of the Mobile Pump Unit.
Design CA/RI NIH Impr/Gillis PS Impr./Reading-Stoneham Interconnection	This phase (Contract 7045) will cover the design and construction of short-term measures identified in the conceptual plan including Gillis PS Improvements and the Reading/Stoneham Interconnection.
Design and Construction Section 89/29 Redundancy Ph 1 & 2	The Concept Plan has developed preliminary route alternatives in order to provide redundancy to Section 89. Final routes will be determined following consultations with local elected officials, consideration of permitting requirements, project impacts and the location of the recommended storage for the NIH system. Contract 6906 will include design and CA/RI for the redundant pipeline only (approximately 7 miles).
NIH Storage Design and Construction	The Concept Plan has identified several potential storage locations in the NIH system. This phase includes the design and construction of two 3-MG elevated tanks.

Sub-phase	Scope
Section 89/29 Rehab Design and Construction (Ph 1 and 2)	There must be a redundant pipeline prior to Section 89 being taken off line for repairs. At that point, the pipeline can be inspected and rehabilitated as necessary. This phase includes design and construction of Section 89/29 rehab.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$82,491	$1,470	$81,022	$3,339	$4,901	$9,076	$50,325	$22,457



Project Status 11/11	3.2%	Status as % is approximation based on project budget and expenditures. Concept planning began in February 2006. Design for Short-term Improvements contract began in September 2009. Mobile Pump Unit purchase was made in FY10. Section 89/29 Redundancy Design/CA/RI contract was awarded in March 2011. Reading/Stoneham Interconnections commenced in August 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$79,070	$82,491	$3,421	Jan-21	Jan-21	None	$10,172	$9,076	($1,097)

Explanation of Changes

- Project cost decreased increased due to inflation adjustments on unawarded contracts. This increase was partially offset by actual award for the Reading/Stoneham Interconnections being less than original estimate.

- Project spending changed primarily due to updated schedule for Section 89 & 29 Redundancy Construction Phase 1 and actual award for Reading Stoneham Interconnections being less than original estimate.

CEB Impact

- The proposed storage facilities will require periodic inspection, maintenance, and water quality testing.

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.

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.

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 and lining 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) CA/RI 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 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 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 Fitchburg Main 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.
Section 4 Webster Ave Bridge Pipe Rehabilitation Design and Construction	Section 4 is a 48” cast iron main crossing the Webster Ave Bridge in Somerville that needs to be rehabilitated and is currently out of service due to pipe deflection and leakage. This project will return a currently isolated pipeline to service to provide redundancy.
Section 50 Pipe Rehabilitation Design and Construction	Section 50 is several hundred feet of 20” cast iron main on exposed pilings which is need of rehabilitation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$66,187	$60,980	$5,207	$0	$80	$582	$4,644	$483

Project Status 11/11	92.1%	Status as % is approximation based on project budget and expenditures. Work in Contract 2, Middle, is complete. Contract 3 (South) was substantially complete in April 2008. Section 4 Webster Ave Bridge Pipe Replacement Design is expected to commence in FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$66,127	$66,187	$60	Dec-18	Dec-18	None	$2,452	$582	($1,870)

Explanation of Changes

- Project cost increase primarily due to inflation adjustment for Construction 4 Trusses.
- Planned spending decreased due to revised schedule for Section 4 Webster Ave Bridge Pipe Rehabilitation Design & Construction and Section 50 Pipe Rehabilitation Design/ESDC/RI contracts.

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 provides 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 cement mortar lining. Section 97A, a new 16-inch pipeline provides redundancy to East Boston via Northern High System. The pipeline connects 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, Design CA/RI 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 and 46 Chelsea, East Boston Design and 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 ductile iron pipeline under the Chelsea River, is assumed to not need rehabilitation.
Section 97A Construction	Installation of approximately 3,000 linear feet of 16-inch and 12-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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$21,698	$2,321	$19,377	$2	$3	$2,268	$4,149	$15,223

Project Status 11/11	10.7%	Status as % is approximation based on project budget and expenditures. Section 97A Construction contract was substantially complete in October 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$20,233	$21,698	$1,465	Jul-20	Jul-22	24 mos.	$2,328	$2,268	($60)

Explanation of Changes

- Project cost increase due to revised cost estimate as a result of inflation adjustments for Section 8 Design and Construction. Also, new sub-phase added for Rehabilitation Sections 37 & 46 Chelsea/Boston/Design/CA/RI.
- Schedule change due to rescheduling Section 8 Construction as a result of project priorities.

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, and the City Tunnel. 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.

Project History and Background

WASM 3 is a 56- to 60-inch diameter lock-bar steel pipe installed in 1926 and 1927. It is connected to the MetroWest Tunnel and Hultman Branch at the west end and the City Tunnel Extension at its east end. It extends from Weston through Waltham, Belmont, Arlington and Somerville to Medford. Most of its flow comes from the MetroWest Tunnel Shaft W, with peak flow of 57 million gallons per day. A lesser amount enters the main from the City Tunnel Extension 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 Supply Mains and Reservoir. WASM 3 serves a population of about 250,000.

A break almost anywhere on this pipeline would result in severe service disruptions in Waltham, Watertown, Belmont, Arlington, Lexington, Bedford and Winchester. Virtually no water would reach Waltham if a break were to occur at the west end of the pipeline; water normally supplied through the Shaft W connection would be forced through the Shaft 9 connection, increasing flows and reducing hydraulic grade lines in WASM 3, the City Tunnel and City Tunnel Extension. The lack of redundancy also makes routine cleaning and lining of the 80-year old pipeline impossible. The need for maintenance is indicated by a significant number of leaks, particularly on the most vulnerable west end, 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 Shaft 9 of the City Tunnel Extension to WASM 3. This will be accomplished by rehabilitating existing mains between the City Tunnel Extension and WASM 3.

Previously proposed portions of this project have been eliminated or placed on hold until the Long Term Redundancy study is completed. Specifically, the proposed new 48-inch pipeline through Newton and Waltham has been eliminated in favor of a shorter 36-inch pipeline in Waltham from Meter 182 to the Waltham transmission system; and the rehabilitation of Sections 23, 24 and 47 has been delayed until the Long Term Redundancy study is finalized.

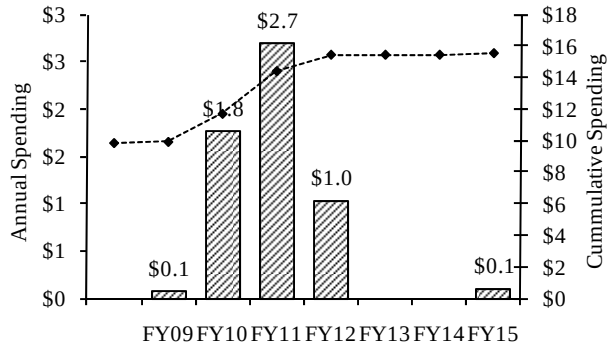
Scope

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 (5163)	Identification of alternatives to determine the optimum approach for providing additional strong connections to WASM 3.
Design/CA/RI-DP1 (6383)	Design, construction administration and residential inspection services for a new 48-inch pipeline to interconnect WASM 3 with WASM 4 (CP-1). This design work was terminated based on the recommendation of the Long Term Redundancy Study.
Design DP2/4 Meter 120 (6384)	Design services for CP-3, 5 and Meter 120. Construction Administration and Resident Inspection services to be performed by in-house staff.
Design and Construction CP2 C&L Sections 59 & 60 (7086/6548)	Cleaning and lining of 16,400 linear feet of 20-inch diameter pipe on Sections 59 and 60 (Intermediate High) from Section 25 in Watertown to Meter 121 in Arlington.
South Segment CP3 (6392)	Cleaning and lining of 6,900 linear feet of 20-inch pipe (Section 24) from Meter 120 to WASM 4, 5,350 linear feet of 36-inch (Section 23) and 10,170 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 (6394)	Rehabilitation of 15,000 linear feet of 20 and 48-inch diameter pipe for Sections 18, 50, and 51 for the Northeast Segment plus Meter 32 replacement.
Replacement of Section 25 Design (6955) and Construction (6956)	Replacement of existing Section 25 (approximately 4,800 linear feet of existing 16" pipe) with a new pipeline.
Section 75 Extension	Addition of approximately 6,000 feet of new 30-inch pipe to extend Section 75 from the Commonwealth Avenue pump station in Newton to Section 23, also in Newton, to provide a redundant feed to the Intermediate High Service area supplying Belmont and Watertown. Requires replacement of Section 25.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$32,639	$9,839	$22,799	$1,034	$0	$5,555	$10,664	$11,100

New Connecting Mains



Project Status 11/11	33.5%	Status as % is approximation based on project budget and expenditures. Northeast Segment CP-5 construction contract was awarded in July 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$31,632	$32,639	$1,006	Nov-19	Nov-19	None	$5,409	$5,555	$146

Explanation of Changes

- Project cost primarily due to inflation adjustments on unawarded contracts. Also, additional change orders for Northeast Segment (CP5).
- Spending increased due to additional change orders for Northeast Segment (CP5).

CEB Impact

- None identified at this time.

S. 692 Northern High Service – Section 27 Improvements

Project Purpose and Benefits

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

To rehabilitate/replace a segment of 107-year old pipe in Lynn which suffers from poor hydraulic performance and frequent leakage. Rehabilitate/replacement of approximately 7,200 linear feet of pipeline will improve service to the communities north of Lynn.

Project History and Background

Section 27 is a 12–20 inch diameter cast iron main installed in 1898 that serves the communities north of Lynn. The main has become severely corroded. As a result of this deterioration, various major leaks have occurred since 1966. Because the main runs under major thoroughfares in Lynn, repair of leaks is disruptive and costly. Appropriate corrosion control methods will be employed on the pipeline to minimize corrosion potential in Section 27. During preliminary design, an evaluation determined MWRA should abandon an adjacent pipeline, Section 35.

Scope

Sub-phase	Scope
Construction Section 27	Rehabilitation/replacement of 7,200 linear feet of pipeline to replace severely corroded pipe.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$3,475	$124	$3,351	$0	$1	$1	$777	$2,574

Project Status 11/11	3.6%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY12	Chge.
$3,308	$3,475	$167	Nov-18	Nov-19	12 mos.	$1	$1	$0

Explanation of Changes

- Project cost increased due to inflation adjustment.
- Project schedule changed due to project priorities.

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 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-feet 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. 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. Sections 49 and 49A, 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, 48 or 60-inch diameter pipeline is needed to reinforce Sections 49 and 49A. An 850-feet 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. Construction of Section 53 Revere started in October 2008.

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 4,900 linear feet of 30-inch pipe in Revere on Section 53 and replacement of 1,500 linear feet under Route 1 in Revere.
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.
Design and Construction 68 & 53A	Design CA/RI, and 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 Design and Construction	Design CA/RI, and 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$35,288	$26,833	$8,455	$0	$0	$2,938	$4,241	$4,215

Project Status 11/11	76.0%	Status as % is approximation based on project budget and expenditures. Revere Beach, Malden Section 53 and Linden Square construction are complete. Revere Section 53 Construction was substantially complete in August 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$33,612	$35,288	$1,676	Nov-19	Nov-20	12 mos.	$2,949	$2,938	($11)

Explanation of Changes

- Project cost increased due to new sub-phases added for Sections 58&53A Design CA/RI and Shaft 9A-D Design CA/RI. Also, inflation adjustment on Sections 68& 53A Construction contract.

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 4,700 linear feet 24-inch water main, 1,800 feet of 36-inch water main and 6,000 feet of 12-inch water 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 town 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 and construction of approximately 6,000 feet of distribution piping for the town of Saugus. The cost of this project will be shared by MWRA and the town of Saugus. An interim interconnection to the Saugus system was constructed in early FY08.

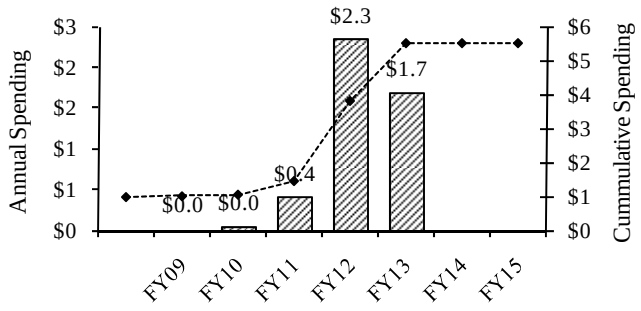
Scope

Sub-phase	Change/Explanation
Temporary Interconnect Construction Ph 1	Install approximately 150 feet of 24" main.
Design and Construction Ph 2	Construction of 4,700 linear feet of new 24-inch main, 1,800 feet of 36-inch water main and 6,000 feet of 12-inch water main.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$5,016	$984	$4,032	$2,342	$1,690	$4,503	$0	$0

Lynnfield Pipeline



Project Status 11/11	39.1%	Status as % is approximation based on project budget and expenditures. Temporary Interconnect Construction Phase I reached substantial completion in December 2007. Construction (Phase 2) commenced in January 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$5,042	$5,016	($26)	Jan-13	Jan-13	None	$4,508	$4,503	($5)

Explanation of Changes

- Project cost and planned spending decreased based on change order estimates.

CEB Impact

- None identified at this time.

S. 618 Northern High Northwest Transmission Section 70-71

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*

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To improve service reliability by completing a study to rehabilitate more than 10 miles of pipeline serving the northern high service area.

Project History and Background

The Northern High System Pipeline Sections 70, 71 and 79 are the primary distribution mains that supply water to seven north shore communities. These water mains are constructed of unlined steel and are over 55 years old. Rehabilitation of these pipelines will extend their useful life and postpone the need for more costly pipe replacement in the future. This project includes an initial planning study that will assess the existing pipe condition and develop a sequence of work that would ensure uninterrupted service to the north shore communities while pipeline segments are out of service for rehabilitation. Future phases for design and construction of the rehabilitation will be added to this project based on the results of the planning study.

Scope

Sub-phase	Scope
Planning	Planning phase for the rehabilitation of more than 10 miles of NHS Sections 70, 71, and 79.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$1,000	$0	$1,000	$0	$0	$0	$1,000	$0

Project Status 11/11	0.0%	Status as % is approximation based on project budget and expenditures. Planning is expected to begin in July 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$1,000	$1,000	$0	Jun-14	Jun-15	12 mos.	$0	$0	$0

Explanation of Changes

- Project schedule changed due to project priorities.

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 and 45 provide service to the Northern Extra High (NEH) communities of Waltham, Lexington, Bedford, Belmont, Winchester 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 community distribution systems. 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
Design/CA/RI and construction – Sections 45, 63, and 83.	Replacement of approximately 2,600 linear feet of Section 45 with 24-inch diameter pipe extending from the connection point at Meter 47 to Section 82 on Park Street at the Intersection of Paul Revere Road in Arlington; installation of about 2,100 linear feet of new 24-inch pipeline, parallel to a portion of Section 83, starting from Meter 182 and proceeding to the intersection of Waltham Street (in Lexington and part of Waltham) and Concord Ave (in Lexington). Rehabilitation of Section 63, consisting of about 3,400 linear feet of 20-inch pipeline connecting Section 63 to Meter 136.
Design and Construction Sections 34 & 45	Replacement of 1,532 linear feet of 12-inch diameter cast-iron pipe (Section 34) with new 20-inch diameter pipe and rehabilitation of 3,374 linear feet of 16-inch diameter cast iron main (Section 45).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$7,479	$3,632	$3,846	$0	$13	$13	2,907	$926

Project Status 5/11	48.6%	Status as % is approximation based on project budget and expenditures. Construction of a portion of Section 45 was rehabilitated in September 2001. Design of Sections 34 and 45 scheduled to start in FY15.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$6,690	$7,479	$788	Nov-16	Dec-18	25 mos.	$25	$13	($12)

Explanation of Changes

- Project cost increase due to new sub-phase added for Section 34 & 45 Design CA/RI. Also, inflation adjustment.
- Schedule shifted due to project priorities.

CEB Impact

- None identified at this time.

S. 735 Section 80 Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*

Master Plan Project☑ 2009 Priority Rating 3 (see Appendix 3)

Rehabilitation of approximately 16,197 feet of pipe along Route128/95. Section 80 supplies water to Wellesley and Needham. Rehabilitation will improve water quality to these two MWRA communities.

Project History and Background

Section 80 is a steel main that runs from Shaft 5 of the City Tunnel in Newton to supply Wellesley and Needham. The main runs along portions of 128/95 and has been exposed to highly corrosive conditions and cathodic protection has not been maintained. Complaints from residents in Needham and Wellesley of a tar-like smell in the water indicate deterioration of the pipe liner. Testing indicated phenols levels 10 times allowable limits. Failure of Section 80 would create huge traffic challenges on this major metro-Boston highway.

Scope

Sub-phase	Scope
Section 80 Design CA/RI and Construction	Design and rehab of approximately 16,197 feet of pipeline in Section 80 along route 128/95.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$8,928	$0	$8,928	$0	$0	$0	$582	$8,346

Project Status 11/11	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$8,485	$8,928	$442	Dec-20	Dec-20	None	$0	$0	$0

Explanation of Changes

- Project cost increased due to updated cost estimates.

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, control and metering sites.
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.
Winsor Dam High Line Replacement	Replace high line cable from Winsor Power Station to Quabbin Tower to insure uninterrupted service of SCADA communication network.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$16,992	$15,705	$1,287	$430	$857	$1,325	$0	$0

Project Status 11/11	93.0%	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 FY12. Winsor Dam High Line Replacement is expected to begin late FY12.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$16,992	$16,992	$0	May-12	Sep-12	4 mos.	$1,325	$1,325	$0

Explanation of Changes

- Schedule changed for the Winsor Dam High Line Replacement project due to project priorities.

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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$1,799	$1,036	$763	$0	$228	$228	$535	$0

Project Status 11/11	57.6%	Status as % is approximation based on project budget and expenditures. Records Development is the one outstanding sub-phase and has been delayed due to competing project priorities. Expect NTP in FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$1,799	$1,799	$0	Dec-14	Dec-14	None	$228	$228	$0

Explanation of Changes

- N/A

CEB Impact

- No additional impacts 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 loan during a ten-year time period beginning one year after the project funding is approved. MWRA increased the initial total program budget to $256,796,500 to provide funds for additional water system communities: Stoughton ($4,480,000), Reading ($1,916,000), Lynnfield ($320,000), Dedham/Westwood ($7,500), and Wilmington ($73,000).

An additional $210 million was added to the FY11 budget for the next phase known as the Local Water System Assistance Program. Community distributions from this program will be made from FY11 through FY20 with repayments scheduled for FY12 through FY30. The $210 million is split with $200 million allocated among 42 Metro-Boston/Metro-West communities and $10 million allocated among three Chicopee Valley Aqueduct (CVA) communities.

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.
Local Water System Assistance Program Loans	This is a continuation of the program of providing interest-free loans to water system communities for pipeline replacement, cleaning and lining, water metering and other local water system improvements.
Local Water System Assistance Program Repayments	Principal repayment over a ten-year period beginning one year after origination of the loans.
CVA Loans	This is an extension of the Local Water System Assistance program to the CVA communities to provide interest-free loans to water system communities for pipeline replacement, cleaning and lining, water metering and other local water system improvements.
CVA 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$0	$104,944	($104,944)	$8,578	$16,919	$39,365	($2,546)	($127,896)

Project Status 11/11	46.0%	Through November 2011, $212.3 million in loans were distributed to member communities.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$0	$0	$0	Jun-30	Jun-30	None	$37,988	$39,365	$1,377

Explanation of Changes

- Spending shift is due to revised cash flows.

CEB Impact

- The annual interest paid for the Commercial Paper program supporting the Local Water Pipeline initiative is over $1.2 million per year based on the last 10 years.

S. 766 Waterworks 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 2018 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.
Transformer at Cosgrove Intake Building	Replacement of a 45 year old main service transformer and load break switch. This transformer supplies power to the Cosgrove Intake Building. If it were to fail, the building would be running on generator power for a significant period of time.
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 John J. Carroll Water Treatment Plant.

Sub-phase	Scope
Covered Storage Tank Rehabilitation	Rehabilitation of Fells and Loring Road Covered storage facilities commencing in FY19. The valves, sluice gates, and piping should be considered for rehabilitation by this time, as each facility will be more than 20 years old.
Elevated Water Storage Tank Repainting	Repaint 5 steel water storage tanks (Bellevue 1, Bellevue 2, Park Circle, Turkey Hill, and Walnut Hill). All were painted in 2000. Bellevue 1 and 2 are in the same service area (SEH); Park Circle, Turkey Hill and Walnut Hill are in the same service area (NEH). As noted, the various tanks are redundant to each other. Redundancy is maintained by performing this project and keeping the tanks in good condition and in service.
Shaft 9 Rehabilitation	Ground water leakage is filling the access shaft. The piping and components in the access shaft need to be evaluated and repair work performed.
Electrical Distribution Upgrades at Southborough	Upgrade of existing 13.8kV distribution system that supplies the various buildings at Southborough Complex due to on-going service disruptions. Install electrical metering equipment to better manage electrical use in facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$17,174	$238	$16,937	$269	$74	$343	$11,430	$5,164

Project Status 11/11	2.1%	Status as % is approximation based on project budget and expenditures. Waltham Pipe/Bridge Replacement project was substantially complete in September 2004. Transformer Replacement at Cosgrove Intake Building began in June 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$16,884	$17,174	$290	Jul-23	Jul-23	None	$621	$343	($278)

Explanation of Changes

- Project cost changed due to new project added for Electrical Distribution Upgrade at Southborough Facility and inflation adjustment for Meter Vault Manhole Retrofits. This increase was partially offset by actual award of the Transformer Replacement at Cosgrove Intake being less than engineer's estimate.
- Planned spending shift primarily due to actual award of the Transformer Replacement at Cosgrove Intake being less than engineer's estimate.

CEB Impact

- No additional impacts 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. (Completed by July 2005).
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. Sub-phases consist of As-Needed Design phases 1-10.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$10,888	$6,296	$4,592	$2,313	$1,668	$6,558	$611	$0

Project Status 11/11	63.5%	Status as % is approximation based on project budget and expenditures. All tasks in *Inventory & Evaluation Phases 1 & 2* are complete. As-Needed Design contract 4 was completed in August 2009 and contract 3 was completed in February 2010. As-Needed Design 7 began in January 2010 and As-Needed Design 8 began in February 2010. As-Needed Design 6 was completed in August 2010. As-Needed Design 5 was completed in March 2011. As-Needed Contracts 9 and 10 were awarded in July 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
11,549	$10,888	($661)	Aug-13	Aug-13	None	$7,297	$6,558	($739)

Explanation of Changes

- Project cost and planned spending decreased due to updated cost estimates.

CEB Impact

- One of the final tasks under the *Inventory & Evaluation Phases 1 & 2* contract consisted of REI/ESDC services on the *Equipment Condition Monitoring* subphase, one of the projects under S.206, *Deer Island Treatment Plant Asset Protection*. Condition Monitoring provides DITP staff with real time, non-intrusive means of evaluating equipment performance (through vibration and temperature monitoring). Maintenance tasks are then performed when the trends indicate that a problem exists, saving staff time and reducing unnecessary maintenance. Total budgetary benefits are not quantified 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.
FY09-13 Major Laboratory Instrumentation	Purchase major laboratory instrumentation, such as high resolution GC-MS or LC-MS to provide for lab testing of newly regulated contaminants.
Vehicles:	
Closed Circuit TV Inspection Truck	Purchase of TV Inspection Truck (WRA700) to support Wastewater Pipeline Unit of Field Operations Department.
High Lift Fork Loader (Lull)	Purchase High Lift Fork Loader (Lull) to move equipment and materials at Deer Island.
Front-End Loader	Purchase front-end loaders to move equipment, sand, and gravel at Deer Island.
Prior Vehicle Purchases	Vehicle purchases prior to FY10 including Back Hoe, Vactor Truck, Water Service Truck, Bucket Machine, Excavator, Grove Crane, Land Fill Loader, Power Sweeper/Catch Basin Cleaner, Back Hoe (WRA-285), Front-End Loader, Dump Truck WRA-558, Dump Truck (WRA 522), Crane (WRA 185), International Tractor/Trailer
Ramp Truck	Purchase of Ramp Truck to replace WRA-396 to support Fleet Services.
Street Sweeper	Purchase of Street Sweeper to support MWRA facilities and community assistance.
FY09-13 Vehicle Purchases	Vehicle purchases planned for FY10-13.
FY14-18 Vehicle Purchases	Future vehicle purchases planned for FY14-18.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$16,237	$9,148	$7,089	$1,655	$1,807	$7,353	$3,627	$0

Project Status 11/11	58.1%	Status as % is approximation based on project budget and expenditures. Purchase and installation of security equipment is in process and will continue through FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**	**FY12**	**FY13**	**Chge.**
$15,655	$16,237	$582	Jun-18	Jun-18	None	$7,498	$7,353	($144)

Explanation of Changes

- Project cost increased primarily due to revised cost estimates for Security Equipment and Installation, FY09-13 and FY14-18 Vehicle Purchases.
- Spending decreased due to updated schedule for Major Laboratory Instrumentation partially offset by revised costs for Security Equipment & Installation and FY09-13 Vehicle Purchases.

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: mechanical, materials testing, surveying, hazardous materials assessment, instrumentation control, and wetland/environmental.

Status: MWRA uses technical assistance contracts in support of various CIP and CEB projects.

Expenditure Forecast (in $000s)

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$ 1,200	$0	$1,200	$0	$400	$400	$800	$0

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$1,200	$1,200	$0	Jun-14	Jun-15	12 mos.	$800	$400	($400)

Explanation of Changes

- Schedule and spending shift to reflect continuation of 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. 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.

The initial business systems plan focused primarily on FY95-97 (Phase 1) with the goal of getting greater use out of existing systems. Implementation of Phase I improvements was completed in June 1997.

Phase II (FY97-10) 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 (TRAC/IS), Phase II is complete. The TRAC I/S was competitively bid in FY07 and the project is expected to be completed in Q2 FY13.

Phase III (FY99-01) focused on implementing a newly, integrated financial, procurement and human resources/payroll system (Lawson) which replaces three separate and obsolete software products. This project was substantially completed in May 2000 and met schedule and budgetary targets. Implementation of a Treasury application (XRT) 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 disruptions. In addition, approximately 65% of Phase IV spending was for items that would have been purchased under normal circumstances and the items have a useful life well beyond 2000.

Phase V (FY01-10) 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 (completed), and improvements to the Laboratory Information Management System (LIMS) to ensure MWRA keeps pace with changing business needs and technology standards. The LIMS contract was awarded in FY08 and the project was completed in Q2 FY10. In addition, Phase V includes replacement of obsolete minicomputers and improvements to GIS and TV Inspection systems based on benchmarking results (completed).

Phase VI (FY04-12) supports the replacement of obsolete PBXs at major sites, the 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. Lawson hardware was procured in FY08; software procurement and implementation was completed in May 2009.

A new MIS Plan, as part of the overall Authority's Master Plan, is under development. The major areas of focus are: replacing aging systems and the network architecture, improving disaster recovery, enhancing data integration, consolidating server/computing resources, and implementing applicable best practices. The goal is to continue to support efficient administrative, financial, operational, engineering and planning functions with cost-effective technologies. Key projects identified include: NET2020 project, storage/server improvements (SAN), Computer

Center and OCC infrastructure equipment replacements, records management software and telecommunications equipment replacement.

Scope – The table describes the original CIP phases and associated projects.

Sub-phase	Scope
Phase I (FY95-03)	(Complete): Upgrade of BHP minicomputers; Unix-based minicomputer for GIS integration; implementation and enhancement of the Sewerage Analysis and Management System (SAMS) including high-end workstations to incorporate improved hydraulic modeling capabilities, condition information, mapping, and GIS data so that CSO Master Plan and Transport data requirements are met; PC replacements; storage and functionality improvements for TRAC (IS) and wastewater flow data; leasing of three replacement minicomputers for administration and finance systems to address capacity and performance issues; 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; and development of a network plan for Business Systems Plan updates to address industry changes, maintenance/replacement concerns and functionality needs.
Phase II (FY97-13)	(Complete): Server consolidation, network scalability program, database integration program, PBX replacement, records management inventory program, maintenance management and waterworks programming services are completed. (Open): The new TRAC I/S replacement was in production by September 2009 and the CIP includes 3 years of maintenance through FY13 and efforts customizing based on MWRA business needs and regulatory requirements. The Authority accepted the system in October 2010.
Phase III (FY99-04)	(Complete): Procurement of new integrated financial, procurement and human resources/payroll system. Purchase and installation of a back-up generator for Building 36 in the Charlestown Navy Yard and network project support.
Phase IV	(Complete): Year 2000 assessment and improvements.

Sub-phase	Scope
Phase V (FY01-12)	(Complete): Waterworks Operations Management System (OMS) project: Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. SCADA incorporation to Process Book is complete. In FY06, a Harbor Outfall Monitoring Database project was identified and the system was completed in FY08. Data warehouse was completed in Q2 FY10. (Complete): Geographical Information Management System (GIS): Conversion of GIS from UNIX to NT based on vendor software changes (complete). Also, completed recommendations from a TV Inspection Benchmarking Project by purchasing new software to improve data and operational efficiencies. New business requirements, including expansion of GeoXH handhelds to collect information on manhole inspections and its incorporation into GIS, are being handled under the CEB. (Complete): GIS Projects and Enhancements Project: In FY01, the scope of this project was expanded to include Open-VMS minicomputers replacement project, which is the project to replace Deer Island VMS servers. In FY08, the Open VMS project was renamed GIS Projects and Enhancements Project and an RFB was published Q1 FY09. (Complete): Laboratory Information Management System: Implementation of software improvements to stay current with industry standards and meet ongoing business needs. A competitive bid was awarded in FY08. Development and testing continued during FY09 with final system acceptance in Q3 FY10. The LIMS will process both water and wastewater samples. Phase One, water testing, of the LabWare LIMS implementation went live in Q3 FY09 as planned. Phase Two, wastewater testing, was completed in Q3 FY10. LIMS replacement is complete.

Sub-phase	Scope
Phase VI (FY04–12)	(Complete): Telecommunications: Replacement of the Deer Island PBX (completed in FY04). (Complete) Lawson Minicomputer: The original plan was to purchase a backup UNIX minicomputer to be used for Lawson processing and storage improvements for all MWRA's minicomputer and server resources (scheduled for FY08). However, in order to maintain vendor support for the Lawson System, new OS and server replacements, application environment and upgrades needed to be implemented in FY08/FY09. New servers were procured for Chelsea (production) and Deer Island (disaster recovery/test/development) in FY08. Application Environment upgrade was procured and installed in FY08. (Complete): Disaster Recovery: In FY06, as part of the MWRA-wide Continuity of Operations Planning project, it was determined that a permanent disaster recovery computer center would be located at the Interim Corrosion Control Facility at the CWTP. A disaster recovery computer center was viewed as a higher priority than the originally budgeted server consolidation line item. This project has changed. The ICCF plan was not viable due to limited space and Weston was identified as a preferred alternative site. However, Weston requires time for design and cost analysis. Pending a review of the viability and cost of a redundant network connection via microwave technology, a third option, utilizing the existing DITP Data Center as the permanent Disaster Recovery was investigated. However, since the Commonwealth is opening a new Disaster Recovery site in Springfield, the MIS Department is working closely with state officials to explore utilizing the space at the new site scheduled to open in the Spring of 2012. The approach will allow the MWRA to save money by leveraging the existing infrastructure (i.e. environmental equipment, generator, security, UPS, etc). The schedule for completion is FY13. To be consolidated under IT Continuity sub-phase. (Complete): Microsoft Licensing: Microsoft's current strategy is 2 years of final maintenance on a version once a newer version has been released. The remaining CIP provides for approximately 350 future Office 2007 licenses (previous re-licensing programs yielded a credit); however, MIS used the funding for Microsoft Server licenses. The outstanding Microsoft office licenses were purchased under the CEB in FY09 and FY10. (Complete): Document Management: The replacement of InfoStar, the MWRA Document Management System, was originally part of this phase but it was eliminated in December 2004 and is requested for FY15. Project not funded during the FY09 Cycle but was resubmitted in FY10 and was budgeted under the FY11 CIP. Staff are currently evaluating various software and anticipate bid specifications in FY12. To be consolidated under IT Continuity sub-phase.

Sub-phase	Scope
NET2020 (FY10–FY14)	(Open): The current MWRA network architecture was implemented in CY2000 in preparation for the facility and staffing consolidation that took place in Chelsea in 2001. The goal was to establish a computer network architecture that would support MWRA's evolving information technology requirements over a 10-year period through 2010. MWRA's architecture emphasizes manageability, stability, flexibility and adaptability. MWRA major sites connected to Chelsea are: Charlestown, Marlborough Records Center, Weston Reservoir, Advisory Board, Carroll Water Treatment Plant, Clinton, Cosgrove, Deer Island Treatment Plant, Nut Island, Pellet Plant, Quabbin Reservoir Lab and Southborough. Due to costs and limited provider options, smaller sites gain access to the MWRA network through a variety of methods such as dial-up (modem over telephone lines) and virtual private network (VPN) over DSL lines or cable company connections. VPN will also be used to support planned projects of wireless connectivity for field staff using MAXIMO, Global Position Units, and for full systems access by the Emergency Services Unit during drills, security incidents and disasters. The NET2020 project will address the new network architecture for the period 2010 to 2020 including replacing all network equipment (3 main switches, 105 premise switches and numerous appliances) with newer products.
SAN II (FY13) SAN III (FY15)	(Open): SANs provide modular scalability, high availability, increased fault tolerance and centralized storage management. Historical data can also be archived to cheaper storage following industry best practices. The use of a SAN reduces footprint requirements. Also, energy needed to run and cool the SAN equipment is reduced by approximately 50%. The current inventory of major servers and minicomputers is 87 (this does not include site servers for file sharing and printing). The first SAN (Phase II) will collapse up to 32 servers/minicomputers' direct attached storage. SAN II will collapse up to an additional 32 servers/minicomputers' direct storage in FY13. In FY15, a SAN III has been planned to replace the original SAN with the then current technology.
Telecommunications (FY14–FY15)	(Open): Voice communication is done using private branch exchanges (PBXs) located at Charlestown, Chelsea, Southborough, Carroll Water Treatment Plant, Deer Island, Clinton and Nut Island. Because the PBXs are networked, staff at these facilities can use four-digit dialing to call each other at no cost. Charlestown and Chelsea operator consoles are linked to permit Chelsea to be the primary call-intake facility. Likewise, Chelsea and Deer Island are uniquely linked to allow Chelsea to be the backup console. A full replacement of the equipment is not planned until FY14, prior to which new technologies will be reviewed such as Voice over IP (telephone communications using the Internet) before the next 10-year architecture is established.
Computer Center & OCC Infrastructure (FY15–FY16)	(Open): The Chelsea facility hosts the Computer Center, Operations Control Center (OCC) and the primary Emergency Operations Center. Specialty fire suppression systems, UPS equipment, environmental control and alarming systems, console apparatus, etc. was purchased in 2000/01 with the facility opening. All of this equipment has a useful life of approximately 15 years and will require replacement beginning in FY15.
Laboratory Instrument Data Management	(Open): Implementation of software improvements to stay current with industry standards, meet ongoing business needs and to re-establish vendor support. Included are a Chromatography Data Management Server and a more global instrument data management system. This solution could include a server-based approach to managing instrument data and interfacing with LIMS. Regulation requires laboratory testing and data archiving. The project will be started after the new Laboratory Information Management System (LIMS) has been implemented which is scheduled for FY12.
Corporate Server Infrastructure & Document Distribution	(Open): The Corporate Server Infrastructure and Replacement Program is one of the major technology changes for the MIS Department along with PIMS, LIMS and Lawson upgrades. Based on current technology standards, the average hardware system infrastructure has a useful life of 3-5 years. MIS requested $500,000 for FY09 and $500,000 for FY13 to prepare for upcoming technology changes in infrastructure and major applications server replacement in a 4-year cycle.

Sub-phase	Scope
DITP/OMS	(Open): Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. SCADA incorporation to Process Book is ongoing. Data warehouse completed in FY10.
GIS/TV Inspection	(Completed): Conversion of GIS from UNIX to NT based on vendor software changes was completed. Also, completed recommendations from a TV Inspection Benchmarking Project by purchasing new software to improve data and operational efficiencies. New business requirements, including expansion of GeoXH handhelds to collect information on manhole inspections and its incorporation into GIS, are being handled under the CEB. Consolidated under IT Continuity.
GIS Projects & Enhancements	(Open): Project will consist of Hardware, Installations, Software, Customizations and Technical Support of Geographical Information Systems. Project began in FY09 Q2 and will continue through FY13.
MIS Strategic Planning Implementation	(Open): Project will consist of consultant services, hardware, storage, technical support and strategic projects.
MIS Licensing	(Complete): Funding for Microsoft Licensing Suite of products – Office Professional 2003 was completed. Remaining funds were used for MS VISTA and Office Professional 2007 Test Licenses.
Lawson Conversion	(Complete): Original funding of $600,000. The remainder of funding came from Phase V projects where bids were awarded at a lower than anticipated cost. The project includes funding for new OS, server replacements and application environment (new servers were procured for Chelsea (production) and Deer Island (disaster recovery/test/development) in FY08). Application Environment upgrade was completed in FY08. The application software upgrade, including technical support and professional services was successfully completed in Q4 FY10.
Cyber Security	(Complete): Funding for Development Contract executed in December 2007 for Internet Data Protection 24X7 Monitoring costs. Cyber Security Monitoring continues to provide multiple layers of protection against internal and external threats to our networks and systems. Updates to software and hardware completed.
Original SAN	(Complete): The original amount of $680,004 funded from Phase II project. Funding will be used for Hardware, Software and Technical Support. This project provides increased data storage with high availability, centralized storage management and more energy-efficient operations
Cyber Security	(Open): Next phase of Cyber Security to provide new appliances, software upgrades, and hardware replacement in addition to the 24 hour 7 day/week monitoring to outfit the 2nd MIS Data Center. This project started in FY12 and will continue through FY15.
Lawson System Upgrade	(Open): Next phase of Lawson hardware, environment, and application replacement or upgrades. This project is expected to start in FY13.
Laboratory Information Mgmt System (LIMS)	(Open): The system is used by MWRA for processing water and wastewater related samplings intended to demonstrate compliance with state and federal regulations. Hardware replacements and enhancements to the system based on current useful life.
Pre-Treatment Information Mgmt System (PIMS)	(Open): The system is used by the MWRA to monitor the pretreatment program pursuant to MWRA's NPDES permit and EPA regulations. Hardware replacements and enhancements to the system based on current useful life.
Document Control System Software Application Replacement	(Open): The Document Control Application is used to track, manage and retrieve the latest and best engineering document information (drawings, specs, submittals, etc.) on MWRA infrastructure assets. The information from the application is used for field maintenance, repair, engineering, construction, litigation, etc.

Sub-phase	Scope
NET 2020 DITP/Southborough	(Open): Network Infrastructure Project - Copper cable upgrade to CAT6 to support new standards and fiber upgrade to support increased backbone capacity for 10GIG. This request is for funding of DITP and Southboro facilities cabling and fiber upgrade. The existing cabling and fiber are non-compliant with current standards.
IT Continuity	Future information technology initiatives to be further defined upon completion of the Information Technology Study.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$39,294	$24,660	$14,635	$975	$3,806	$7,432	$9,854	$0

Project Status 11/11	63.7%	Status as % is approximation based on project budget and expenditures. Phases V and VI are complete. The first phase of Cyber Security was completed in September 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$38,800	$39,294	$494	Sep-16	Sep-16	None	$8,407	$7,432	($975)

Explanation of Changes

- Project cost increased primarily due to revised cost estimates for Document Control System Software Application Replacement sub-phase.

- Spending decreased due to reduction in budget for the completion of several phases including Phase VI and Cyber Security and revised schedule for Laboratory Instrument Data Management. This was partially offset by increase for Information Technology Continuity future initiatives.

CEB Impact

- The incremental software and/or hardware maintenance costs for the Phase V LIMS Replacement (GIS & OMS) ($187,000 in FY14); Phase II TRAC Replacement ($150,000 in FY14); NET2020 ($50,000 in FY14); SAN II ($100,000 in FY15); NET2020 DITP and Southborough ($75,000 in FY16); SAN III ($100,000 in FY19); and Telecommunications ($25,000 in FY19).

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 completed in October 2010. 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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$1,479	$1,479	$0	$0	$0	$11	$0	$0

Project Status 11/11	100%	Status as % is approximation based on project budget and expenditures. The Prison Point oil recovery was completed in July 2010 and decommissioning of the oil recovery system was completed in October 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$1,556	$1,479	($78)	Jan-13	Oct-10	(27) mos.	$88	$11	($78)

Explanation of Changes

- Project cost, schedule, and spending decreased due to revised cost estimate and schedule for prison point oil recovery.

CEB Impact

- No additional impacts 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 consolidated existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions across the organization.

The 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. The project also included funds for demolition of the CSB (Construction Support Building) which was built as a temporary structure and has also deteriorated. The CSB Demolition contract was completed in September 2009.

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 FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$2,151	$371	$1,780	$28	$865	$1,264	$887	$0

Project Status 5/11	17.2%	Status as % is approximation based on project budget and expenditures. CSB/Demolition began in May 2009 and is substantially complete. Records Center Shelving and Moving to the interim warehouse/records center was completed in the spring of 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$2,151	$2,151	$0	Jan-13	Apr-13	3 mos.	$2,151	$1,264	($887)

Explanation of Changes

- Project spending changed due to revised schedule for project to rehabilitate or demolish the old Deer Island Administrative Building.

CEB Impacts

- No additional impacts identified at this time.

S. 935 Alternative Energy Initiatives

Project Purpose

A comprehensive "green energy" initiative that is expected to bring solar, wind and hydroelectric power either alone or in combination to a number of MWRA facilities

Project History and Background

This project was originally included under Deer Island in previous budget cycles. Building upon its track record in sustainable resource use – most notably dramatic system-wide reductions in water demand, 100% beneficial reuse of biosolids, self-generation of approximately 25% of Deer's Island power needs, and maximizing revenue through hydropower – MWRA continues to work aggressively to use its resources efficiently, respond appropriately to climate change, and reduce the environmental impacts of its daily operations. Key initiatives completed in FY11 and early FY12 include: A comprehensive "green energy" initiative that brought solar, wind and hydroelectric power to a number of MWRA facilities.

Scope

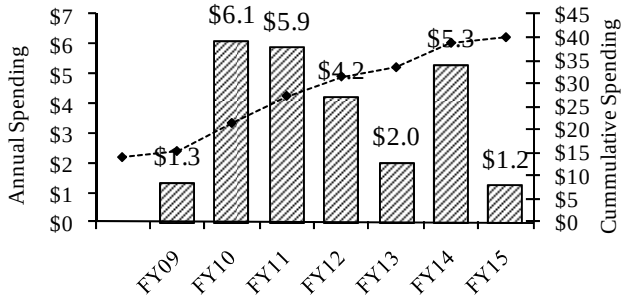
Sub-phase	Scope
DI Solar Residuals Odor Control (ROC)	Design and construction of 100kw photovoltaic array. Projected annual output estimated at 105,000 kwh.
DI Wind	Design and construction of 2 600kw solar wind turbine systems. Projected annual output estimated at 2,300,000 kwh.
DI Solar Maintenance/Warehouse	Design and construction of 180kw photovoltaic array. Projected annual output estimated at over 200,000 kwh. Project funding includes $735K million from the American Recovery and Reinvestment Act ("ARRA").
Future DI Wind	Design and construction of up to two 600 kw wind turbines at Deer Island. Projected annual output estimated at 1,150,000 kwh per turbine.
DI Solar Power Purchase Agreement (PPA)	Design and construction of 456kw photovoltaic array through a third party 20 yr Power Purchase Agreement. Projected annual output estimated at 520,000 kwh. Project partially subsidized by $1.1M from ARRA program. No capital costs to MWRA; pay for electricity generated.
Loring Road Hydro	Construction of a 200 kW hydropower turbine/generator at Loring Road. Projected annual output estimated at 1,200,000 kwh. Project funding includes $1.5 million from the ARRA program.
Energy Adv Con Services	Consultant for comprehensive energy advisory services on throughout the Authority.
Wachusett Hydro Design & Construction	Design and construction of 155kw hydro generation plant at Wachusett Reservoir. Projected annual output estimated at 750,000 kwh.
Technical Assistance	Various technical assistance contracts to aid solar, wind, and hydro initiatives.
Carroll WTP Solar Construction	Installation of photovoltaic cells with generating capacity of 496kw at Carroll WTP plant. Projected annual output estimated at over 616,000 kwh. Project funding includes $2.2 million from the ARRA program.
Charlestown Wind	Design and construction of 1.5 MW wind turbine system. Projected annual output estimated at 3,000,000 kwh. Project funding includes $4.8 million from the ARRA program.

DI Wind Phase 2/CSB	Installation of one 600 kw wind turbine at Deer Island. Projected annual output estimated at 1,150,000 kwh.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY11	Remaining Balance	FY12	FY13	FY09-13	FY14-18	Beyond FY18
$27,055	$13,881	$13,173	$4,220	$2,000	$19,510	$6,953	$0

Alternative Energy Initiatives



Project Status 11/11	60.3%	Status as % is approximation based on project budget and expenditures. Carroll Water Treatment Solar and Loring Road Hydro Construction were completed in May 2011. Carroll Water Treatment Plant Solar Construction and Charlestown Wind Project were completed in 2011. DITP Solar PPA completed in 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY12	FY13	Chge.	FY12	FY13	Chge.	FY12	FY13	Chge.
$26,377	$27,055	$678	Dec-14	Dec-16	24 mos.	$21,231	$19,510	($1,721)

Explanation of Changes

- Project cost increased primarily due to Fish Hatch Pipeline Hydro sub-phase broken out from Winsor Station project and inflation adjustments. These increases were partially offset by updated cost estimate for Wind Power Feasibility Study.

- Spending decreased primarily due to schedule changes for Wachusett Hydroelectric Design and Construction and DI Wind Phase 2 contracts.

CEB Impacts

- Deer Island Wind Phase 2 reflects impacts of ($300,000) in incremental avoided costs and +$40,000 in RPS (Renewable Portfolio Standards) revenue in FY14: Future DI Wind assume ($53,000) in FY15 and ($53,000) in FY16 in incremental avoided costs and +$15,000 in RPS revenue in FY16: Wachusett Hydro assume avoided cost of ($120,000) and additional RPS revenue of $19,000 as of FY18.

APPENDIX 2

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 FY13 Proposed CIP 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), and sub-phases (e.g., Facilities Plan/EIR). Sub-phases represent awarded and unawarded contracts.

Contract Number

To the left of each project name is a string of nine numbers. 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.

The first string 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.

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.

Notice to Proceed (NTP) and Substantial Completion (SC)

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.

Contract Value

The Contract Value represents the budget amount for the capital 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.

Payments through FY10

Payments through FY11 includes actual and accrued expenditures since the inception of the contract through the end of FY11.

Remaining Balance

Remaining Balance is calculated by subtracting Payments through FY11 from the Contract Amount. This amount is then spread in the columns to the right, from FY12 to Beyond FY18.

APPENDIX 2
FY13 PROPOSED TEN-YEAR CIP BY MAJOR PROGRAM CATEGORY

CAPITAL IMPROVEMENT PROGRAM
EXPENDITURE FORECAST FY2009-2013
($000)

	Total Contract Amount	Project Payments Thr. FY11	Balance as of 6/30/11	FY09 Actual	FY10 Actual	FY11 Actual	FY12	QI FY13	QII FY13	QIII FY13	QIV FY13	FY13	5-Year Total FY09-13
Wastewater System Improvements	2,643,297	1,568,043	1,075,254	123,710	152,658	92,004	90,721	12,462	28,374	17,341	29,541	87,717	546,811
Waterworks System Improvements	2,769,264	1,744,247	1,025,017	52,855	50,106	38,895	64,360	26,787	25,472	19,549	21,373	93,181	299,397
Business & Operations Support	108,119	65,658	42,461	5,674	8,669	8,384	9,182	1,194	1,762	3,442	4,147	10,546	42,455
Contingency	130,762		130,762	-	-	-	7,158	2,291	2,464	2,358	2,547	9,660	16,817
Total MWRA w/ Contingency	5,651,442	3,377,948	2,273,494	182,239	211,433	139,283	171,421	42,734	58,072	42,690	57,608	201,104	[(1)] 905,480

TEN-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY BY CATEGORY

CAPITAL IMPROVEMENT PROGRAM
EXPENDITURE FORECAST FY2013-2022
($000)

			FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	10-Year Total FY13-22
Wastewater System Improvements			87,717	118,772	127,168	105,853	88,149	61,794	71,907	59,758	44,943	25,971	792,032
Waterworks System Improvements			93,181	80,173	93,221	90,253	73,173	102,857	136,306	162,649	122,923	40,791	995,527
Business & Operations Support			10,546	11,527	6,288	3,560	1,058	300	-	0	0	0	33,279
Contingency			9,660	13,320	15,543	13,505	11,056	11,609	14,365	14,175	13,511	6,861	123,605
Total MWRA w/ Contingency			201,104	223,792	242,220	213,171	173,436	176,560	222,578	236,582	181,377	73,623	1,944,443

Total FY09-13 (see FY09-13 Table)			182,239	211,433	139,283	171,421	201,104	905,480					
Total FY12-22			201,104	223,792	242,220	213,171	173,436	176,560	222,578	236,582	181,377	73,623	1,944,443

[(1)] Please note the five-year total (FY09-13) of $905,480,000 includes $16,818,000 in contingency funds. The spending without contingency is $888,662,000.

Massachusetts Water Resources Authority
FY13 Proposed Capital Expenditure Forecast
($000s)

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Total MWRA				**5,520,680,133**	**3,395,948,931**	**2,124,731,202**	**164,262,991**	**191,444,522**	**888,662,827**	**964,145,434**	**804,878,254**
Wastewater				**2,643,297,311**	**1,586,043,421**	**1,057,253,890**	**90,720,877**	**87,717,271**	**546,810,583**	**501,736,052**	**377,079,698**
Interception & Pumping				**819,942,971**	**512,615,430**	**307,327,541**	**8,017,869**	**8,506,280**	**40,972,800**	**146,783,349**	**144,020,049**
102 Quincy Pump Facilities	**completed project**			25,908,066	25,908,077	(11)					
104 Braintree-Weymouth Relief Facilities				233,960,837	227,932,058	6,028,779	1,078,674	1,810,104	15,789,312	3,140,000	
Geotechnical - Marine	10001_5333	Nov-91	Apr-92	442,860	442,860	-					
Geotechnical - Land	10044_5332	Nov-91	Mar-92	7,980	7,980	-					
Facilities Planning - Phase 1	10045_5311	Oct-81	Dec-90	331,140	331,140	-					
EIR - Phase 1	10046_5312	Nov-84	Oct-90	513,530	513,530	-					
Design 1/CS/RI	10047_5313	Nov-94	Jun-06	18,882,312	18,882,312	-					
Land Acquisition	10048_5314	Mar-97	Jun-10	13,221,359	12,857,238	364,120	364,120		9,561,562		
Tunnel Construction/Rescue	10049_5315	Jun-99	Jul-03	83,550,809	83,550,809	-					
Intermediate Pump Station - Construction	10050_5316	Dec-00	Apr-05	47,444,929	47,444,929	-					
North Weymouth Relief Interceptor	10051_5303	Mar-01	Jun-02	4,704,618	4,704,618	-					
HDD Siphon - Construction	10052_5373	Jul-03	May-07	16,357,407	16,357,407	-					
B-W Replacement Pump Station	10054_5375	Jan-05	Apr-08	17,728,028	17,728,028	-			76,562		
Design - Rehab	10055_5308	Sep-88	Dec-89	23,710	23,710	-					
Construction - Rehab	10056_5309	Jan-92	Dec-96	255,490	255,490	-					
Final EIR/Facility Plan	10057_5324	Apr-91	Aug-93	1,111,007	1,111,007	-					
Design 2/CS/RI	10058_5331	Apr-95	Dec-11	15,265,432	14,869,633	395,799	395,799		1,356,427		
Rehabilitation of Section 624 - Construction	10060_5310	Jul-10	Dec-10	2,505,769	2,503,621	2,148	2,148		2,505,769		
Technical Assistance	10061_5951	Nov-84	Apr-07	144,264	144,264	-					
Sedimentation Testing	10251_6016	Sep-94	Apr-96	95,880	95,880	-					
Legal	10263_6072	Jul-95	Apr-08	825,088	834,033	(8,945)	(8,945)		80,534		
Hazardous Waste	10265_6074	Jul-95	Apr-07	7,937	7,937	-			6,037		
Marine Pipeline - Design	10278_6119	Feb-97	Aug-97	1,100,000	1,100,000	-					
Mill Cove Siphon - Construction	10302_6368	Aug-97	Jun-98	2,748,908	2,748,908	-					
Community Technical Assistance	10354_6631	Jul-99	Apr-07	1,111,451	1,111,451	-					
Geotechnical Consultant	10375_6766	Sep-00	Mar-03	56,045	56,045	-					
IPS/RPS Communication System	10378_6792	Dec-02	Apr-08	224,884	224,884	-			42,421		
Wetlands Replication	10470_7290	Jan-12	Sep-12	700,000	24,344	675,656	225,552	450,104	700,000		
Mill Cove Siphon Sluice Gates - Design	10479_7326			-	-	-					
Mill Cove Sluice Gates - Construction	10480_7327	Jan-13	Jun-14	600,000	-	600,000	100,000	400,000	500,000	100,000	
Braintree-Weymouth Improvements	10493_7366	Apr-13	Jun-17	4,000,000	-	4,000,000		960,000	960,000	3,040,000	

Massachusetts Water Resources Authority
FY13 Proposed Capital Expenditure Forecast
($000s)

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
105 New Neponset Valley Relief Sewer	**completed project**			30,300,305	30,300,303	2					
106 Wellesley Extension Replacement Sewer	**completed project**			64,358,544	64,358,543	1					
107 Framingham Extension Relief Sewer	**completed project**			47,855,986	47,855,986	-					
127 Cummingsville Replacement Sewer	**completed project**			8,998,766	8,998,767	(2)			43,382		
130 Siphon Structure Rehabilitation				2,670,539	939,770	1,730,769		29,696	29,696	1,701,072	
Planning	10253_6017	Jan-96	Nov-98	937,670	937,670	-					
Land Acquisition	10280_6165	Jun-06	Dec-10	2,100	2,100	-					
Design/CS/RI	10293_6224	Jan-13	Mar-17	494,943	-	494,943		29,696	29,696	465,246	
Construction	10294_6225	Apr-15	Mar-16	1,235,826	-	1,235,826				1,235,826	
131 Upper Neponset Valley Sewer System				54,943,954	53,776,931	1,167,023	67,023	1,100,000	1,794,298		
Design/CS/RI	10256_6031	May-00	Apr-09	4,584,683	4,584,683	-			91,606		
Legal	10266_6075	Jun-00	Apr-08	131,259	66,466	64,793	64,793		130,000		
Sewer Sections 685-686 - Replacement	10290_6191	Mar-05	Mar-08	37,004,923	37,004,923	-			509,867		
Land Acquisition	10311_6450	Jun-00	Apr-08	2,602,325	1,502,325	1,100,000		1,100,000	1,100,045		
Sewer Section 687 Replacement - Construction	10352_6629	Oct-06	Nov-07	7,663,585	7,663,585	-			(181,000)		
Boston Paving	10393_6830	Apr-05	Apr-08	610,568	609,723	845	845		44,125		
Resident Engineering / Inspection	10439_7072	Apr-05	Feb-09	2,346,611	2,345,226	1,385	1,385		99,655		
132 Corrosion & Odor Control				16,139,782	3,002,809	13,136,973				5,706,052	7,430,921
Planning / Study	10279_6137	Jan-97	Dec-98	587,422	587,422	-					
Land Acquisition	10323_6549	Aug-02	Jun-05	3,341	3,341	-					
Legal	10325_6551	Dec-00	Jul-08	1,925	1,925	-					
Design/CS/RI	10327_6553	Aug-02	Jun-05	1,787,912	1,787,912	-					
Interim Corrosion Control	10373_6743	Jul-00	Dec-01	622,209	622,209	-					
FES Tunnel Rehab - Construction	10405_6918	Dec-17	Jun-19	6,800,000	-	6,800,000				1,431,579	
FES/FERS Biofilters - Design	10406_6919	Jul-14	Apr-17	1,031,726	-	1,031,726				1,031,726	
FES Tunnel Rehab - Design	10453_7196	Jul-17	Jun-19	1,700,000	-	1,700,000				637,500	
FES/FERS Biofilters - Construction	10456_7215	Apr-16	Apr-17	1,605,247	-	1,605,247				1,605,247	
System-wide Odor Control - Study	10491_7364	Jul-18	Jul-20	1,000,000	-	1,000,000					
Nut Island Odor Control System -Evaluation & Design	10492_7365	Jul-14	Jul-16	1,000,000	-	1,000,000				1,000,000	

Massachusetts Water Resources Authority
FY13 Proposed Capital Expenditure Forecast
($000s)

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
136 West Roxbury Tunnel				11,487,370	10,284,737	1,202,633	202,633		1,607,568		1,000,000
Inspection	10299_6230	Jul-98	Sep-99	344,202	344,202	-					
Tunnel Easements & Permits	10329_6566	Mar-10	Dec-15	53,789	53,789	-			53,789		
Legal	10330_6567	Apr-00	Mar-10	2,133	2,133	-			295		
Land Acquisition	10331_6568	Apr-00	Mar-10	440,154	440,154	-					
Construction	10332_6569	Jun-01	Jun-02	6,673,671	6,673,671	-					
Design/CS/RI	10333_6570	Apr-00	Jun-03	1,412,185	1,412,185	-					
Technical Assistance	10366_6709	Nov-99	Mar-10	7,752	7,752	-					
Tunnel - Design	10400_6897	Feb-09	Jun-11	1,553,484	1,350,851	202,633	202,633	-	1,553,484		
Tunnel Inspection	10401_6898	Sep-19	Jun-20	1,000,000	-	1,000,000					
137 Wastewater Central Monitoring				20,839,477	19,782,201	1,057,276	157,276	250,000	6,241,741	650,000	
Planning	10301_6232	Jan-98	Jul-99	563,425	563,425	-					
Design and Integration Services	10319_6532	Jun-02	Jul-10	6,501,542	6,344,266	157,276	157,276		1,508,524		
Construction 1 (CP1)	10320_6533	Mar-06	Jan-08	7,662,173	7,662,173	-			7,780		
Construction 2 (CP2)	10321_6534	Feb-08	Jul-09	5,139,444	5,139,444	-			4,460,402		
Technical Assistance	10322_6535	Sep-02	Jul-10	7,425	7,425	-			4,235		
Equipment Prepurchase	10398_6861	Apr-05	Dec-09	65,468	65,468	-			10,800		
Wastewater Redundant Communications	10490_7363	Nov-12	Apr-14	900,000	-	900,000		250,000	250,000	650,000	
139 South System Relief Project				4,939,244	3,439,244	1,500,000			(645)	187,500	1,312,500
Archdale - CS/RI	10309_6419	Nov-98	Aug-99	5,379	5,379	-			(645)		
Archdale - Construction	10310_6420	May-99	Aug-99	210,748	210,748	-					
Sections 70 & 71 HLS - Evaluation	10318_6519	Sep-98	Oct-99	215,140	215,140	-					
Outfall 023 - Design	10345_6595	Jun-99	Sep-99	509	509	-					
Outfall 023 - Cleaning	10346_6596	Apr-00	Nov-00	1,097,526	1,097,526	-					
Land Acquisition & Easements	10347_6605	Apr-99	Apr-05	5,053	5,053	-					
Sections 70 & 71 HLS - Construction	10349_6611	Jun-99	Oct-99	417,021	417,021	-					
Milton Financial Assistance	10350_6616	Oct-99	Jun-00	1,487,868	1,487,868	-					
Outfall 023 - Structural Improvements	10386_6801	Jan-18	Dec-19	1,500,000	-	1,500,000				187,500	
141 Wastewater Process Optimization				10,299,552	930,308	9,369,244	278,988	278,989	557,977	5,686,267	3,125,000
Planning	10367_6733	Aug-01	Aug-04	930,308	930,308	-					
North System Hydraulic Study	10412_6930	Nov-11	Oct-12	557,977	-	557,977	278,988	278,989	557,977		
Somerville Sewer - Design	10413_6931	Oct-14	Aug-17	200,000	-	200,000				200,000	
Somerville Sewer - Construction	10414_6932	Mar-17	Aug-17	1,019,244	-	1,019,244				1,019,244	
Siphon - Planning	10415_6933	Nov-16	Jun-17	150,000	-	150,000				150,000	
Manhole Structure Flood Protection - Design	10416_6934	Jan-15	Dec-15	500,000	-	500,000				500,000	

Massachusetts Water Resources Authority
FY13 Proposed Capital Expenditure Forecast
($000s)

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Manhole Structure Flood Protection - Construction	10417_6935	Jul-17	Jun-19	5,000,000	-	5,000,000				1,875,000	
Hydraulic Flood Engineering Analysis - North System	19401_7412	Jul-13	Dec-15	1,942,023	-	1,942,023				1,942,023	
142 Wastewater Meter Sys - Equip. Replacement				26,578,429	5,137,912	21,440,517	140,517	60,000	249,664	8,547,393	12,692,607
Planning / Study	10371_6739	Jan-13	May-13	100,000	-	100,000		60,000	60,000	40,000	
Equipment Purchase & Installation	10379_6793	Nov-03	Jun-08	5,278,429	5,137,912	140,517	140,517		189,664		
Design	10410_6928	Jul-14	Jan-17	200,000	-	200,000				200,000	
Construction	10411_6929	Jan-16	Jan-17	1,000,000	-	1,000,000				1,000,000	
WW Metering Asset Protection / Equipment Purchase	10451_7191	Jul-13	Jul-26	20,000,000	-	20,000,000				7,307,393	
143 Regional I/I Management Planning	**completed project**			168,987	168,987	-					
145 Facility Asset Protection				254,743,133	9,798,797	244,944,336	6,092,758	4,977,491	14,659,807	117,496,065	116,378,021
Prison Point HVAC Upgrades - Construction	10380_6795	Dec-10	Mar-12	2,245,852	600,063	1,645,789	1,645,789		2,245,852		
Remote Headworks Heating Syst Upgrade	10381_6796	May-05	May-06	1,175,181	1,175,181	-					
Alewife Brook Pump Station Rehab - Construction	10382_6797	May-13	Sep-15	6,666,000	-	6,666,000				6,666,000	
Rehab of Section 93A Lexington	10383_6798	Jul-03	Apr-04	1,565,742	1,565,742	-					
Chelsea Creek Upgrade ESDC/REI	10387_6802	Sep-13	Mar-17	2,047,800	-	2,047,800				2,047,800	
Technical Assistance	10392_6829	Jul-02	Nov-08	78,189	49,660	28,529	28,529		52,971		
Sections 80 & 83	10394_6842	Apr-07	Sep-07	364,590	364,590	-			-		
Section 160	10395_6843	Jun-07	Dec-08	1,581,369	1,581,369	-			(271,680)		
Survey	10396_6857	Nov-04	May-05	10,708	10,708	-			-		
Permits	10397_6858	May-03	Nov-08	8,057	8,096	(39)	(39)		1,010		
Remote Headworks Concept Plan	10399_6886	May-08	Sep-09	738,728	687,888	50,840	50,840		686,728		
Interceptor Renewal No. 2	10418_6936	Jul-16	Jan-18	9,192,664	-	9,192,664				9,192,664	
Alewife Brook Pump Station Rehab - Des/CA	10419_6937	Apr-10	Oct-11	250,000	197,484	52,516	52,516		250,000		
Prison Point HVAC Upgrades - Design	10420_6938	Jan-08	Mar-13	452,248	379,309	72,939	51,796	21,143	404,134		
93 A Force Main Replacement	10423_6987	May-06	Jan-07	461,962	461,962	-					
Mill Brook Valley Sewer Section 79 & 92	10424_7004	Jun-04	Mar-05	542,292	542,292	-					
Hingham Pump Station Isolation Gate - Construction	10427_7033	Sep-11	May-12	124,500	-	124,500	96,833	27,667	124,500		
Alewife Brook Pump Station Final Design/CA/REI	10428_7034	Jan-12	Sep-16	1,500,000	-	1,500,000	78,947	315,789	394,736	1,105,264	
Caruso Pump Station Improvements - Design/CA/REI	10431_7037	Aug-12	Jan-16	593,862	-	593,862		115,874	115,874	477,988	
Land/Easements	10440_7073	Jul-03	Jun-10	103,386	103,386	-			50		
Nut Island Headworks Fire Alarm/Wiring Replacement	10444_7144	Jun-09	Dec-09	285,391	285,391	-			285,391		
Chelsea Creek Upgrades - Construction	10445_7161	Sep-13	Mar-17	51,195,000	-	51,195,000				51,195,000	
Pump Stations and CSOs Condition Assessment	10446_7162	Jun-12	Jun-14	3,000,000	-	3,000,000		1,250,000	1,250,000	1,750,000	
Interceptor Renewal No.1 - Design	10447_7163			-	-	-					
Interceptor Renewal No.1 - Construction	10448_7164	Feb-15	Sep-16	3,800,000	-	3,800,000				3,800,000	

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Chelsea Creek Upgrades - Design/CA	10455_7206	Jul-10	Mar-18	6,682,531	1,011,250	5,671,281	802,657	811,440	2,625,347	4,057,184	
Malden & Melrose Hydraulics & Structural -Study	10457_7216	Jan-14	Dec-14	300,000	-	300,000				300,000	
Malden & Melrose Hydraulics & Structural -Construct.	10458_7217	Jan-15	Dec-17	1,000,000	-	1,000,000				1,000,000	
Nut Island Fire Pump Building - Study	10459_7218	Jan-13	Feb-14	300,000	-	300,000		64,286	64,286	235,714	
NI Mechanical & Electrical Replacements	10460_7219	Jul-13	Jun-16	3,000,000	-	3,000,000					
Headworks Effluent Shaft - Study	10463_7237	Jul-15	Jul-16	500,000	-	500,000				500,000	
Melrose Sewer	10464_7248	Feb-10	Feb-11	653,640	653,639	1			653,639		
Interceptor Ren. No. 3 Camb/Somerville Sects. 26&27	10467_7279	Jul-18	Jun-19	5,000,000	-	5,000,000					
Interceptor Renewal No. 4 Everett Sections 23/24/156	10468_7280	Jul-16	Jun-17	3,000,000	-	3,000,000				3,000,000	
Cottage Farm Fuel System Upgrade	10469_7281	Feb-12	Jan-13	374,787	-	374,787	62,360	312,427	374,787		
NI Electrical & Grit/Sreens Conveyance - Design	10477_7312	Mar-11	Oct-15	1,124,877	120,787	1,004,090	344,919	416,320	882,026	242,851	
NI Electrical & Grit/Sreens Conveyance - Construction	10478_7313	May-13	Oct-14	7,066,166	-	7,066,166				7,066,166	
Interceptor Renewal No. 5 - Milton	10481_7328	Jul-17	Jun-20	4,000,000	-	4,000,000				1,000,000	
Interceptor Renewal No. 6 - Chelsea	10482_7329	Jul-18	Jun-21	11,000,000	-	11,000,000					
Somerville/Marginal Influent Gates Replacement	10484_7344	Jul-11	Nov-11	364,319	-	364,319	364,319		364,319		
PP Dry Weather Flow&Stripping Pump Improvements	10485_7358	Jan-13	Dec-15	750,000	-	750,000		62,500	62,500	687,500	
PP/CF CSO Rehab Preliminary Design/Study	10486_7359	Jul-12	Jan-14	1,000,000	-	1,000,000		473,685	473,685	526,315	
System Relief & Contingency Planning	10487_7360	Jul-13	Jun-15	500,000	-	500,000				500,000	
DeLauri Pump Station Improvements	10488_7361	Jul-12	Jul-13	420,400	-	420,400		291,045	291,045	129,355	
Caruso Pump Station Impovements - Construction	10489_7362	Dec-13	Jan-15	2,180,825	-	2,180,825				2,180,825	
Pump Station Rehab - Preliminary Design/Study	10500_7375	Jan-15	Jan-20	750,000	-	750,000				479,508	
Prison Pt Pump & Gearbox Rebuilds	10501_7389	Apr-12	Jan-13	440,000	-	440,000		440,000	440,000		
Sect 156 Rehab - Design/Build	10503_7393	Jul-11	Jul-12	2,528,607	-	2,528,607	2,513,292	15,315	2,528,607		
Interceptor Renewal No.2 - Design/CA/REI	10504_7410	Jan-14	Jan-19	2,000,000	-	2,000,000				1,700,000	
Sections 4,5,6 North Met - Design CS/RI	10505_7421	Jul-13	Jul-18	1,000,000	-	1,000,000				990,000	
Sections 4,5,6 North Met - Construction	10506_7422	Jul-15	Jul-17	4,000,000	-	4,000,000				4,000,000	
Rehab of Sections 186 and 4 - Construction	10507_7423	Jan-13	Jan-15	3,000,000	-	3,000,000		360,000	360,000	2,640,000	
Ward St. Headworks Upgrades - Design ESDC/REI	10510_7429	Sep-15	Mar-22	6,860,130	-	6,860,130				2,691,950	
Ward St. Headworks - Construction	10511_7430	Sep-17	Mar-21	45,051,600	-	45,051,600				7,333,981	
Columbus Park Headworks Upgrade - Design ESDC/RE	10512_7431	Sep-19	Mar-26	6,860,130	-	6,860,130					
Columbus Park Headworks Upgrade - Construction	10513_7432	Sep-21	Mar-25	45,051,600	-	45,051,600					
146 D.I. Cross Harbor Tunnel				5,000,000	-	5,000,000				2,919,000	2,081,000
Tunnel Shaft Repairs - Plan/Design/Construction	10454_7199	Jul-16	Jun-18	5,000,000	-	5,000,000				2,919,000	
147 Randolph Trunk Sewer Relief				750,000	-	750,000				750,000	
Study	10461_7220	Jul-15	Jun-17	750,000	-	750,000				750,000	
Treatment				**628,065,181**	**152,344,516**	**475,720,665**	**27,651,926**	**45,563,319**	**173,765,700**	**252,877,959**	**149,627,461**

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200 DI Plant Optimization	**completed project**			33,455,815	33,455,815	-			296,298		
206 DI Treatment Plant Asset Protection				583,272,675	117,067,039	466,205,636	25,889,682	42,988,464	168,584,488	247,700,029	149,627,461
DITP Roof Replacements	18045_6196	Jun-10	Jun-11	2,299,886	2,299,881	5	5		2,299,886		
DISC Application	19162_6241	Jun-96	Jun-14	250,000	125,077	124,923				124,923	
Pump Packing Replacement	19176_6422	Sep-03	Jun-08	732,447	732,447	-					
Demineralizer Construction	19177_6423	Jul-00	Dec-00	50,527	50,527	-					
Equipment Replacement Projection	19182_6478	Jul-18	Jun-23	25,000,000	-	25,000,000					
Ancillary Mods - Construction 4	19188_6538	Nov-14	Mar-18	10,565,000	-	10,565,000				10,565,000	
Equipment Condition Monitoring	19193_6594	May-04	Jan-05	1,776,946	1,776,946	-					
Expansion Joint Repair - Design	19204_6668	Apr-99	Oct-04	149,421	149,421	-					
Expansion Joint Repair - Construction 1	19205_6669	Aug-02	Nov-03	304,726	304,726	-					
Expansion Joint Repair - Construction 2	19217_6704	Feb-12	Jul-13	2,000,000	-	2,000,000	461,539	1,384,615	1,846,154	153,846	
Expansion Joint Repair - Construction 3	19218_6705	May-14	Nov-14	528,850	-	528,850				528,850	
As-needed Design Phase 6-1	19220_6721	May-09	May-12	1,850,000	1,204,851	645,149	645,149		1,850,000		
As-needed Design Phase 6-2	19221_6722	May-09	May-12	1,850,000	938,554	911,446	911,446		1,850,000		
Eastern Seawall - Design 1	19222_6723	Jan-13	Nov-15	514,150	-	514,150		85,692	85,692	428,458	
Eastern Seawall - Construction 1	19223_6724	May-14	Nov-15	2,203,500	-	2,203,500				2,203,500	
Digester Gas Flare No.4 - Design	19227_6728	Jun-13	Mar-16	445,680	-	445,680				445,680	
Digester Gas Flare No.4 - Construction	19228_6729	Oct-14	Mar-16	1,002,780	-	1,002,780				1,002,780	
Roof Replacement - Phase I	19230_S464	Mar-09	Mar-10	2,749,941	2,749,941	-			2,749,941		
Drive Chain Replacement	19231_6742	Oct-01	Jul-03	264,000	264,000	-					
Busduct Replacement (2+22)	19236_6763	Jan-01	Oct-01	195,500	195,500	-					
Reline Hypochlorite Tanks 1 & 3	19237_6764	May-07	Nov-07	1,691,095	1,691,095	-			220		
CTG Modifications	19238_6765	Mar-01	May-02	482,339	482,339	-					
Electrical Equipment Upgrades - Constrution 2	19239_6767	Apr-05	Feb-07	1,913,183	1,913,183	-					
Document Format Conversion	19241_6791	May-07	Jun-14	145,275	55,698	89,577			21,300	89,577	
Outfall Modification - Inspection	19243_6811	Dec-01	Jul-02	173,500	173,500	-					
Secondary Clarifier Access	19244_6812	Sep-01	Jul-02	274,874	274,874	-					
Transformer Replacement	19245_6813	Jul-08	Jun-15	2,537,993	876,808	1,661,185	826,268	310,000	1,975,083	524,917	
Reline Hypochlorite Tanks 2 & 4	19250_6849	Apr-08	Oct-08	2,241,692	2,241,692	-			1,787,192		
Chemical Pipe Replacement - Design	19252_6851	Sep-12	Jan-15	519,802	-	519,802		173,266	173,266	346,536	
Chemical Pipe Replacement - Construction	19253_6852	Jan-14	Jan-15	2,115,400	-	2,115,400				2,115,400	
Sodium Hypochlorite Pipe Replacement - Design	19254_6853	Jun-12	Nov-16	2,115,400	-	2,115,400		813,615	813,615	1,301,785	
Sodium Hypochlorite Pipe Replacement - Construction	19255_6854	Nov-13	Nov-16	7,403,900	-	7,403,900				7,403,900	
Electrical Equipment Upgrades - Construction 3	19256_6855	Feb-08	Aug-11	15,066,089	14,316,443	749,646	749,646		14,423,089		
WTF VFD Replacement - Construction	19258_6875	Jan-13	Jan-15	3,775,850	-	3,775,850		314,654	314,654	3,461,196	

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Heat Loop Pipe Replacement - Construction 1	19259_6876	Mar-05	Dec-05	615,000	615,000	-					
Miscellaneous VFD Replacements	19260_6877	May-05	Jun-14	2,625,000	932,451	1,692,549	1,000,000		1,029,840	692,549	
LOCAT Scrubber Replacement - Design	19263_6880	Nov-12	May-15	900,000	-	900,000		180,000	180,000	720,000	
Grit Air Handler Replacements	19264_6881	Jul-08	Jun-10	1,751,687	1,751,687	-			1,751,687		
CEMS Equipment Replacement	19265_6882	Nov-05	Mar-06	100,392	101,872	(1,480)	(1,480)		(1,480)		
Heat Loop Pipe Replacement - Construction 2	19266_6883	Dec-06	Feb-08	1,488,356	1,488,356	-					
PICS Replacement - Construction	19267_6884	Jul-11	Oct-12	1,302,198	-	1,302,198	1,202,198	100,000	1,302,198		
Primary & Secondary Clarifier Rehab - Construction	19268_6899	Feb-09	Feb-12	59,633,306	50,743,233	8,890,073	8,890,073		59,633,306		
Electrical Equipment Upgrades - Construction 4	19270_6901	Jan-12	Jul-14	5,000,000	-	5,000,000	500,000	2,000,000	2,500,000	2,500,000	
NMPS VFD Replacement - Design/ESDC	19271_6902	Dec-07	Jul-15	1,946,817	1,088,745	858,072	73,873	247,641	1,191,502	536,558	
NMPS VFD Replacement - Construction	19272_6903	Dec-11	May-15	24,079,200	-	24,079,200	291,667	5,899,866	6,191,533	17,887,667	
Fire Alarm System Replacement - Design	19273_6904	Jan-12	Feb-16	2,100,000	-	2,100,000	300,000	808,333	1,108,333	991,667	
Gravity Thickener Rehab - Design	19274_6963	Feb-12	Jul-15	977,500	-	977,500	112,791	375,960	488,751	488,749	
Primary & Secondary Clarifier Rehab - Design	19276_6965	Mar-09	Feb-13	2,049,379	1,185,512	863,867	732,023	131,844	2,049,379		
Gravity Thickener Improvements - Construction	19277_6966	Apr-10	Jun-12	1,085,164	679,118	406,046	406,046		1,085,164		
STG System Modifications - Design	19278_6967	Jun-09	Apr-11	405,732	405,732	-			405,732		
Electrical Equipment Upgrades 3 - REI	19279_6968	Feb-08	Nov-11	1,206,631	1,029,823	176,808	176,808		1,137,472		
Fuel Transfer Pipe Replacement - Design	19280_6969	Nov-18	Feb-22	1,150,000	-	1,150,000					
Fuel Transfer Pipe Replacement - Construction	19281_6970	Feb-20	Feb-22	2,941,920	-	2,941,920					
NMPS Motor Control Center - Design	19282_6971	Nov-11	Mar-13	350,000	-	350,000	102,941	247,059	350,000		
NMPS Motor Control Center - Construction	19283_6972	Nov-11	Feb-13	1,000,000	-	1,000,000	312,500	687,500	1,000,000		
STG System Modifications - Construction	19284_6973	May-10	Apr-11	2,567,505	2,546,172	21,333	21,333		2,567,505		
Digester Chiller Replacement	19287_7005	Sep-05	May-06	635,244	635,244	-					
Dystor Tank Membrane Replacement	19288_7006	Sep-04	Oct-05	640,195	640,195	-					
Fire Alarm System Replacement - Construction	19289_7051	Feb-13	Feb-16	16,000,000	-	16,000,000		888,890	888,890	15,111,110	
Digester & Storage Tank Rehab - Design/ESDC	19290_7052	Jun-12	Jun-17	3,000,000	-	3,000,000		687,500	687,500	2,312,500	
Thickened Primary Sludge Pump Replacement - Design	19291_7053	Sep-12	Apr-15	575,000	-	575,000		287,500	287,500	287,500	
Thickened Primary Sludge Pump Replacement - Const.	19292_7054	Jul-13	Apr-15	2,551,250	27,297	2,523,953				2,523,953	
Digester Modules 1 & 2 Pipe Replacemt	19293_7055	Aug-11	Aug-13	6,959,666	(4)	6,959,670	2,375,888	3,479,833	5,855,717	1,103,949	
LOCAT Scrubber Replacement - Construction	19294_7056	Mar-14	May-15	4,082,000	-	4,082,000				4,082,000	
Centrifuge Backdrive Replacement	19295_7057	Jan-12	Jan-14	2,790,347	25,952	2,764,395	348,793	1,395,173	1,747,679	1,020,429	
Switchgear Replacement - Design	19296_7058	Nov-12	Apr-14	1,213,434	-	1,213,434		337,065	337,065	876,369	
Switchgear Replacement - Construction	19297_7059	Feb-12	Apr-14	4,082,000	-	4,082,000	226,778	1,927,611	2,154,389	1,927,611	
Power Consultant Recommnedations - Design	19298_7060	Jan-06	Jul-09	2,097,404	2,097,404	-			271,600		
Power System Improvements - Construction	19299_7061	Jan-09	Sep-13	8,639,811	3,380,954	5,258,857	2,425,524	2,000,000	7,806,478	833,333	
NMPS VFD Replacement - REI	19300_7062	Jul-12	Jul-15	2,000,000	-	2,000,000		555,557	555,557	1,444,443	
Heat Loop Pipe Replacement - Construction 3	19301_7063	Jun-09	Jun-11	11,355,252	11,329,102	26,150	26,150		11,355,252		
Ancillary Modifications - Final Design 4	19303_7088	Oct-12	Mar-18	2,325,620	-	2,325,620		452,204	452,204	1,873,416	

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Sodium Hypochlorite Tank Liner Removal	19304_7089	May-06	Sep-06	196,400	196,400	-					
As-needed Design Phase 5-1	19305_7090	Aug-07	Aug-09	955,174	955,174	-			267,876		
As-needed Design Phase 5-2	19306_7091	Jul-07	Jul-09	1,055,822	1,055,822	-			428,663		
Thermal Power Plant Fuel System Modifications - REI	19307_7094	Feb-12	Dec-13	500,000	-	500,000	90,909	272,727	363,636	136,364	
HVAC Equipment Replacement - Design/ESDC	19309_7111	Jan-12	Aug-16	3,500,000	-	3,500,000	437,500	1,312,500	1,750,000	1,750,000	
HVAC Equipment Replacement - Construction	19310_7110	Aug-13	Aug-16	17,100,600	-	17,100,600				17,100,600	
DI As-needed Technical Design	19311_7121	May-15	Dec-25	21,050,000	-	21,050,000				8,000,000	
Digester Sludge Pump Replacement - Construction	19313_7123	Oct-09	Oct-13	4,383,103	1,338,295	3,044,808	147,859	1,448,474	2,934,628	1,448,475	
Electrical Equipment Upgrades - Phase 5	19314_7124	Oct-13	Jan-21	23,161,875	-	23,161,875				14,376,334	
Future SSPS VFD Replacements - Design	19316_7126	Jul-15	Jun-20	4,800,000	-	4,800,000				3,700,000	
Future SSPS VFD Replacements - Construction	19317_7127	Nov-16	Jun-20	19,200,000	-	19,200,000				6,600,000	
Future NMPS VFD Replacements - Design	19318_7128	Jun-21	Sep-24	4,420,000	-	4,420,000					
Future NMPS VFD Replacements - Construction	19319_7129	Sep-22	Sep-24	17,680,000	-	17,680,000					
Future Misc. VFD Replacements - Design	19320_7130	Jul-12	Feb-15	1,333,000	-	1,333,000		500,000	500,000	833,000	
Future Misc. VFD Replacements - Construction	19321_7131	May-13	May-18	5,334,000	-	5,334,000				5,334,000	
DI Switchgear Replacement - Design	19322_7132	Jul-15	Apr-20	4,500,000	-	4,500,000				3,000,000	
DI Switchgear Replacement - Construction	19323_7133	Apr-18	Apr-21	16,000,000	-	16,000,000					
DI PICS Replacement - Construction	19324_7134	Feb-21	Feb-23	5,400,000	-	5,400,000					
DI Dystor Membrane Replacements	19325_7135	Jul-14	Oct-14	3,000,000	-	3,000,000				1,000,000	
DI CTG Rebuilds	19326_7136	Jun-13	Jun-16	6,000,000	-	6,000,000				4,000,000	
DI Centrifuge Replacements - Design	19327_7137	Jul-13	Oct-15	4,160,000	-	4,160,000				1,040,000	
DI Centrifuge Replacements - Construction	19328_7138	Oct-14	Oct-15	16,640,000	-	16,640,000				4,160,000	
Cryogenics Plant - Equipment Replacement - Design	19329_7139	Jul-13	May-16	1,600,000	-	1,600,000				1,600,000	
Cryogenics Plant - Equipment Replacement - Construct.	19330_7140	Nov-14	May-16	3,800,000	-	3,800,000				3,800,000	
Future Sodium Hypochlorite Tank Rehab	19332_7142	Jul-17	Jul-19	10,000,000	-	10,000,000				2,500,000	
Barge Berth and Facility Replacement	19334_7168	Apr-12	Aug-13	2,264,750	-	2,264,750	460,177	1,274,043	1,734,220	530,530	
South Systm Punp Station Lube System Replacement	19335_7169	Jul-18	Jul-20	2,900,000	-	2,900,000					
East/West Odor Control Air Handler Replacement	19336_7170	Jun-25	Jun-30	2,000,000	-	2,000,000					
PICS Distributed Process Units Replacement	19338_7172	Feb-21	Feb-23	8,000,000	-	8,000,000					
NMPS & WTF Butterfly Valve Replacement	19339_7275	Mar-12	Mar-14	2,500,000	-	2,500,000	104,167	1,250,000	1,354,167	1,145,833	
Digester & Storage Tank Rehab - Construction	19345_7373	Jun-14	Jun-17	21,700,000	-	21,700,000				21,700,000	
Clarifier W3H Flush System	19346_7374	Feb-12	Aug-13	2,000,000	-	2,000,000	222,222	1,333,333	1,555,555	444,445	
Clarifier Rehab Phase 2 - Design	19347_7394	Jul-12	Jul-13	3,000,000	-	3,000,000		833,333	833,333	2,166,667	
Clarifier Rehab Phase 2 - Construction	19348_7395	Nov-13	May-16	27,000,000	-	27,000,000				27,000,000	
Clarifier Tip Tube Replacement	19349_7396	Jul-12	Jul-14	4,000,000	-	4,000,000		1,500,000	1,500,000	2,500,000	
Cryogenic Compressor Replacement	19351_7397	Jan-12	Jul-13	1,500,000	-	1,500,000	250,000	1,000,000	1,250,000	250,000	
Cryogenic Chillers Replacement	19352_7398	Jan-12	Jan-13	1,100,000	-	1,100,000	366,667	733,333	1,100,000		
As-Needed Design 7-1	19353_7399	May-12	May-15	2,700,000	-	2,700,000	75,000	900,000	975,000	1,725,000	

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As-Needed Design 7-2	19354_7400	May-12	May-15	2,700,000	-	2,700,000	75,000	900,000	975,000	1,725,000	
Thermal Power Plant Boiler Controls Replacement	19355_7401	Jun-12	Jun-13	1,000,000	-	1,000,000		833,333	833,333	166,667	
Sodium Hypochlorite Piping & Tank Replace. - REI	19356_7413	Nov-13	Nov-16	600,000	-	600,000				600,000	
NMPS Harmonic Filter Replacement	19557_7414	May-13	May-15	6,000,000	-	6,000,000				6,000,000	
Fuel Pipe Cementing	19558_7415	Jan-12	Sep-12	750,000	-	750,000	250,000	500,000	750,000		
Electrical Equipment Upgrades 4 - REI	19559_7416	Jan-12	Jul-14	700,000	-	700,000	70,000	280,000	350,000	350,000	
NMPS Motor Control Center Phase 2 - REI	19560_7419	Nov-12	Nov-14	603,410	-	603,410		144,818	144,818	458,592	
NMPS Motor Control Center Phase 2 - Construction	19561_7420	Nov-12	Nov-14	6,085,725	-	6,085,725		1,267,859	1,267,859	4,817,866	
Roof Replacement Phase 3	19562_7424	Jan-13	Jan-14	1,000,000	-	1,000,000		200,000	200,000	800,000	
Fire System Replacement - REI	19563_7426	Feb-13	Feb-16	1,200,000	-	1,200,000		66,666	66,666	1,133,334	
Gravity Thickener Center Columns Replacement	19564_7427	Dec-11	Jun-13	1,000,000	-	1,000,000	222,222	666,667	888,889	111,111	
Gravity Thickener Rehab	19565_7428	Jul-13	Jul-15	5,786,060	-	5,786,060				5,786,060	
210 Clinton Wastewater Treatment Plant				9,043,661	648,872	8,394,789	642,004	2,574,855	3,520,948	5,177,930	
Clinton Soda Ash Replacement	19302_7075	Nov-07	Aug-08	267,221	267,221	-			152,878		
Clinton Permanent Standby Generator	19308_7095	Feb-07	Nov-07	230,440	230,440	-					
Clinton Plant-Wide Concrete Repair	19340_7276	Feb-13	Feb-15	1,500,000	62,615	1,437,385		125,000	187,615	1,312,385	
Clinton Digester Cleaning & Rehabilitation	19341_7277	May-10	Dec-13	1,800,000	88,600	1,711,400		1,045,855	1,134,455	665,545	
Clinton Aeration Effciency Improvement	19342_7278	Dec-11	Dec-12	1,746,000	(4)	1,746,004	582,004	1,164,000	1,746,000		
Clinton WWTP Influent Gates	19343_7371			-	-	-					
Phosphorous Removal - Construction	19400_7411	Jun-13	Jun-15	3,000,000	-	3,000,000				3,000,000	
Phosphorous Removal - Design/ESDC	19950_7377	Mar-12	Jul-15	500,000	-	500,000	60,000	240,000	300,000	200,000	
211 Laboratory Services				2,293,030	1,172,790	1,120,240	1,120,240		1,363,966		
Metals Lab Fume Hood Replacement - Construction	19152_6197	Mar-11	Feb-12	933,487	16,000	917,487	917,487		933,487		
Metals Lab Fume Hood Replacement - Design	19249_6848	Jan-09	Feb-12	390,706	187,953	202,753	202,753		390,706		
Metals Lab Modification - Construction	19251_6850	May-07	Sep-08	968,837	968,837	-			39,773		

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Residuals				**211,740,619**	**64,156,045**	**147,584,574**	**142,914**	**571,660**	**1,059,771**	**57,495,000**	**89,375,000**
261 Residuals	**completed project**			63,810,848	63,810,848	-					
271 Residuals Asset Protection				147,929,771	345,197	147,584,574	142,914	571,660	1,059,771	57,495,000	89,375,000
Residual Facility Plan / EIR	26069_7143	Jul-13	Apr-14	870,000	-	870,000				870,000	
Residuals Facility Upgrade - Design	26070_7145	Jan-14	Jan-16	4,000,000	-	4,000,000				4,000,000	
Residuals Facility Upgrade - Construction	26071_7146	Jul-15	Jul-20	10,000,000	-	10,000,000				5,667,000	
Condition Assessment/Technlgy & Regulatory Review	26072_7147	May-09	Dec-12	1,059,771	345,197	714,574	142,914	571,660	1,059,771		
Six Rotary Dryer Replacements - Design	26073_7148			-	-	-					
Six Rotary Dryer Replacements -Construction	26074_7149	Jul-14	Jul-17	57,000,000	-	57,000,000				20,000,000	
Six Air Scrubber Replacements -Design	26075_7150			-	-	-					
Six Air Scrubber Replacements - Construction	26076_7151	Jul-16	Jul-18	8,000,000	-	8,000,000				2,750,000	
Plant MCC Replacements - Design	26077_7152			-	-	-					
Plant MCC Replacements - Construction	26078_7153	Jul-17	Jul-19	4,500,000	-	4,500,000				625,000	
Rail System Rehabilitation - Design	26081_7175			-	-	-					
Rail System Rehabilitation - Construction	26082_7176	Jul-17	Jul-19	3,000,000	-	3,000,000				417,000	
Replace 9 Pellet Storage Silos -Design	26083_7177			-	-	-					
Replace 9 Pellet Storage Silos -Construction	26084_7178	Jul-16	Jul-18	6,000,000	-	6,000,000				1,833,000	
Sludge Conveyor Replacement - Design	26085_7179			-	-	-					
Sludge Conveyor Replacement - Construction	26086_7180	Jul-15	Jul-16	3,000,000	-	3,000,000				1,000,000	
Sludge Storage Tank Rehab - Design	26087_7181			-	-	-					
Sludge Storage Tank Rehab - Construction	26088_7182	Jul-16	Jul-17	3,000,000	-	3,000,000				1,000,000	
Upgrade Pumping System - Design	26089_7183			-	-	-					
Upgrade Pumping System - Construction	26090_7184	Jul-15	Jul-17	6,000,000	-	6,000,000				2,000,000	
Replace 12 Centrifuges - Design	26091_7185			-	-	-					
Replace 12 Centrifuges - Construction	26092_7186	Jul-16	Jul-18	34,000,000	-	34,000,000				16,500,000	
Utility Upgrades - Design	26093_7187			-	-	-					
Utility Upgrades - Construction	26094_7188	Jul-17	Jul-19	6,000,000	-	6,000,000				833,000	
Odor Control System Upgrade - Design	26095_7189			-	-	-					
Odor Control System Upgrade - Construction	26096_7190	Jul-18	Jul-19	1,500,000	-	1,500,000					

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CSO				**860,682,679**	**754,703,548**	**105,979,131**	**50,362,331**	**29,236,759**	**312,084,502**	**25,944,224**	**435,819**
CSO MWRA Managed				**439,696,269**	**425,936,966**	**13,759,303**	**5,130,541**	**1,329,657**	**162,946,993**	**7,299,106**	
339 North Dorchester Bay				227,854,368	218,375,065	9,479,303	4,959,487	959,657	85,252,115	3,560,159	
North Dorchester Outfall - Design/CA/RI	10426_7032	Mar-11	Apr-13	1,010,264	39,556	970,708	452,108	200,001	691,665	318,599	
Tunnel - Design/ESDC	32660_6220	Sep-04	Aug-12	23,518,463	23,015,346	503,117	317,842	185,275	1,893,498		
Tunnel - Construction (Ch30)	32661_6244	Aug-06	Nov-09	147,531,347	147,395,535	135,812	135,812		38,673,105		
Dewatering Pump Station & Sewers - Construction	32662_6245	Apr-09	Apr-11	27,286,364	25,448,475	1,837,889	1,837,889		27,286,364		
Tunnel & Facilities - CM Services	32726_6993	Oct-05	Apr-12	10,244,044	8,317,896	1,926,148	1,926,148		7,080,928		
Pleasure Bay - Construction	32732_7012	Sep-05	May-06	3,194,885	3,194,885	-					
Design/ESDC/Facilities	32733_7013	Nov-06	May-12	4,887,796	4,600,811	286,985	212,604	74,381	2,889,497		
Tunnel Rescue/Emergency Response	32744_7103	Mar-07	Dec-09	793,354	793,354	-			590,767		
Ventilation Building - Construction	32745_7259	Dec-09	May-11	5,430,335	5,353,252	77,083	77,083		5,430,335		
Communication Systems	32746_7345	Jul-10	May-11	215,956	215,955	1	1		215,956		
North Dorchester Outfall Dredging - Construction	32747_4094	Sep-12	Feb-13	3,741,560	-	3,741,560		500,000	500,000	3,241,560	
347 East Boston Branch Sewer Relief				85,709,822	85,598,769	111,053	111,054		75,004,444		
Design	32673_6256	Mar-00	Sep-06	3,463,306	3,463,306	-			582		
East Boston Branch Relief Sewer	32674_6257	Jul-08	Jul-10	62,095,343	62,095,343	-			62,095,343		
East Boston Branch Sewer Rehab	32719_6840	Apr-03	May-04	5,222,005	5,222,005	-					
Sections 38 & 207 Replacement	32720_6841	Apr-09	Jul-10	8,875,990	8,875,990	-			8,875,990		
Design 2 CS	32742_7087	Jun-06	Jul-11	2,863,796	2,810,498	53,299	53,299		843,147		
Resident Inspection Services	32743_7097	Jul-08	Mar-11	3,189,382	3,131,627	57,755	57,755		3,189,382		
348 BOS019 Storage Conduit	**completed project**			14,287,581	14,287,581	-			(44,067)		
349 Chelsea Trunk Sewer	**completed project**			29,779,319	29,779,319	-					
350 Union Park Detention Treatment Facility	**completed project**			49,583,406	49,583,406	-			(227,192)		
353 Upgrade Existing CSO Facilities	**completed project**			22,385,200	22,385,200	-					
354 Hydraulic Relief Projects	**completed project**			2,294,549	2,294,549	-					
355 MWR003 Gate & Siphon				4,168,947	-	4,168,947	60,000	370,000	430,000	3,738,947	
Design	32722_6952	Apr-12	Sep-16	1,527,316	-	1,527,316	60,000	370,000	430,000	1,097,316	
Construction 1	32723_6953	Sep-13	Jun-14	600,000	-	600,000				600,000	
Construction 2	32755_7409	Aug-14	Oct-15	2,041,631	-	2,041,631				2,041,631	

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357 Charles River CSO Controls	**completed project**			3,633,077	3,633,077	-			2,531,693		
CSO Community Managed				**370,537,435**	**279,759,472**	**90,777,963**	**44,489,744**	**27,889,102**	**144,458,772**	**18,399,118**	
340 Dorchester Bay Sewer Separation (Fox Pt)				54,187,455	53,762,619	424,836	424,836		424,836		
Design	32651_6155	Jun-96	Aug-09	11,432,929	11,153,942	278,987	278,987		278,987		
Construction	32664_6247	Apr-99	Nov-06	42,754,526	42,608,677	145,849	145,849		145,849		
341 Dorchester Bay Sewer Separation (Comm Pt)				64,725,351	59,870,559	4,854,792	2,075,910	1,965,000	9,020,880	813,881	
Design	32650_6154	Jun-96	Jun-14	17,737,961	15,655,785	2,082,175	1,382,910	579,000	3,934,205	241,265	
Construction	32665_6248	Apr-99	Jun-14	46,987,390	44,214,774	2,772,616	693,000	1,386,000	5,086,675	1,386,616	
342 Neponset River Sewer Separation	**completed project**			2,444,394	2,444,394	-					
343 Constitution Beach Sewer Separation	**completed project**			3,768,888	3,768,888	-					
344 Stony Brook Sewer Separation				44,332,539	44,198,384	134,155	134,155		(721,285)		
Design/CS/RI	32667_6395	Jul-98	Sep-08	10,137,127	10,137,127	-			343,167		
Construction	32668_6251	Jul-00	Sep-06	34,195,412	34,061,257	134,155	134,155		(1,064,452)		
346 Cambridge Sewer Separation				56,390,950	28,188,682	28,202,268	7,618,000	11,260,000	28,615,551	9,324,269	
Design/CS/RI	32654_6161	Jan-97	Jun-16	22,280,380	12,363,846	9,916,534	3,617,000	3,189,000	10,486,676	3,110,534	
Construction	32672_6255	Jul-98	Dec-15	34,110,570	15,824,836	18,285,735	4,001,000	8,071,000	18,128,875	6,213,735	
351 BWSC Floatables Controls	**completed project**			932,979	932,979	-					
352 Cambridge Floatables Control	**completed project**			1,086,925	1,086,925	-			164,727		
356 Fort Point Channel Sewer Separation				12,047,018	11,932,708	114,310	114,310		3,755,860		
Design	32724_6991	May-04	Jun-11	2,435,362	2,341,391	93,971	93,971		1,074,428		
Construction	32725_6992	Mar-05	Dec-10	9,611,656	9,591,317	20,339	20,339		2,681,432		
358 Morrissey Boulevard Drain				32,898,744	35,585,080	(2,686,336)	(2,895,792)	209,457	18,222,573		
Design	32735_7015	Jun-05	Jun-13	4,578,099	3,989,642	588,457	379,000	209,457	1,595,614		
Construction	32713_6696	Dec-06	Jun-09	28,320,645	31,595,438	(3,274,792)	(3,274,792)		16,626,959		
359 Reserved Channel Sewer Separation				62,322,968	20,093,888	42,229,080	21,045,112	12,923,000	51,345,006	8,260,968	
Design	32734_7014	Jul-06	Jun-16	14,197,952	7,875,857	6,322,095	3,659,617	1,702,000	10,520,480	960,478	
Construction	32727_6994	May-09	Dec-15	48,125,016	12,218,031	35,906,985	17,385,495	11,221,000	40,824,526	7,300,490	
360 Brookline Sewer Separation				25,413,353	8,036,910	17,376,443	15,844,798	1,531,645	24,141,753		
Design/CS/RI	32736_7076	Nov-06	Jun-13	4,794,297	3,328,763	1,465,534	1,436,115	29,419	3,522,697		
Construction	32737_7077	Nov-08	Nov-12	20,619,056	4,708,147	15,910,909	14,408,683	1,502,226	20,619,056		
361 Bulfinch Triangle Sewer Separation				9,985,871	9,857,456	128,415	128,415		9,488,871		
Design/CS/RI	32738_7078	Aug-06	Jun-11	1,365,361	1,236,946	128,415	128,415		868,361		
Construction	32739_7079	Sep-08	Jul-10	8,620,510	8,620,510	-			8,620,510		
Planning & Support				**50,448,975**	**49,007,110**	**1,441,865**	**742,046**	**18,000**	**4,678,737**	**246,000**	**435,819**

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324 CSO Support				50,448,975	49,007,110	1,441,865	742,046	18,000	4,678,737	246,000	435,819
Technical Assistance	32400_5790	Feb-94	Dec-95	228,320	228,320	-					
Planning/EIR	32401_5791	Mar-88	Sep-90	10,768,610	10,768,610	-					
Master Planning	32403_5716	Mar-92	Sep-04	21,762,805	21,762,805	-			(114,342)		
Technical Assistance - Geotech	32407_5970	Jun-90	Jun-92	61,110	61,110	-					
Modeling	32409_5795	May-92	Mar-95	299,840	299,840	-					
SOP Program	32411_5767	Jan-94	May-01	1,956,550	1,956,550	-					
Watershed Planning	32645_6036	Dec-94	Apr-01	877,134	877,134	-					
Technical Review	32648_6150	Jul-96	Dec-20	793,592	528,932	264,660				40,000	
Land Acquisition & Easement	32658_6169	Jul-96	Jun-14	13,225,014	12,496,960	728,054	532,046	18,000	4,583,079	166,000	
System Assessment	32691_6372	May-97	Dec-20	476,000	26,849	449,151	210,000		210,000	40,000	
Other Wastewater				**122,865,861**	**102,223,882**	**20,641,979**	**4,545,837**	**3,839,253**	**18,927,810**	**18,635,520**	**(6,378,631)**
128 I/I Local Financial Assistance				122,584,985	101,943,006	20,641,979	4,545,837	3,839,253	18,927,810	18,635,520	(6,378,631)
Phase II - Grants	10273_6084	May-93	May-06	15,928,524	15,928,524	-					
Phase II - Loans	10274_6085	May-93	May-06	47,664,000	47,664,000	-					
Phase II - Repayments	10282_6170	May-94	May-11	(47,664,000)	(47,663,995)	(5)	(5)		(1,121,836)		
Public Participation	10348_6609	Feb-99	Jun-02	6,461	6,461	-					
Phase IV - Grants	10368_6736	Nov-99	May-10	34,650,000	34,650,000	-			1,294,358		
Phase IV - Loans	10369_6737	Nov-99	May-10	42,350,000	42,350,000	-			1,581,995		
Phase IV - Repayments	10370_6738	Nov-00	May-15	(42,350,000)	(39,497,282)	(2,852,718)	(2,852,718)		(14,303,874)		
Phase V - Grants	10407_6925	Aug-04	May-12	18,000,000	16,561,210	1,438,790	1,438,790		6,216,126		
Phase V - Loans	10408_6926	Aug-04	May-12	22,000,000	20,241,473	1,758,527	1,758,527		7,597,488		
Phase V - Repayments	10409_6927	Aug-05	May-17	(22,000,000)	(13,446,233)	(8,553,767)	(1,320,007)	(1,446,752)	(12,889,786)	(5,787,008)	
Phase Vl - Grants	10441_7107	Nov-06	Jun-15	18,000,000	9,943,785	8,056,215	1,631,250	1,800,000	10,776,575	4,624,965	
Phase Vl - Loans	10442_7108	Nov-06	Jun-15	22,000,000	12,153,514	9,846,486	2,461,622	2,461,621	13,900,862	4,923,243	
Phase Vl - Repayments	10443_7109	Nov-07	Jun-20	(22,000,000)	(3,952,169)	(18,047,831)	(2,049,835)	(2,031,552)	(7,661,965)	(11,596,945)	
Phase VII - Grants	10471_7293	Aug-09	Jun-18	18,000,000	3,369,780	14,630,220	1,662,795	1,800,000	6,832,575	11,167,425	
Phase VII - Loans	10472_7294	Aug-09	Jun-18	22,000,000	4,118,620	17,881,380	2,032,305	2,200,000	8,350,925	13,649,075	
Phase VII - Repayments	10473_7295	Aug-10	Jun-23	(22,000,000)	(484,682)	(21,515,318)	(216,887)	(944,064)	(1,645,633)	(8,815,235)	
Phase VIII - Grants	10474_7296	Aug-13	Jun-21	18,000,000	-	18,000,000				5,850,000	
Phase VIII - Loans	10475_7297	Aug-13	Jun-21	22,000,000	-	22,000,000				7,150,000	
Phase VIII - Repayments	10476_7298	Aug-14	Jun-26	(22,000,000)	-	(22,000,000)				(2,530,000)	
138 Sewerage System Mapping Upgrade	**completed project**			280,876	280,876	-					

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Waterworks				**2,769,264,195**	**1,744,247,467**	**1,025,016,728**	**64,359,886**	**93,180,939**	**299,397,377**	**439,677,337**	**427,798,556**
Drinking Water Quality Improvements				**652,165,973**	**541,290,614**	**110,875,359**	**19,756,292**	**41,791,096**	**94,288,050**	**49,327,971**	
542 Carroll Water Treatment Plant				427,970,502	378,178,131	49,792,371	14,166,875	19,854,990	39,487,726	15,770,506	
Study 1	53293_5023	Jan-88	Feb-89	444,190	444,190	-					
Study 2	53294_5024	Jul-90	Mar-94	2,368,323	2,368,323	-					
EIR / Conceptual Design	53296_5042	Nov-93	Jul-95	5,807,703	5,807,703	-					
Technical Assistance	53300_5997	Jan-88	Jun-00	72,108	72,108	-					
Wachusett WTP - Design/CS/RI	53301_5017	Oct-96	Sep-06	46,605,542	46,605,542	-					
Permit Fees	53304_5157	Jul-93	Mar-14	79,000	76,924	2,076	2,076		30,680		
Cryptosporidium Inactivation Study	53367_6118	Feb-97	May-00	150,000	150,000	-					
Management Support - Design	53371_6134	Apr-97	Apr-00	1,729,937	1,729,937	-					
AWWARF Study	53375_6182	Dec-96	Sep-03	650,342	650,342	-					
Emergency Discharge Reservoir Water Mgmt Study	53376_6206	Nov-98	Sep-02	1,453,825	1,453,825	-					
Wachusett and Cosgrove Intakes - CP1	53377_6207	Jun-00	Jun-03	15,489,314	15,489,314	-			98,218		
Construction Management / RI	53378_6208	Aug-98	Sep-06	31,437,824	31,437,824	-					
Cosgrove Disinfection - Phase II	53390_6365	Apr-98	May-99	2,169,292	2,169,292	-					
Cosgrove Disinfection - Phase I	53391_6397	Jul-97	Oct-97	150,380	150,380	-					
Distribution Water Consultant	53392_6401	Jul-97	Jun-98	3,200	3,200	-					
Immediate Disinfection - MECO	53393_6406	Jul-97	Jul-97	10,300	10,300	-					
Cosgrove Disinfection Facility - Underwater	53406_6479	Jan-98	Jun-98	217,400	217,400	-					
Community Chlorine Analyzers	53410_6485	Apr-98	Jun-98	48,863	48,863	-					
Wachusett Aqueduct Interim Rehabilitation - CP2	53412_5522	Dec-00	Oct-02	23,400,005	23,400,005	-					
Sitework & Storage Tanks - CP3	53413_6488	Mar-99	Nov-02	67,367,673	67,367,673	-					
Treatment Facilities - CP4	53414_6489	Dec-00	Jul-05	145,871,496	145,871,496	-					
Late Sitework - CP6	53416_6491	Jul-04	Jan-06	4,087,831	4,087,831	-					
OCIP	53418_6494	Mar-99	Dec-07	5,107,089	5,107,089	-					
Professional Services	53419_6495	Sep-98	Oct-05	2,752,328	2,752,328	-					
Marlboro MOA	53420_6497	Sep-98	Jun-05	5,859,141	5,859,141	-					
CWTP- MECO	53421_6520	Sep-98	Mar-05	128,328	128,328	-					
Site Security Services	53425_6613	May-99	Mar-05	1,263,635	1,263,635	-					
Existing Facilities Modifications - CP7	53426_6650	Jul-12	Dec-13	5,000,000	-	5,000,000		2,352,000	2,352,000	2,648,000	
CSX Crossing	53427_6670	Aug-01	Dec-01	64,700	64,700	-					
Wachusett Algae - Design CS/RI	53428_6671	Jul-14	Dec-17	450,000	-	450,000				450,000	
Public Health Research	53432_6691	Jul-00	Jun-07	1,702,560	1,702,560	-					
Security Equipment	53435_6756	Jun-00	Jun-00	570,721	570,721	-					
Cosgrove Screens, CP8 - Construction	53437_6773	Aug-03	Aug-04	3,238,306	3,238,306	-					
AWWARF - Evaluation Ozone & UV	53443_6815	Jul-01	Jan-04	301,750	301,750	-					
Fitout / Construction	53445_6827	Oct-03	Jun-14	1,500,000	547,679	952,321	(1,750)	423,000	226,320	531,071	
Wachusett Algae - Construction	53448_6889	Feb-15	Dec-16	1,800,000	-	1,800,000				1,800,000	
CWTP Ultraviolet Disinfection - Design/ESDC/RI	53450_6923	Jul-08	Apr-15	4,393,797	1,161,837	3,231,960	800,019	900,000	2,861,856	1,531,941	
CWTP Ultraviolet Disinfection - Construction	53451_6924	May-11	Mar-14	29,477,382	780,000	28,697,382	10,788,909	14,070,000	25,638,909	3,838,473	
As-needed Technical Assistance No.1	53452_6939	Jan-06	Jun-08	491,274	491,274	-			330		
Existing Facilities Modifications, CP7 - Design	53453_6951	Jul-05	Dec-14	1,842,611	636,165	1,206,446	364,000	400,000	1,286,387	442,446	
As-needed Technical Assistance	53455_6989	Jan-06	Jun-08	702,024	702,024	-			21,023		
Ancillary Modifications - Construct. 1	53456_7084	Jul-06	Jun-08	160,475	160,475	-					

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Ancillary Modifications - Construct. 2	53457_7085	Jan-09	Apr-15	6,471,320	2,202,555	4,268,765	1,702,190	850,000	4,754,745	1,716,575	
Ancillary Modifications - Design 3	53458_7192	Mar-08	Sep-10	299,101	299,101	-			296,601		
Ancillary Modifications - Design 4	53459_7208	Mar-08	Sep-10	527,412	527,412	-			480,657		
Technical Assistance 5	53464_7315	Sep-10	Sep-12	563,000	47,093	515,907	252,869	263,038	563,000		
Technical Assistance 6	53465_7316	Sep-10	Sep-12	563,000	21,486	541,514	258,562	282,952	563,000		
CWTP Storage Tank Roof Drainage System	53470_7376	Jan-15	Jan-16	2,000,000	-	2,000,000				2,000,000	
Technical Assistance 7	75530_7406	Sep-12	Sep-14	563,000	-	563,000		157,000	157,000	406,000	
Technical Assistance 8	75531_7407	Sep-12	Sep-14	563,000	-	563,000		157,000	157,000	406,000	
543 Quabbin Water Treatment Plant				17,666,662	10,767,179	6,899,483	306,490	4,367,000	5,297,147	2,225,993	
Quabbin WTP - Design/CA/RI	53363_6043	May-95	Aug-01	3,793,701	3,793,701	-			(29,021)		
Permit Fees	53380_6210	Jan-98	Dec-13	12,000	9,745	2,255	2,255		4,890		
Utilities	53381_6211	Aug-98	Jan-12	13,400	13,400	-					
Construction	53382_6212	Nov-98	Sep-00	5,070,892	5,070,892	-					
Ware Fire Department - MOA	53433_6706	Oct-99	Jul-00	25,000	25,000	-					
Water Quality Analysis Equipment	53434_6711	Jan-01	Jun-06	48,620	48,620	-					
Quabbin UVWTP - Design/CA/RI	53439_6775	Dec-08	Oct-14	1,790,740	663,549	1,127,191	304,235	400,000	1,367,784	422,956	
Quabbin UVWTP - Construction	53440_6776	May-12	Aug-13	5,770,037	-	5,770,037		3,967,000	3,967,000	1,803,037	
Quabbin UVWTP -Study/Pilot	53442_6804	May-02	Dec-05	1,142,272	1,142,272	-			(13,506)		
544 Norumbega Covered Storage	**completed project**			106,674,146	106,674,146	-			101,670		
545 Blue Hills Covered Storage				40,679,737	39,969,625	710,112	291,124	22,844	21,394,739	396,144	
Technical Support & Permit Compliance	53385_6215	Apr-02	Dec-15	104,000	25,758	78,242	17,324	22,844	42,664	38,074	
Design / Build	53386_6216	Jan-07	Apr-10	37,660,514	37,544,510	116,004	116,004		20,964,161		
Roadway Resurfacing - Design	53460_7213	Jul-13	Jan-15	58,700	-	58,700				58,700	
Roadway Resurfacing - Construction	53461_7214	Apr-14	Jan-15	299,370	-	299,370				299,370	
EIR/Preliminary Design/OR	68025_6139	May-97	Jun-10	2,557,153	2,399,357	157,796	157,796		387,914		
550 Spot Pond Storage Facility				59,174,926	5,701,533	53,473,393	4,991,803	17,546,262	28,006,768	30,935,328	
Environmental Review	53400_6455	Apr-02	Feb-03	232,830	232,830	-					
Design / Build	53402_6457	Nov-11	Nov-14	49,361,000	-	49,361,000	3,500,000	16,676,000	20,176,000	29,185,000	
Easements, Land Acquisition & Permits	53447_6868	Oct-08	Dec-14	6,000,000	5,099,700	900,300	207,762	277,015	5,584,477	415,523	
Owners' Representative	53462_7233	Mar-10	Jul-15	2,892,096	369,003	2,523,093	595,041	593,247	1,557,291	1,334,805	
Early Construction Water Connection	53463_7314	Jul-11	Feb-12	689,000	-	689,000	689,000		689,000		

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Transmission				**1,163,232,918**	**719,536,942**	**443,695,976**	**21,988,298**	**19,411,966**	**88,052,746**	**154,501,326**	**247,794,379**
597 Winsor Station Pipeline				26,196,325	1,346,511	24,849,814	397,423	609,095	2,314,747	23,843,296	
Preliminary Permit, Study & Licensing	60032_6276	Nov-97	Jun-99	38,282	38,282	-					
Quabbin Aqueduct TV Inspection	60033_6277	Apr-13	Oct-15	2,682,282	-	2,682,282				2,682,282	
Hatchery Pipeline - Design/ESDC/RI	60077_7017	Jan-12	Jan-16	719,340	-	719,340	44,176	176,130	220,306	499,034	
Quabbin Aqueduct & WPS Upgrade - Design/CA/RI	60087_7114	Feb-10	Aug-15	2,320,000	523,534	1,796,466	353,247	432,965	1,309,746	1,010,254	
Winsor Station Rehab & Improvement	60088_7115	Apr-13	Oct-15	8,931,605	-	8,931,605				8,931,605	
Shaft 12 Construction	60095_7197	Apr-13	Oct-15	8,398,016	-	8,398,016				8,398,016	
Shaft 2 Construction	60096_7198	Apr-13	Oct-15	316,151	-	316,151				316,151	
Winsor Station Chapman Valve Repair	60101_7212	Feb-09	Nov-09	416,425	416,425	-			416,425		
Purchase of Sleeve Valves	60105_7234	Jul-08	May-09	368,270	368,270	-			368,270		
Hatchery Pipeline - Construction	60106_7235	Jul-13	Jan-15	2,005,954	-	2,005,954				2,005,954	
601 Sluice Gate Rehabilitation	**completed project**			9,158,418	9,158,411	7					
604 MetroWest Tunnel				711,616,468	669,794,980	41,821,488	14,254,500	9,928,000	60,176,654	16,638,987	1,000,000
Study	59794_5043	Jun-84	Oct-89	414,770	414,770	-					
Design/EIR - Tunnel/ESDC	59795_5044	Apr-92	Mar-07	37,938,693	37,938,693	-			51,985		
Sudbury Pipe Bridge - Construction	59796_5048	Nov-91	Jun-92	295,910	295,910	-					
West Tunnel Segment - CP1	59798_6054	Apr-97	Apr-03	147,787,135	147,787,135	-					
Construction Management / Resident Inspection	59799_5284	May-95	Apr-04	39,427,799	39,427,799	-					
Technical Assistance	59804_5976	Jun-84	Jun-98	131,400	131,400	-					
Land Acquisition	59805_5139	Oct-95	Jul-13	6,258,741	6,258,741	-					
Hultman Study	59806_5141	Apr-95	Mar-05	1,863,998	1,863,998	-					
DEP Permit Fees	60012_6037	Oct-94	Sep-14	58,000	55,842	2,158	2,158		7,438		
Middle Tunnel Segment - CP2	60013_6055	Jun-96	Apr-03	245,809,358	245,809,358	-					
MHD Salt Sheds - CP5	60014_6056	Sep-96	Jun-97	1,313,900	1,313,900	-					
Shaft 5A - CP3	60015_6059	Aug-97	Aug-98	5,871,954	5,871,954	-					
Local Supply Contingency - Design/CA/RI	60017_6063	May-96	Oct-99	858,703	858,703	-					
Community Technical Assistance	60018_6067	Jun-95	Apr-99	297,408	297,408	-					
Professional Services	60020_6117	Nov-95	Dec-03	730,860	730,860	-					
OCIP	60021_6122	Jun-96	May-06	26,021,794	26,021,794	-			(1,034)		
Hultman Leak Repair	60022_6128	Aug-96	May-97	307,281	307,280	1					
Framingham MOU	60023_6129	May-96	Dec-03	2,444,171	2,444,171	-					
Local Supply Contingency - Construction	60024_6130	Jun-97	Dec-03	4,298,444	4,298,444	-			10,023		
Local Supply Contingency - Legal/Easement	60025_6131	Apr-97	Jun-02	9,110	9,110	-					
Hultman Repair Bands	60026_6140	Aug-96	Dec-96	28,400	28,400	-					
Loring Road Storage Tanks - CP-8	60029_6203	Sep-97	Nov-00	41,367,921	41,367,921	-					
Testing & Disinfection - CP7	60030_6204	Jan-03	Oct-03	3,612,435	3,612,435	-					
Upper Hultman Rehabilitation - CP6B	60031_6205	Mar-12	Dec-14	8,785,000	-	8,785,000	758,000	3,100,000	3,858,000	4,927,000	
Southboro MOA	60038_6366	May-97	Jun-03	254,883	254,883	-					
Weston MOA	60039_6367	Apr-96	Oct-04	1,005,524	1,005,524	-					
East Tunnel Segment - CP3A	60040_6374	Nov-98	Sep-02	55,975,616	55,975,616	-					
Hultman Investigation and Repair	60042_6430	Jun-99	Nov-00	1,604,381	1,604,381	-					
Hultman Repair Bands 98-99	60043_6492	Apr-99	Jun-99	116,457	116,457	-					
Wayland MOA	60053_6762	Jun-00	Dec-02	35,040	35,040	-					
Equipment Prepurchase	60054_6777	Jun-05	Mar-06	198,000	198,000	-					

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Hultman Rehabilitation - CP9	60058_6856	Nov-05	Dec-06	3,256,702	3,256,702	-					
Interim Disinfection	60059_6872	Jan-03	Oct-05	1,244,540	1,244,540	-					
Hultman Interconnect - Final Design/CA/RI	60066_6911	Sep-05	Sep-14	6,387,819	4,408,900	1,978,919	515,212	500,000	2,394,551	963,707	
Valve Chamber Modifications - Design/CA	60072_6950	Jul-13	Dec-17	1,111,698	-	1,111,698				1,111,698	
Lower Hultman Rehabilitation -CP6A	60073_6975	Sep-09	Mar-14	51,813,700	33,577,867	18,235,833	12,486,833	5,749,000	51,813,700		
Hultman Interconnect - RI Services	60083_7082	Jan-10	Sep-14	2,499,909	887,905	1,612,004	442,297	529,000	1,859,202	640,707	
CP6 Easements	60085_7105	Jan-08	Apr-14	175,000	25,917	149,083	50,000	50,000	125,567	49,083	
CP6A Demolition	60086_7106	Sep-08	Jan-09	57,222	57,222	-			57,222		
Valve Chamber & Storage Tank Access Improvements	60109_7283	Jul-13	Jul-17	3,000,000	-	3,000,000				3,000,000	
Shaft 5 Electrical Upgrade	60128_7367	Jan-19	Jan-20	1,000,000	-	1,000,000					
Shaft 5A/5 Surface Piping Inspection & Restoration	60129_7368	Jan-14	Jan-15	1,500,000	-	1,500,000				1,500,000	
Valve Chamber Modifications - Construction	75525_7755	Jan-15	Dec-16	4,446,792	-	4,446,792				4,446,792	
615 Chicopee Valley Aqueduct Redundancy	**completed project**			8,666,747	8,666,747	-			95,143		
616 Quabbin Transmission System				13,589,015	4,743,754	8,845,261	1,533,333	1,134,424	2,988,084	3,697,504	2,480,000
Facilities Inspection	60055_6828	Oct-05	Oct-07	1,005,413	1,005,413	-			(2,049)		
Equipment Pre-purchase	60075_7007	Feb-05	Jun-08	534,366	534,366	-					
Oakdale Phase 1A Electrical - Design	60103_7229	Oct-09	Jan-14	799,880	322,376	477,504	200,000	200,000	722,376	77,504	
Oakdale Phase 1A Electrical - Construction	60104_7230	Jan-12	May-13	2,267,757	-	2,267,757	1,333,333	934,424	2,267,757		
Ware River Intake Valve Replacement	60108_7282	Jul-14	Jul-17	1,200,000	-	1,200,000				1,200,000	
CVA Intake Motorized Screens Replacement	60112_7332	Jul-17	Jun-18	500,000	-	500,000				500,000	
Wachusett Lower Gatehouse Rehabilitation	60113_7333	Jul-14	Dec-18	2,200,000	-	2,200,000				1,920,000	
Rehabilitate Oakdale Turbine	60135_7378	May-20	Jan-21	1,000,000	-	1,000,000					
Geo-Thermal Heat Wachusett Gatehouse	60136_7379	May-19	Nov-19	200,000	-	200,000					
Rehab Wachusett Gatehouse Chamber 4 Piping	60137_7380	Jan-19	Jan-20	1,000,000	-	1,000,000					
Oakdale Valves - Phase 1 Construction	75491_6690	Oct-05	Jun-06	1,811,309	1,811,309	-					
Oakdale Valves - Phase 1 Study & Design	75496_6831	Apr-04	Jun-07	1,070,290	1,070,290	-					
617 Sudbury/Weston Aqueduct Repairs				4,308,053	659,948	3,648,105	2		25,002	3,648,103	-
Sudbury Aqueduct Inspection	60056_6838	Aug-05	Oct-06	369,520	369,520	-					
Technical Assistance	60057_6839	Sep-09	Dec-11	25,002	25,000	2	2		25,002		
Weston Aqueduct Inspection	60070_6947	Jul-14	Mar-15	150,000	-	150,000				150,000	
Sudbury Short-Term Repairs	60076_7016	Jul-13	Jun-14	400,103	-	400,103				400,103	
Sudbury Short-Term Repairs - Phase 2	60110_7317	Jul-14	Jul-15	2,098,000	-	2,098,000				2,098,000	
Ash Street Sluice Gates	60130_7369	Jan-15	Jan-16	1,000,000	-	1,000,000				1,000,000	
Hazardous Material Sudbury Aqueduct	75486_6617	Apr-99	May-05	265,428	265,428	-					
620 Wachusett Reservoir Spillway Improvements	**completed project**			9,287,460	9,287,461	(1)			1,237,499		
621 Watershed Land				19,000,000	13,899,500	5,100,500	2,908,500	2,192,000	10,793,000		
Land Acquisition	60081_7069	Apr-06	Jun-12	19,000,000	13,899,500	5,100,500	2,908,500	2,192,000	10,793,000		

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623 Dam Projects				5,729,181	719,452	5,009,729	1,592,356	1,202,932	3,514,740	2,214,441	
Dam Safety Modifications & Repairs - Construction	60094_7194	Aug-11	Dec-12	2,243,440	-	2,243,440	1,330,431	913,009	2,243,440		
Dam Safety Modifications & Repairs - Design/CA/RI	60100_7211	Sep-09	Jun-14	1,534,741	719,293	815,448	261,565	276,942	1,257,800	276,941	
Oakdale Dam Permits	60118_7346	Jan-12	Dec-12	1,000	159	841	360	481	1,000		
Oakdale Dam - Design/ESDC/RI	60119_7347	Jan-14	Dec-17	200,000	-	200,000		12,500	12,500	187,500	
Oakdale Dam Removal - Construction	60120_7348	Jul-15	Dec-16	750,000	-	750,000				750,000	
Goodnough Dike Drainage Improvements	60131_7370	Jul-14	Jul-15	1,000,000	-	1,000,000				1,000,000	
625 Long Term Redundancy				355,681,251	1,260,178	354,421,073	1,302,184	4,345,515	6,907,877	104,458,995	244,314,379
Water Transmission Redundancy Plan	60035_6273	Oct-08	Sep-11	1,918,971	1,260,178	658,793	658,793		1,918,971		
Cosgrove Tunnel Redundancy PS - Design/ESDC/RI	60090_7156	Jan-12	Feb-17	8,719,200	-	8,719,200	421,897	1,687,587	2,109,484	6,609,716	
Cosgrove Tunnel Redundancy PS - Construction	60091_7157	Aug-13	Feb-16	43,596,000	-	43,596,000				43,596,000	
Sudbury Aqueduct - Design/CA/RI	60092_7159	Jul-14	Jun-22	48,630,248	-	48,630,248				22,795,429	
Sudbury Aqueduct Slipline - Construction	60093_7160	Jul-18	Jun-21	89,962,163	-	89,962,163					
MWWST/Sudbury Aqueduct Connection - Construction	60107_7291	Jul-17	Jun-21	148,580,618	-	148,580,618				27,858,867	
Sudbury Aqueduct - MEPA Review	60122_7352	Mar-12	Feb-14	5,315,855	-	5,315,855	221,494	2,657,928	2,879,422	2,436,433	
Chestnut Hill Final Connection - Construction	60123_7353	Jul-17	Dec-19	3,699,850	-	3,699,850				1,109,955	
Tops of Shafts Rehab - Design/CA/RI	60126_7356	Jan-18	Dec-22	1,051,904	-	1,051,904				52,595	
Tops of Shafts Rehab - Construction	60127_7357	Jan-20	Dec-21	4,206,442	-	4,206,442					
Distribution And Pumping				**910,412,097**	**354,009,059**	**556,403,038**	**13,337,992**	**13,899,508**	**75,794,814**	**226,429,582**	**302,735,953**
618 Northern High NW Transmission Section 70				1,000,000	-	1,000,000				1,000,000	
Planning	60063_6895	Jul-14	Jun-15	1,000,000	-	1,000,000				1,000,000	
677 Valve Replacement				22,104,344	9,338,478	12,765,866	1,584,299	1,606,139	3,949,588	4,365,068	5,210,360
Construction 1	67559_5126	Nov-95	Nov-96	717,800	717,800	-					
Technical Assistance	67560_5124	Oct-95	May-10	113,338	113,338	-			1,595		
Equipment Purchase	68005_6088	Oct-95	Jun-18	4,037,670	1,111,804	2,925,866		487,646	812,436	2,438,220	
Construction 2	68012_6105	Nov-97	Jul-99	1,356,516	1,356,516	-					
Construction 3	68039_6278	Feb-00	Aug-01	1,337,571	1,337,571	-					
Construction 4	68079_6345	May-02	Oct-03	1,539,911	1,539,911	-					
Construction 5	68080_6346	Mar-04	Jul-05	1,389,006	1,389,006	-					
Construction 6	68126_6435	May-07	Dec-08	1,571,992	1,571,992	-			238,765		
Construction 7	68127_6436	Apr-11	Apr-13	2,990,000	194,000	2,796,000	1,584,299	1,118,493	2,896,792	93,208	
Permits	68239_6859	Jan-02	May-10	770	770	-					
Easements	68240_6860	Jan-02	May-10	5,770	5,770	-					
Construction 8	68300_7195	Jan-17	Jun-19	2,935,000	-	2,935,000				1,467,500	
Construction 9	68307_7236	Dec-19	Jun-21	2,935,000	-	2,935,000					
Phase 8 - Design/CA/RI	68330_7417	Jan-16	Jan-20	587,000	-	587,000				323,449	
Phase 9 - Design/CA/RI	68331_7418	Dec-17	Jun-22	587,000	-	587,000				42,691	
678 Boston Low Service - Pipe & Valve Rehab	**completed project**			23,690,864	23,690,863	-					
683 Heath Hill Road Pipe Replacement	**completed project**			19,358,038	19,358,036	2			(9,817)		
689 James L. Gillis Pump Station	**completed project**			33,419,006	33,419,007	-					
692 Northern High Service - Sect 27 Improvement				3,475,091	123,646	3,351,445	250	500	750	776,756	2,573,939

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Section 27 - Construction	67769_6333	Mar-18	Nov-19	3,350,520	26,581	3,323,939				750,000	
Easements	68192_6589	Apr-16	Mar-18	22,800	-	22,800				22,800	
Technical Assistance	68211_6712	Oct-99	Mar-18	64,500	59,794	4,706	250	500	750	3,956	
Surveying	68229_6809	Jun-01	Mar-17	37,271	37,271	-					
693 NHS - Revere & Malden Pipeline Improve.				35,287,923	26,832,740	8,455,183			2,938,022	4,240,675	4,214,508
Revere & Malden - Design/CS/RI	67780_5185	May-88	Sep-94	1,785,747	1,785,747	-					
Revere Beach - Construction	67781_5186	Aug-92	Oct-94	6,314,186	6,314,186	-					
Malden Section 53 - Construction	67782_5176	Apr-92	Sep-94	10,026,430	10,026,430	-					
Revere Section 53 - Construction	67784_5177	Sep-08	Aug-09	2,938,022	2,938,022	-			2,938,022		
Control Valves - Construction	67785_5191	Jun-88	Aug-89	948,780	948,780	-					
DI Pipeline Cleaning & Lining - Construction	67786_5179	Jun-90	Sep-90	157,930	157,930	-					
Winthrop Cleaning & Lining - Construction	67787_5178	Jun-90	Aug-90	575,040	575,040	-					
Sections 68 & 53A - Construction	67790_6335	Jul-17	Dec-18	5,804,875	-	5,804,875				3,500,000	
Technical Assistance	67791_5986	Jul-06	Mar-18	246,445	246,445	-					
Linden Square - Construction	67792_5238	Apr-91	Nov-91	1,849,430	1,849,430	-					
Linden Square - Construction Administration	67793_5239	Apr-91	Nov-91	125,380	125,380	-					
Road Restoration - Design/CA/RI	67996_6033	Nov-94	Dec-95	77,250	77,250	-					
Road Restoration - Construction	67997_6034	Jul-95	Jun-96	1,713,790	1,713,790	-					
Malden Section 53 - Landscaping	68020_6113	Apr-96	Jun-96	20,000	20,000	-					
Sidewalk Restoration	68033_6183	Sep-96	Oct-96	54,100	54,100	-					
Revere Section 53 - Easements	68078_6334	Sep-02	Jul-09	210	210	-					
Shaft 9A-D Extension - Construction	68258_6958	Mar-19	Nov-20	1,200,000	-	1,200,000					
Easements	68265_6978	Jul-06	Mar-19	30,000	-	30,000				25,000	
Permits	68280_7049	Apr-05	Mar-18	5,000	-	5,000				5,000	
Sections 68 & 53A - Design/CA/RI	75526_7402	Jul-15	Dec-19	1,161,820	-	1,161,820				624,261	
Shaft 9A-D Design/CA/RI	75527_7403	Mar-17	Nov-21	253,488	-	253,488				86,414	
702 New Connect Mains-Shaft 7 to WASM 3				32,638,600	9,839,318	22,799,282	1,034,190		5,554,782	10,664,459	11,100,633
Routing Study	67846_5163	Aug-94	Nov-96	397,087	397,087	-					
Watertown MOU	68035_6199	Jun-94	Sep-97	167,000	167,000	-					
CP1- Design/CA/RI	68110_6383	Sep-98	Jul-11	3,532,814	3,532,814	-			42,395		
Design/CA/RI Meter 120	68111_6384	Aug-02	Oct-08	1,277,722	1,277,722	-			30,720		
CP3 - Final Design/CA/RI	68112_6385	Oct-14	Aug-20	1,533,560	-	1,533,560				1,220,136	
CP1 A&B - Easements	68114_6387			16,919	16,919	-					
CP3 - Easements	68115_6388	Jan-16	Dec-16	40,000	-	40,000				40,000	
CP5 - Easements	68117_6390	Dec-06	Jan-11	29,000	21,659	7,341	7,341		28,701		
CP3 - South Segment	68119_6392	Oct-16	Aug-19	7,030,877	-	7,030,877				4,218,526	
CP5 - Northeast Segment	68121_6394	Aug-09	Nov-11	5,452,966	4,426,117	1,026,849	1,026,849		5,452,966		
CP2- Clean & Line Sections 59 & 60 - Construction	68174_6548	Jan-18	Nov-19	4,724,791	-	4,724,791				1,150,000	
CP2 -Easements	68175_6547	May-17	Nov-17	33,000	-	33,000				33,000	
Replacement of Section 25 - Design/CA/RI	68255_6955	Apr-16	Aug-20	509,651	-	509,651				259,632	
Replacement of Section 25 - Construction	68256_6956	Apr-18	Aug-19	2,548,255	-	2,548,255				500,000	
Section 59 & 60 - Design/CA/RI	68286_7086	Jan-16	Nov-20	944,958	-	944,958				603,165	
Section 75 Extension	68315_7284	Oct-15	Oct-19	4,400,000	-	4,400,000				2,640,000	

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704 Rehab of Other Pump Stations				55,143,866	30,058,049	25,085,817	85,825		12,158,292		25,000,000
Preliminary Design	67885_5153	Aug-94	Mar-96	351,000	351,000	-					
Design/CS/RI	68017_6110	May-97	Nov-04	2,545,826	2,545,826	-					
Construction II & C	68072_6304	Jan-00	Feb-01	639,272	639,272	-					
Rehab of 5 Pump Stations	68102_6375	Oct-06	Jun-10	21,847,848	21,847,856	(8)			10,137,081		
Legal	68179_6557	Jul-99	Jan-10	6,097	6,097	-			3,292		
Proprietary Equipment Purchases	68204_6676	Jun-99	Jan-10	157,638	157,638	-					
Design 2 CS/RI	68266_6980	Dec-04	Jun-11	4,596,185	4,510,360	85,825	85,825		2,017,919		
Pump Station Rehabilitation	75522_7383	Jul-19	Jun-24	25,000,000	-	25,000,000					
706 NHS-Connecting Mains from Section 91	**completed project**			2,360,194	2,360,194	-					
708 Northern Extra High Service - New Pipelines				7,478,503	3,632,119	3,846,384		13,000	13,000	2,906,934	926,450
Design/CA/RI	67970_5242	Sep-94	Jun-01	587,802	587,802	-					
Appraisal &Easements	67971_6339	Sep-94	Jun-01	389	389	-					
Construction	67972_6340	Aug-99	Sep-01	3,031,572	3,031,572	-					
Regulatory Compliance	68010_6099	Nov-95	Oct-00	250	250	-					
Sections 34 & 45 - Construction	68162_6522	Jul-16	Dec-18	3,154,392	-	3,154,392				2,400,000	
Public Participation	68176_6554	Jul-99	Jan-17	5,000	-	5,000		1,000	1,000	4,000	
Legal	68177_6555	Jul-99	Jan-17	5,000	-	5,000		1,000	1,000	4,000	
Technical Assistance	68210_6707	Nov-10	Jan-17	54,000	7,886	46,114		10,000	10,000	36,114	
PLC Equipment Purchases	68215_6749	Dec-99	Dec-00	4,220	4,220	1					
Permits	68281_7050	Nov-10	Jan-17	5,000	-	5,000		1,000	1,000	4,000	
Section 34 & 45 Design/CA/RI	75528_7404	Jul-14	Dec-19	630,878	-	630,878				458,820	
712 Cathodic Protection Of Distribution Mains				1,526,883	140,913	1,385,970					1,385,970
Planning Phase I	68002_6058	Apr-95	Dec-97	107,680	107,680	-					
Test Station Installation 2	68129_6438	Jun-19	Jun-20	461,990	-	461,990					
Test Station Installation 3	68130_6439	Jun-20	Jun-21	461,990	-	461,990					
Test Station Installation 4	68131_6440	Jun-21	Jun-22	461,990	-	461,990					
Technical Assistance	68216_6751	Jan-00	May-09	33,233	33,233	-					
713 Spot Pond Supply Mains Rehab				66,187,435	60,980,158	5,207,277		80,000	581,659	4,644,366	482,911
Section 4 Webster Ave Bridge Pipe Rehab - Design	60114_7334	Jan-13	Dec-16	500,000	-	500,000		80,000	80,000	420,000	
Section 4 Webster Ave Bridge Pipe Rehab - Construct.	60115_7335	Jan-14	Jan-15	1,500,000	-	1,500,000				1,500,000	
Section 50 Pipe Rehab - Design/ESDC/RI	60116_7336	Jul-13	Jun-17	500,000	-	500,000				500,000	
Section 50 Pipe Rehab - Construction	60117_7337	Jul-15	Jun-16	1,500,000	-	1,500,000				1,500,000	
Preliminary Design & Design/CA/RI	68038_6223	Sep-98	Oct-08	10,868,582	10,868,582	-			76,155		
Easements & Paving - CP1	68059_6316	May-00	Mar-02	143,347	143,347	-					
North (Medford/Melrose)	68060_6317	May-00	Jan-02	6,597,330	6,597,330	-					
Easements - CP2	68106_6379	May-02	Jun-06	49,601	49,601	-					
Easements - CP3	68107_6380	Apr-04	Nov-07	79,782	79,782	-					
Middle (Medford/Somerville)	68108_6381	Jun-02	Jul-06	22,176,813	22,176,813	-					
South (Cambridge/Boston)	68109_6382	Oct-04	Apr-08	17,590,133	17,590,133	-			326,397		
Early Valve Replacement Contract	68150_6475	Sep-98	Jan-00	2,387,073	2,387,073	-					
Easements - CP4	68151_6476	Sep-06	May-09	1,451	1,451	-					
Early Valve Equipment Purchase	68153_6483	May-98	Nov-01	161,390	161,390	-					
Construction 4 - Bridge Trusses	68209_6697	Apr-17	Dec-18	1,207,277	-	1,207,277				724,366	

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CA/RI - CP3	68274_7003	Sep-04	Apr-09	924,656	924,656	-			99,107		
714 Southern Extra High Sections 41 & 42	**completed project**			3,657,243	3,657,243	-					
719 Chestnut Hill Connecting Mains				29,906,382	17,486,675	12,419,707			25,061	6,046,000	6,373,707
Pump Station Potable Connection - Design/CA/RI	68026_6141	Mar-00	Dec-04	1,359,533	1,359,533	-			-		
Preliminary Engineering	68051_6301	Jan-05	Apr-06	457,200	457,200	-			25,061		
Shaft 7 Building - Design & Construction	68052_6302	Jan-22	Jan-26	5,379,746	-	5,379,746					
Easements	68053_6303	Apr-03	Dec-07	80,575	80,575	-					
Emergency Pump Relocation - Constuction	68155_6501	Feb-99	Mar-01	6,502,187	6,502,187	-					
Emergency Pump Relocation - Design/CA/RI	68157_6503	May-98	May-01	1,120,816	1,120,816	-					
Boston Paving	68180_6558	Jul-99	Dec-07	132,896	132,896	-					
Legal	68182_6560	Jul-99	Jun-08	1,137	1,137	-					
BECo Emergency Pump Construction	68199_6623	Sep-99	Jun-00	430,641	430,641	-					
Pump Station Potable Connection - Construction	68203_6651	Apr-02	Dec-03	7,132,109	7,132,109	-					
Equipment Pre-purchase	68230_6814	Apr-01	Oct-01	154,337	154,337	-					
Demolition of Garages	68231_6820	Feb-02	May-02	71,600	71,600	-					
Utilities	68244_6869	Jun-02	Aug-02	43,644	43,644	-					
CHEPS Emergency Generation - Construction	68267_6982	Jul-16	Jul-18	4,431,533	-	4,431,533				4,046,000	
CHEPS Emergency Generation - Final Design/CA/RI	68268_6995	Jul-14	Jun-19	1,108,428	-	1,108,428				875,000	
CH Underground Pump Station Electrical Rehab	75521_7382	Jul-14	Jun-19	1,500,000	-	1,500,000				1,125,000	
720 Warren Cottage Line Rehab	**completed project**			1,204,821	1,204,821	(1)					
721 South Spine Distribution Mains				72,509,383	32,754,548	39,754,835	3,949,063	803,071	19,896,747	1,117,655	33,885,046
Sections 21, 43 & 22 - Design	68083_6290	Sep-00	May-13	7,776,068	6,403,281	1,372,787	640,684	627,518	2,568,427	104,585	
Sections 21, 43 & 22 - Easements	68084_6291	Mar-02	May-12	134,000	102,707	31,293	25,740	5,553	59,384		
Section 22 South - Construction	68085_6292	Jul-03	Jun-05	4,993,131	4,993,131	-					
Section 20 & 58 - Design	68089_6296	Jun-18	Nov-23	2,739,254	-	2,739,254					
Section 20 & 58 - Easements	68090_6297	Sep-16	Sep-20	35,070	-	35,070				13,070	
Section 20 & 58 - Construction	68091_6298	Sep-20	May-22	12,891,058	-	12,891,058					
Adams Street Bridge	68122_6396	Jul-98	Dec-99	153,783	153,783	-					
Southern High Public Participation	68193_6601	Oct-98	May-99	15,000	15,000	-					
Southern High Extension Study	68194_6602	Sep-98	May-99	242,372	242,372	-					
Boston Paving	68228_6787			3,194	3,194	-					
Section 22 North - Construction	68235_6844	Jan-21	Jan-23	15,732,734	-	15,732,734					
Section 107 Phase 1 - Construction	68236_6845	Jul-07	Jan-09	6,184,370	6,184,362	8	8		2,182,358		
Legal	68237_6846	May-04	Jun-10	5,000	1,192	3,808	3,808		3,934		
Technical Assistance	68238_6847	Feb-04	Oct-05	28,102	28,102	-					
Contract 1A - Construction	68247_6885	Nov-03	Jun-05	2,858,603	2,858,603	-					
Section 107 Phase 2 - Construction	68290_7099	Jan-10	May-12	15,082,644	11,633,821	3,448,823	3,278,823	170,000	15,082,644		
Milton Pressure Regulator Valve	68291_7104	Jun-06	Nov-06	135,000	135,000	-					
Section 22 North - Design/ESDC	68298_7120	Jul-18	Jan-24	2,500,000	-	2,500,000					
Section 22 North - Facility Plan/EIR	68299_7155	Jul-15	Jun-17	1,000,000	-	1,000,000				1,000,000	

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722 NIH Redundancy & Storage				82,491,395	1,469,640	81,021,755	3,339,011	4,901,016	9,075,694	50,324,944	22,456,784
Concept Plan	53454_6954	Feb-06	Aug-10	826,748	796,748	30,000	30,000		192,775		
Easements	68093_6306	Jul-12	Jun-14	300,000	-	300,000		275,000	275,000	25,000	
Section 89/29 Redundancy - Design	68252_6906	Mar-11	Sep-17	4,644,381	7,000	4,637,381	679,544	700,000	1,386,544	3,257,837	
Purchase Mobile Pump Unit	68276_7026	Jul-09	Jan-10	291,315	290,848	467	467		291,315		
Short Term Improvements - Design/CA/RI	68277_7045	Sep-09	Sep-13	825,171	375,044	450,127	200,000	150,000	725,044	100,127	
Permits	68278_7047	Jan-10	Dec-18	5,000	-	5,000	2,000	2,000	4,000	1,000	
Technical Assistance	68279_7048	Jan-10	Dec-18	18,000	-	18,000	4,000	4,000	8,000	10,000	
Section 89 & 29 Redundancy Construction - Phase 1	68282_7066	Nov-13	Nov-16	20,376,200	-	20,376,200				20,376,200	
Section 89 & 29 Redundancy Construction - Phase 2	68283_7067	Dec-13	Dec-16	20,735,780	-	20,735,780				20,735,780	
NIH Storage - Construction	68284_7068	Jan-19	Jan-21	16,540,680	-	16,540,680					
Section 89/29 Rehab - Design	68294_7116	Jul-14	Jun-19	1,396,867	-	1,396,867				1,047,000	
Section 89/29 Rehab - Construction	68295_7117	Jul-16	Jun-19	6,982,157	-	6,982,157				4,073,000	
Gillis Pump Station Improvements	68309_7260	May-12	Dec-12	3,770,016	-	3,770,016		3,770,016	3,770,016		
Reading/Stoneham Interconnections	68310_7261	Aug-11	Oct-12	2,423,000	-	2,423,000	2,423,000		2,423,000		
NIH Storage - Design	68316_7311	Jan-17	Dec-22	3,356,080	-	3,356,080				699,000	
723 Northern Low Service Rehab - Section 8				21,698,013	2,320,986	19,377,027	2,000	3,000	2,268,003	4,149,088	15,222,932
Easements	68094_6321	Jul-15	Jun-22	80,000	-	80,000				40,000	
Section 8 - Construction	68095_6322	Jul-20	Jul-22	12,821,323	-	12,821,323					
Rehab Sections. 37 & 46 Chelsea/East Boston Constr.	68262_6962	Jul-17	Jun-18	3,200,000	-	3,200,000				3,200,000	
Permits	68263_6977	Jul-05	Jul-18	299,000	284,912	14,088	2,000	3,000	276,174	9,088	
Technical Assistance	68264_6979	Jul-05	Jul-17	44,245	44,245	-			-		
Section 97A - Construction	68275_7021	Oct-08	Oct-09	1,991,836	1,991,829	7			1,991,829		
Section 8 - Design/CA/RI	68287_7092	Jul-17	Jul-22	2,564,265	-	2,564,265				300,000	
Rehab Sections 37 & 46 Chelsea/Boston - Des/CA/RI	75529_7405	Jul-15	Jun-19	697,344	-	697,344				600,000	
724 Northern High Service - Pipeline Improve.				-	-	-			(1,600)		
Design/CA/RI	68098_6336	40,674	40,862	-	-	-			(1,600)		
Appraisal/Easement	68099_6337	40,736	40,737	-	-	-					
Construction	68100_6338	40,588	40,862	-	-	-					
725 Hydraulic Model Update	**completed project**			598,358	598,358	-					
727 SEH Redundancy & Storage				101,848,792	6,664,412	95,184,380	160,000	156,105	5,313,248	23,495,000	71,373,275
Concept Plan/Preliminary Design/Environ. Review	53397_6452	Feb-07	Feb-12	840,072	526,800	313,272	160,000	153,272	428,097		
Redundancy/Storage Phase 1 - Final Design/CA/Rl	53398_6453	Jul-14	Jun-20	5,789,647	-	5,789,647				4,549,000	
Redundancy/Storage Phase 1 - Construction	53399_6454	Jul-16	Jun-19	28,948,235	-	28,948,235				16,886,000	
Redundancy/Storage Phase 2 - Final Design/CA/Rl	68135_6444	Jul-17	Jun-22	4,440,424	-	4,440,424				908,000	
University Avenue Water Main	68136_6445	Mar-08	Nov-08	6,137,445	6,137,445	-			4,882,318		
Sections 77 & 88 Rehab - Design	68292_7112	Jul-24	Jun-29	1,239,965	-	1,239,965					
Sections 77 & 88 Rehab - Construction	68293_7113	Jul-26	Jun-28	4,959,859	-	4,959,859					
Short Term Improvements - Design/CA/RI	68302_7223	Jul-13	Jun-17	200,000	-	200,000				200,000	
Short Term Improvements - Construction	68303_7224	Jul-15	Jun-16	750,000	-	750,000				750,000	
Easements	68305_7226	Aug-08	Jul-26	300,000	-	300,000				200,000	
Permits	68306_7227	Aug-08	Jul-26	5,000	167	4,833		2,833	2,833	2,000	
Redundancy/Storage Phase 2 - Construction	68308_7245	Jul-19	Jun-21	22,202,119	-	22,202,119					
Phase 4, 2nd Tank - Construction	68311_7262	Jul-24	Jun-26	9,484,188	-	9,484,188					

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Phase 4, 2nd Tank - Design	68312_7263	Jul-22	Jun-27	1,896,838	-	1,896,838					
Phase 3, Pump Station - Construction	68313_7264	Jul-22	Jun-24	11,724,000	-	11,724,000					
Phase 3, Pump Station - Design	68314_7265	Jun-20	Jun-25	2,931,000	-	2,931,000					
730 Weston Aqueduct Supply Mains				276,166,245	64,377,912	211,788,333	841,000	4,647,000	8,965,051	112,116,637	94,183,692
Newton Water Mains - Construction	59774_5034	Apr-95	Oct-96	668,790	668,790	-					
Technical Assistance	59776_5975	Mar-95	Oct-18	186,424	186,424	-					
WASM 4 - Design/CA/RI	67865_5147	Mar-95	Sep-07	6,013,476	6,013,476	-			133,999		
WASMs 1 & 2 - Design/CA/RI	68027_6142	Jun-97	Jul-06	5,066,028	5,066,028	-			(8,624)		
Appraisal / Easement	68030_6174	Mar-95	Oct-18	753,000	293,352	459,648		20,000	20,954	359,000	
WASM 1, 2 & 4 - Auburndale	68031_6175	Jun-97	Nov-98	4,001,461	4,001,461	-					
Meter 103 - Construction	68032_6176	Oct-96	Jul-98	61,027	61,027	-					
WASMs 1 & 2 - Newton	68041_6280	Mar-00	Jun-02	9,218,520	9,218,520	-					
WASMs 1 & 2 - Boston	68042_6281	Feb-03	Jun-05	7,038,896	7,038,896	-					
WASMs 2 & 4 - Newton	68069_6312	Apr-98	Mar-01	8,281,877	8,281,877	-					
WASM 4 - Allston & Western Avenue Sewer	68070_6313	Feb-02	Dec-04	17,330,800	17,330,800	-					
WASM 3 - MEPA/Design/CA/RI	68166_6539	Jul-12	Feb-23	31,524,268	-	31,524,268		2,445,000	2,445,000	16,305,000	
Section 36/Watertown/Waltham Conn. - Design/CA/RI	68167_6540	Jan-11	Dec-16	2,988,492	177,530	2,810,962	780,000	427,000	1,384,530	1,603,962	
WASM 3 Waltham - CP2	68170_6543	Jul-15	Sep-17	62,582,058	-	62,582,058				62,582,058	
WASM 3 Belmont - CP3	68171_6544	Oct-17	Dec-20	77,338,214	-	77,338,214				11,898,000	
WASM 3 Arlington - CP4	68172_6545	Jan-20	Feb-22	15,888,562	-	15,888,562					
Section 28, Arlington - CP1	68173_6546	Aug-09	Feb-11	2,303,629	2,303,626	3			2,303,626		
Survey	68245_6870	Dec-01	Oct-18	210,000	88,681	121,319	61,000		61,000	60,319	
Arlington Pipe Work	68269_6996	Dec-09	May-10	401,036	401,035	1			401,035		
WASM3 Section 12 Replacement - Construction	68272_7000	Oct-04	Sep-05	2,113,693	2,113,693	-					
WASM3 Section 12 Replacement - Design	68273_7001	May-04	Aug-06	266,008	266,008	-					
Section 28 - Design/CA/RI	68285_7083	Oct-06	Apr-11	866,688	866,688	-			468,531		
Section 36/Watertown/Waltham Conn. Construction	68301_7222	Jan-13	Dec-15	21,063,298	-	21,063,298		1,755,000	1,755,000	19,308,298	
731 Lynnfield Pipeline				5,015,832	983,802	4,032,030	2,342,354	1,689,677	4,503,111		
Construction Phase 2	68187_6584	Jan-11	Jan-13	3,784,738	361,900	3,422,838	1,759,104	1,663,735	3,784,738		
Easement, Legal, License & Permits	68196_6619	Jul-07	Jul-11	200,000	3,399	196,601	196,601	-	200,000		
Design/CA/RI	68251_6905	Nov-07	Jul-13	759,093	346,502	412,591	386,649	25,942	519,210		
Temporary Interconnect - Phase 1 Construction	68289_7096	Jun-07	Dec-07	272,001	272,001	-			(837)		
732 Walnut St. & Fisher Hill Pipeline Rehab	**completed project**			2,717,140	2,717,141	(1)			563,223		
735 Section 80 Rehabilitation				8,927,746	-	8,927,746				582,000	8,345,746
Section 80 - Construction	68249_6891	Jan-19	Dec-20	7,142,197	-	7,142,197					
Section 80 - Design/CS/RI	68250_6892	Jan-17	Dec-21	1,785,549	-	1,785,549				582,000	

Massachusetts Water Resources Authority
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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Other Waterworks				**43,453,207**	**129,410,852**	**(85,957,645)**	**9,277,304**	**18,078,369**	**41,261,767**	**9,418,458**	**(122,731,776)**
753 Central Monitoring System				16,992,423	15,704,996	1,287,427	430,284	857,143	1,325,478		
Study	75300_5025	Mar-84	Sep-86	189,590	189,590	-					
Design	75301_5026	Oct-87	Jan-92	2,651,250	2,651,250	-					
Equipment Prepurchase	75302_5027	Oct-87	Dec-93	2,161,920	2,161,920	-					
SCADA Implementation	75303_5028	Aug-96	Mar-12	2,101,110	1,813,683	287,427	287,427		325,478		
Communications Structures	75304_5160	Nov-92	May-93	161,290	161,290	-					
Construction & Start-up Services	75305_5173	Jul-92	Aug-98	352,040	352,040	-					
Construction 1	75306_5171	Nov-97	Nov-98	208,950	208,950	-					
Operations Center - Construction	75308_5849	Sep-92	Jun-94	1,498,980	1,498,980	-					
Technical Assistance	75309_5987	Jul-92	Dec-97	385,601	385,601	-					
Microwave Equipment	75474_6125	Mar-96	Dec-01	781,987	781,987	-					
Microwave Communication System-Wide Backbone	75488_6653	Sep-01	Jun-02	1,694,018	1,694,018	-					
Monitoring & Control - Study & Design	75489_6654	Dec-99	Sep-04	1,807,784	1,807,784	-					
Microwave Communication for Waterworks Facilities	75494_6816	Sep-02	Jul-04	1,957,399	1,957,399	-					
Ludlow Communications	75495_6825	Sep-01	Oct-01	40,504	40,504	-					
Winsor Dam High Line Replacement	75512_7338	Mar-12	Sep-12	1,000,000	-	1,000,000	142,857	857,143	1,000,000		
763 Distribution System Facilities Mapping				1,798,919	1,036,368	762,551		228,000	228,000	534,551	
Planning and Design	75458_5162	Feb-95	Dec-98	936,368	936,368	-					
Data Purchase	75476_6152	Nov-95	Aug-96	100,000	100,000	-					
Records Development	75484_6525	Jul-12	Dec-14	762,551	-	762,551		228,000	228,000	534,551	
764 Local Water Infrastructure Rehab	**completed project**			7,487,762	7,487,762	-					
765 Local Water Pipeline Assistance Program				-	104,944,176	(104,944,176)	8,578,315	16,918,981	39,365,339	(2,546,093)	(127,895,379)
Community Loans	75485_6608	Aug-00	Jun-13	251,796,500	196,808,346	54,988,155	22,000,000	32,988,154	111,717,248		
Community Repayment	75493_6759	Aug-01	Jun-23	(251,796,500)	(98,010,473)	(153,786,027)	(19,225,351)	(19,569,173)	(87,801,878)	(84,246,093)	
Local Water System Assistance Loans	75513_7339	Aug-10	Jun-20	200,000,000	6,146,303	193,853,697	5,417,896	4,000,000	15,564,199	110,600,000	
Local Water System Assistance Repayment	75514_7340	Aug-11	Jun-30	(200,000,000)	-	(200,000,000)	(614,230)	(1,400,000)	(2,014,230)	(31,900,000)	
CVA Loans	75515_7350	Nov-10	Jun-20	10,000,000	-	10,000,000	1,000,000	1,000,000	2,000,000	5,000,000	
CVA Repayments	75516_7351	Nov-11	Jun-30	(10,000,000)	-	(10,000,000)		(100,000)	(100,000)	(2,000,000)	
766 Waterworks Facility Asset Protection				17,174,103	237,550	16,936,553	268,705	74,245	342,950	11,430,000	5,163,603
Meter Vault Manhole Retrofits	75490_6689	Sep-15	Jun-18	1,843,603	-	1,843,603				1,680,000	
Walnut Hill Tank - Design	75497_6832	Jan-13	Dec-17	300,000	-	300,000		30,000	30,000	270,000	
Walnut Hill Tank - Construction	75498_6833	Jul-14	Jan-16	1,000,000	-	1,000,000				1,000,000	
Waltham Bridge Pipe Replacement	75501_6910	Mar-04	Sep-04	237,550	237,550	-					
Permits and Legal Fees	75502_6920	Mar-04	Mar-12	15,000	-	15,000		15,000	15,000		
Cosgrove Turbine Isolation - Design	75506_7023	Jul-13	Dec-17	480,000	-	480,000				480,000	
Cosgrove Valve Seat Replacement - Construction	75509_7064	Jul-14	Dec-14	500,000	-	500,000				500,000	
Cosgrove Valve Seat Replacement - Design	75510_7065	Jul-13	Dec-15	100,000	-	100,000				100,000	
Transformer at Cosgrove Intake Building	75511_7228	Jun-11	Jul-12	297,950	-	297,950	268,705	29,245	297,950		
Shaft 9 Rehabilitation	75520_7381	Jul-13	Jul-16	2,000,000	-	2,000,000				2,000,000	
Elevated Water Storage Tank Repainting	75523_7384	Jul-13	Jul-16	5,000,000	-	5,000,000				5,000,000	
Covered Storage Tank Rehabilitation	75524_7385	Jul-19	Jul-23	5,000,000	-	5,000,000					
Electrical Distribution Upgrades - Southboro	75535_7425	Jul-13	Jun-14	400,000	-	400,000				400,000	

Massachusetts Water Resources Authority
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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Business & Operations Support				**108,118,627**	**65,658,043**	**42,460,584**	**9,182,228**	**10,546,312**	**42,454,867**	**22,732,045**	
881 Equipment Purchase				16,237,455	9,148,384	7,089,071	1,654,619	1,807,452	7,353,347	3,627,000	
TV Inspection Truck	92367_6732	Jul-00	Mar-01	-	-	-			(174,977)		
Security Equipment & Installation	92374_6760	Jan-01	Jun-13	7,111,505	5,367,393	1,744,112	759,660	984,452	4,064,585		
ICP-MS Lab Testing Equipment	92379_6808	Oct-08	Dec-08	117,432	117,432	-					
Back Hoe	92381_6866	Apr-03	Jun-04	-	-	-			(129,921)		
Vactor Truck	92382_6867	Apr-03	Jun-03	-	-	-			(219,890)		
Water Service Truck	92383_6907	Apr-04	Jun-04	-	-	-			(114,357)		
Bucket Machine	92384_6944	Oct-04	Dec-04	-	-	-			(136,936)		
Excavator	92385_6945	Apr-07	Jun-07	-	-	-			(232,699)		
Grove Crane	92386_6946	May-05	Aug-05	-	-	-			(310,800)		
Land Fill Loader	92388_6981	May-05	Aug-05	-	-	-			(112,682)		
PowerSweeper/Catch Basin	92392_6986	Apr-04	Jun-04	-	-	-			(154,958)		
Back Hoe (WRA385)	92394_6990	Jan-08	Mar-08	-	-	-			(96,900)		
Front-End Loader	92396_7028	Jul-05	Mar-06	-	-	-			(110,258)		
Dump Truck (WRA 522)	92398_7030	Jan-09	Mar-09	-	-	-					
Crane (WRA-185)	92400_7074	Apr-06	Jun-06	-	-	-			(298,378)		
High Lift Fork Loader (Lull)	92411_7239	Oct-10	Dec-10	121,449	121,449	-			121,449		
Ford Ramp Truck	92416_7246	Apr-10	Jun-10	121,572	121,572	-			121,572		
Street Sweeper	92417_7247	Jul-09	Sep-09	181,673	181,673	-			181,673		
Prior Vehicle Purchases	98454_7306	Jul-00	Jun-10	2,415,190	2,415,190	-			2,415,190		
FY09-13 Vehicle Purchases	98455_7307	Jul-09	Jun-13	1,967,413	702,454	1,264,959	714,959	550,000	1,967,413		
FY14-18 Vehicle Purchases	98456_7308	Jul-13	Jun-18	3,080,000	-	3,080,000				3,080,000	
FY09-13 Major Lab Instrumentation	98457_7309	Mar-12	Mar-15	1,000,000	-	1,000,000	180,000	273,000	453,000	547,000	
Front-End Loader	98467_7325	Oct-10	Dec-10	121,221	121,221	-			121,221		
925 Technical Assistance				1,200,000	-	1,200,000		400,000	400,000	800,000	
Land Appraisal	77000_LAND			150,000	-	150,000		50,000	50,000	100,000	
Surveying	80000_SURV			150,000	-	150,000		50,000	50,000	100,000	
Hazardous Material	90000_HAZM			900,000	-	900,000		300,000	300,000	600,000	
930 MWRA Facility - Chelsea	**completed project**			9,814,582	9,822,601	(8,019)	(8,019)		(72,323)		
931 Business Systems Plan				39,294,428	24,659,755	14,634,673	974,944	3,805,611	7,432,230	9,854,118	
Network - Phase I	92322_6015	Jul-94	Dec-96	141,610	141,610	-					
Phase I (FY95-97)	92338_6014	Jul-94	Mar-03	1,146,321	1,146,321	-					
Hardware - Phase I	92339_6013	Jul-94	Dec-96	440,770	440,770	-					
Phase II (FY97-10)	92343_6177	Jul-96	Jun-13	4,174,368	4,081,117	93,251	45,000	48,251	923,507		
Phase III (FY99-01)	92347_6362	Dec-97	Jun-04	10,746,841	10,748,465	(1,624)	(1,624)		(1,624)		
Phase IV / Year 2000 Improvements	92352_6508	Jul-98	Jan-00	3,018,373	3,018,373	-			(19,600)		
Phase V (FY01-10)	92353_6509	Jul-01	Jun-11	1,940,351	1,940,351	-			976,557		
Phase VI (FY04-09)	92380_6865	Jan-03	Jun-11	2,036,689	2,036,689	-			(241,597)		
Computer Center & OCC Infrastructure	92404_7200	Jul-14	Jun-16	1,500,000	-	1,500,000			-	1,500,000	
Net 2020 (FY10-12)	92405_7201	Mar-11	Jun-14	1,500,000	535,882	964,118	263,000	513,000	1,311,882	188,118	
SAN II (FY12)	92406_7203	Jul-12	Jun-13	600,000	-	600,000		450,000	450,000	150,000	
SAN III (FY15)	92407_7204	Jul-14	Jun-15	600,000	-	600,000				600,000	

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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Telecommunications (FY14-15)	92408_7205	Jul-13	Jun-15	750,000	-	750,000				750,000	
Laboratory Instrument Data Management	92410_7238	Oct-12	Oct-13	250,000	-	250,000		60,000	60,000	190,000	
Corporate Server Infrastructure & Document Distrib.	92412_7240	Jun-12	Jun-16	1,000,000	-	1,000,000		425,000	425,000	575,000	
DITP/OMS	92418_7249	Jul-12	Dec-12	142,279	-	142,279		142,279	142,279		
GIS/TV Inspection	92419_7250	Apr-09	Jun-10	31,289	30,731	558	558		31,289		
GIS Upgrades & Enhancements	92420_7251	Jul-12	Jun-13	314,081	-	314,081		314,081	314,081		
MIS Strategic Planning	92422_7253	Oct-12	Jun-17	500,000	-	500,000		100,000	100,000	400,000	
MIS Licensing	92423_7254	Jul-08	Mar-10	24,211	14,060	10,151	10,151		24,211		
Lawson Conversion	92424_7255	Jun-08	Jun-11	186,727	186,727	-			186,727		
Cyber Security	92425_7256	Apr-09	Sep-11	98,712	89,288	9,424	9,424		98,712		
Original SAN	92426_7257	Jul-09	Jun-11	251,806	249,371	2,435	2,435		251,806		
Cyber Security	92434_7285	Sep-11	Sep-13	1,200,000	-	1,200,000	646,000	554,000	1,200,000		
Lawson System Upgrade	92435_7286	Sep-13	Sep-15	1,550,000	-	1,550,000				1,550,000	
Laboratory Information Mangement System (LIMS)	92436_7287	Sep-14	Sep-16	600,000	-	600,000				600,000	
Pre-Treatment Information Mangement System (PIMS)	92437_7288	Sep-14	Sep-16	600,000	-	600,000				600,000	
Document Control System Software App Replacement	92438_7289	Oct-12	Jun-15	750,000	-	750,000		136,000	136,000	614,000	
NET 2020 DITP/Southborough	92469_7386	Jul-12	Jul-14	2,100,000	-	2,100,000		788,000	788,000	1,312,000	
IT Continuity	98472_7408	Sep-12	Sep-15	1,100,000	-	1,100,000		275,000	275,000	825,000	
932 Environmental Remediation				1,478,802	1,479,202	(400)	(400)		10,602		
Technical Assistance/Environmental Remediation	92369_6745	Feb-99	Jun-07	543,255	543,655	(400)	(400)		(1,724)		
Prison Point Tank Removal - Construction	92370_6746	Feb-99	Oct-10	452,523	452,523	-			12,326		
Cottage Farm Tank Replacement - Construction	92371_6747	Jun-02	Dec-02	427,749	427,749	-					
Oakdale Power Station	92376_6805	Sep-03	Dec-04	47,066	47,066	-					
Cosgrove Power Station	92377_6806	Jun-02	Aug-02	8,209	8,209	-					
933 Capital Maintenance Planning & Develop.				10,887,901	6,296,081	4,591,820	2,312,797	1,668,247	6,557,745	610,777	
Inventory & Evaluation - 1 & 2	19175_6421	Apr-00	Jul-05	2,579,434	2,579,434	-					
As-Needed Design Contract 1	92387_6976	Mar-05	Sep-07	314,424	313,302	1,122	1,122				
As Needed Design Contract 2	92393_6988	Mar-05	Sep-07	317,539	317,539	-					
As-Needed Design Contract 5	92399_7070	Sep-08	Mar-11	558,123	558,111	12	12		558,123		
As-Needed Design Contract 3	92402_7101	Aug-07	Feb-10	578,622	578,623	-			259,017		
As-Needed Design Contract 4	92403_7102	Aug-07	Aug-09	343,744	343,744	-			155,367		
As-Needed Design Contract 6	92413_7242	Aug-08	Aug-10	704,232	704,220	12	12		704,232		
As-Needed Design Contract 7	92414_7243	Jan-10	Jan-12	1,077,226	544,303	532,923	330,538	202,385	1,077,226		
As-Needed Design Contract 8	92415_7244	Feb-10	Feb-12	1,214,557	356,805	857,752	857,752		1,214,557		
As-Needed Design Contract 9	98470_7390	Jul-11	Jul-13	1,600,000	-	1,600,000	568,861	727,862	1,296,723	303,277	
As-Needed Design Contract 10	98471_7391	Aug-11	Aug-13	1,600,000	-	1,600,000	554,500	738,000	1,292,500	307,500	
934 MWRA Facilities Management & Planning				2,150,535	370,533	1,780,002	28,000	865,002	1,263,535	887,000	
Design/Engineering Services	92389_6983	Jan-12	Apr-13	150,000	(2)	150,002	28,000	113,002	141,000	9,000	
Facilities Construction	92390_6984	May-09	Apr-13	2,000,535	370,535	1,630,000		752,000	1,122,535	878,000	

Massachusetts Water Resources Authority
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($000s)

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY11	Remaining Balance	FY12	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
935 Alternative Energy Initiatives				27,054,924	13,881,487	13,173,437	4,220,287	2,000,000	19,509,731	6,953,150	
Deer Island Solar	19285_6974	Sep-07	May-08	903,714	903,714	-			311,671		
DI Wind	92428_6974C	Nov-08	Apr-10	4,063,294	4,063,294	-			4,063,294		
Future DI Wind Construction	92430_7270	Sep-13	Aug-14	4,411,200	-	4,411,200				4,411,200	
Loring Road Hydro - Design	92432_6974E	Mar-08	Sep-09	2,344	2,344	-			2,344		
Technical Assistance - Solar	92439_7274	May-09	May-12	385,000	143,250	241,750	241,750		385,000		
Energy Advisory Consultant Services	92440_6974B	Jun-08	Jun-09	58,780	45,632	13,148	13,148		58,780		
Wind Power Feasibility Study	92441_OP67	Mar-07	Jun-10	386,426	346,426	40,000	40,000		386,426		
DI Photovoltaic System Phase 1 - Construction	92442_7292	Sep-09	Mar-10	1,119,000	1,119,000	-	-		1,119,000		
Technical Assistance-Energy Efficiency	92443_7274A	May-09	May-12	500,000	25,627	474,373	474,373		500,000		
Technical Assistance - Solar II	92444_7274B	May-09	May-12	380,000	90,213	289,787	289,787		380,000		
Technical Assistance - Emerging Technology	92445_7274C	May-09	May-12	200,000	4,041	195,959	195,959		200,000		
Technical Assistance - Wind	92446_7274D	May-09	May-12	750,000	259,123	490,877	490,877		750,000		
Wachusett Hydro - Design & Construction	98448_7300	Jul-15	Dec-16	1,382,500	-	1,382,500				1,382,500	
Charlestown Wind - Construction	98450_7302	Feb-10	Aug-11	5,093,921	2,585,117	2,508,804	2,508,804		5,093,921		
Carroll WTP Solar-Construction	98452_7304	Jan-10	Aug-11	2,366,527	2,426,314	(59,787)	(59,787)		2,366,527		
Loring Road Hydro - Construction	98459_6974F	Jan-10	May-11	1,882,218	1,856,842	25,376	25,376		1,882,218		
DI Wind Phase II - Construction	98463_7321	Nov-11	May-13	2,500,000	10,550	2,489,450		2,000,000	2,010,550		
Fish Hatch Pipeline Hydro	98465_7323	Jul-13	Jan-15	670,000	-	670,000				670,000	

MASSACHUSETTS WATER RESOURCES AUTHORITY
CONTINGENCY FUND FORECAST FY2013 - 2022
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	Total Contingency Budget FY13-22	Q1 FY2013	Q2 FY2013	Q3 FY2013	Q4 FY2013	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Wastewater System Improvements	50,839	720	866	1,069	1,155	3,809	6,980	8,620	6,932	5,785	4,315	5,169	4,106	2,944	2,179
Waterworks System Improvements	70,520	1,495	1,482	1,054	1,109	5,140	5,561	6,511	6,324	5,198	7,273	9,196	10,068	10,567	4,682
Business & Operations Support	2,245	77	116	234	283	710	779	412	249	74	21	-	-	-	-
Total MWRA	123,605	2,291	2,464	2,358	2,547	9,660	13,320	15,543	13,505	11,056	11,609	14,365	14,175	13,511	6,861

APPENDIX 3

New Capital Projects Added During the FY13 Proposed CIP

APPENDIX 3
New Capital Projects Added to the FY13 Proposed CIP

Program	Project	Subphase	Total Contract Amount	FY09-13	FY14-18	Beyond FY18	Total Expenditures
Interception & Pumping	I&P Facility Asset Protection	Rehabilitation of Sections 4, 5, & 6 of the North Metropolitan Sewer, East Boston and Winthrop Design CS/RI	$1,000,000	$0	$990,000	$10,000	$1,000,000
		Rehabilitation of Sections 4, 5, & 6 of the North Metropolitan Sewer, East Boston and Winthrop Construction	$4,000,000	$0	$4,000,000	$0	$4,000,000
	I&P Facility Asset Protection	Rehabilitation of Sections 186 and 4, Winthrop and Boston Construction	$3,000,000	$360,000	$2,640,000	0	$3,000,000
Treatment	DITP Asset Protection	Roof Replacement Phase 3	$1,000,000	$200,000	$800,000	$0	$1,000,000
Other Waterworks	Waterworks Facility Asset Protection	Electrical Distribution Upgrade at Southboro Headquarters	$400,000	$0	$400,000	0	$400,000
Drinking Water Quality Improvements	Carroll Water Treatment Plant	Technical Assistance 7	$563,000	$157,000	$406,000	0	$563,000
	Carroll Water Treatment Plant	Technical Assistance 8	$563,000	$157,000	$406,000	0	$563,000
SUMMARY:							
Total Wastewater Projects			**$9,000,000**	**$560,000**	**$8,430,000**	**$10,000**	**$9,000,000**
Total Waterworks Projects			**$1,526,000**	**$314,000**	**$1,212,000**	**$0**	**$1,526,000**
Total Projects			**$10,526,000**	**$874,000**	**$9,642,000**	**$10,000**	**$10,526,000**

APPENDIX 4

Overview of the FY13 Proposed CIP and Changes from the FY12 Final CIP

APPENDIX 4
Comparison of the FY13 Proposed CIP and Changes from the FY12 Final CIP
($000)

	FY12 Final				FY13 Proposed				Change from FY12 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
Total MWRA	**5,468,271**	**936,660**	**999,850**	**668,745**	**5,520,680**	**888,663**	**964,145**	**804,878**	**52,409**	**(47,997)**	**(35,704)**	**136,134**
Wastewater	**2,625,405**	**574,878**	**558,525**	**274,333**	**2,643,297**	**546,811**	**501,736**	**377,080**	**17,892**	**(28,067)**	**(56,789)**	**102,746**
Interception & Pumping	**814,734**	**60,708**	**217,929**	**47,930**	**819,943**	**40,973**	**146,783**	**144,021**	**5,209**	**(19,735)**	**(71,146)**	**96,091**
102 Quincy Pump Facilities	25,908	-	-	-	25,908	-	-	-	-	-	-	-
104 Braintree-Weymouth Relief Facilities	234,002	15,830	3,140	-	233,961	15,789	3,140	-	(41)	(41)	-	-
105 New Neponset Valley Relief Sewer	30,300	-	-	-	30,300	-	-	-	-	-	-	-
106 Wellesley Extention Replacement Sewer	64,359	-	-	-	64,359	-	-	-	-	-	-	-
107 Framingham Extension Relief Sewer	47,856	-	-	-	47,856	-	-	-	-	-	-	-
127 Cummingsville Replacement Sewer	8,999	43	-	-	8,999	43	-	-	-	-	-	-
130 Siphon Structure Rehabilitation	2,685	88	1,657	-	2,671	30	1,701	-	(14)	(58)	44	-
131 Upper Neponset Valley Sewer	55,056	1,906	-	-	54,944	1,794	-	-	(112)	(112)	-	-
132 Corrosion & Odor Control	16,782	275	12,504	1,000	16,140	-	5,706	7,431	(642)	(275)	(6,798)	6,431
134 Ashland Extension Sewer	-	-	-	-	-	-	-	-	-	-	-	-
135 System Master Plan Interceptors	-	-	-	-	-	-	-	-	-	-	-	-
136 West Roxbury Tunnel	46,934	1,608	21,100	15,347	11,487	1,608	-	1,000	(35,447)	-	(21,100)	(14,347)
137 Wastewater Central Monitoring	20,839	6,842	50	-	20,839	6,242	650	-	-	(600)	600	-
139 South System Relief Project	4,939	(1)	938	563	4,939	(1)	188	1,313	-	-	(750)	750
140 Neponset Valley Relief Sewer	-	-	-	-	-	-	-	-	-	-	-	-
141 Wastewater Process Optimization	10,248	1,000	7,693	625	10,300	558	5,686	3,125	52	(442)	(2,007)	2,500
142 Wastewater Meter System-Equipment	26,578	1,443	8,892	11,154	26,578	250	8,547	12,691	-	(1,193)	(345)	1,537
143 Regional I/I Management Planning	169	-	-	-	169	-	-	-	-	-	-	-
145 Facility Asset Protection	213,329	31,672	156,205	19,242	254,743	14,660	117,496	116,378	41,414	(17,012)	(38,709)	97,136
146 D.I. Cross Harbor Tunnel Inspection	5,000	-	5,000	-	5,000	-	2,919	2,081	-	-	(2,081)	2,081
147 Randolph Trunk Sewer Relief	750	-	750	-	750	-	750	-	-	-	-	-
Treatment	**618,975**	**190,210**	**227,759**	**149,212**	**628,065**	**173,766**	**252,878**	**149,628**	**9,090**	**(16,445)**	**25,119**	**416**
200 DI Plant Optimization	33,456	296	-	-	33,456	296	-	-	-	-	-	-
206 DI Treatment Plant Asset Protection	575,907	186,099	223,236	149,212	583,273	168,584	247,700	149,628	7,366	(17,515)	24,464	416
210 Clinton Wastewater Treat Plant	7,298	2,430	4,523	-	9,044	3,521	5,178	-	1,746	1,091	655	-
211 Laboratory Services	2,315	1,385	-	-	2,293	1,364	-	-	(22)	(21)	-	-
Residuals	**211,741**	**2,335**	**62,803**	**82,791**	**211,741**	**1,060**	**57,495**	**89,375**	**-**	**(1,275)**	**(5,308)**	**6,584**
261 Residuals	63,811	-	-	-	63,811	-	-	-	-	-	-	-
271 Residuals Asset Protection	147,930	2,335	62,803	82,791	147,930	1,060	57,495	89,375	-	(1,275)	(5,308)	6,584

APPENDIX 4
Comparison of the FY13 Proposed CIP and Changes from the FY12 Final CIP
($000)

	FY12 Final				FY13 Proposed				Change from FY12 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
CSO	**857,089**	**305,765**	**28,672**	**436**	**860,683**	**312,085**	**25,944**	**436**	**3,593**	**6,320**	**(2,728)**	**-**
340 Dorchester Bay Sewer Separation (Fox Point)	54,171	409	-	-	54,187	425	-	-	16	16	-	-
341 Dorchester Bay Sewer Separation (Commercial Point)	64,725	8,207	1,628	-	64,725	9,021	814	-	-	814	(814)	-
342 Neponset River Sewer Separation	2,444	-	-	-	2,444	-	-	-	-	-	-	-
343 Constitution Beach Sewer Separation	3,769	-	-	-	3,769	-	-	-	-	-	-	-
344 Stony Brook Sewer Separation	44,333	(719)	-	-	44,333	(721)	-	-	-	(2)	-	-
346 Cambridge Sewer Separation	55,702	27,926	9,325	-	56,391	28,616	9,324	-	689	690	(1)	-
351 BWSC Floatables Controls	933	-	-	-	933	-	-	-	-	-	-	-
352 Cambridge Floatables Control	1,087	165	-	-	1,087	165	-	-	-	-	-	-
356 Fort Point Channel Sewer Separation	12,047	3,756	-	-	12,047	3,756	-	-	-	-	-	-
358 Morrissey Boulevard Drain	32,899	18,197	25	-	32,899	18,223	-	-	-	26	(25)	-
359 Reserved Channel Sewer Separation	62,323	45,425	14,181	-	62,323	51,345	8,261	-	-	5,920	(5,920)	-
360 Brookline Sewer Separation	25,930	24,659	-	-	25,413	24,142	-	-	(517)	(517)	-	-
361 Bulfinch Triangle Sewer Separation	9,986	9,489	-	-	9,986	9,489	-	-	-	-	-	-
339 North Dorchester Bay	224,252	85,205	5	-	227,854	85,252	3,560	-	3,602	47	3,555	-
347 East Boston Branch Sewer Relief	85,715	75,009	-	-	85,710	75,004	-	-	(5)	(5)	-	-
348 BOS019 Storage Conduit	14,288	(44)	-	-	14,288	(44)	-	-	-	-	-	-
349 Chelsea Trunk Sewer	29,779	-	-	-	29,779	-	-	-	-	-	-	-
350 Union Park Detention Treatment Facility	49,583	(227)	-	-	49,583	(227)	-	-	-	-	-	-
353 Upgrade Existing CSO Facilities	22,385	-	-	-	22,385	-	-	-	-	-	-	-
354 Hydraulic Relief Projects	2,295	-	-	-	2,295	-	-	-	-	-	-	-
355 MWR003 Gate & Siphon	3,682	430	3,252	-	4,169	430	3,739	-	487	-	487	-
357 Charles River CSO Controls	3,633	2,532	-	-	3,633	2,532	-	-	-	-	-	-
324 CSO Support	51,128	5,348	256	436	50,449	4,679	246	436	(679)	(669)	(10)	-
Other Wastewater	**122,866**	**15,859**	**21,361**	**(6,036)**	**122,866**	**18,928**	**18,636**	**(6,379)**	**-**	**3,069**	**(2,725)**	**(343)**
128 I/I Local Financial Assistance	122,585	15,859	21,361	(6,036)	122,585	18,928	18,636	(6,379)	-	3,069	(2,725)	(343)
138 Sewerage System Mapping Upgrade	281	-	-	-	281	-	-	-	-	-	-	-
Total Waterworks	**2,735,725**	**314,347**	**424,552**	**394,411**	**2,769,264**	**299,397**	**439,677**	**427,798**	**33,539**	**(14,950)**	**15,126**	**33,386**
Drinking Water Quality	**663,548**	**99,989**	**54,970**	**-**	**652,166**	**94,288**	**49,328**	**-**	**(11,381)**	**(5,701)**	**(5,641)**	**-**
542 Carroll Water Treatment Plant	426,797	33,424	20,620	-	427,971	39,488	15,771	-	1,174	6,064	(4,849)	-
543 Quabbin Water Treatment Plant	17,686	5,443	2,100	-	17,667	5,297	2,226	-	(19)	(146)	126	-
544 Norumbega Covered Storage	106,674	102	-	-	106,674	102	-	-	-	-	-	-
545 Blue Hills Covered Storage	40,695	21,457	349	-	40,680	21,395	396	-	(15)	(62)	47	-
550 Spot Pond Storage Facility	71,696	39,564	31,900	-	59,175	28,007	30,935	-	(12,521)	(11,557)	(965)	-
Transmission	**1,147,194**	**94,982**	**145,073**	**234,255**	**1,163,233**	**88,053**	**154,501**	**247,794**	**16,038**	**(6,929)**	**9,427**	**13,540**
597 Winsor Station Pipeline	26,082	10,231	15,813	-	26,196	2,315	23,843	-	114	(7,916)	8,030	-
601 Sluice Gate Rehabilitation	9,158	-	-	-	9,158	-	-	-	-	-	-	-
604 MetroWest Tunnel	710,719	56,375	19,544	1,000	711,616	60,177	16,639	1,000	897	3,802	(2,905)	-
615 Chicopee Valley Aqueduct Redundancy	8,667	95	-	-	8,667	95	-	-	-	-	-	-
616 Quabbin Transmission System	13,547	2,981	3,843	2,300	13,589	2,988	3,698	2,480	42	7	(145)	180
617 Sudbury/Weston Aqueduct Repairs	4,288	310	3,343	-	4,308	25	3,648	-	20	(285)	305	-
620 Wachusett Reservior Spillway Improvement	9,498	1,448	-	-	9,287	1,237	-	-	(211)	(211)	-	-
621 Watershed Land	19,000	10,793	-	-	19,000	10,793	-	-	-	-	-	-
622 Cosgrove/Wachusett Redundancy	-	-	-	-	-	-	-	-	-	-	-	-
623 Dam Projects	8,181	4,797	3,384	-	5,729	3,515	2,214	-	(2,452)	(1,282)	(1,170)	-
625 Long Term Redundancy	338,053	7,952	99,147	230,954	355,681	6,908	104,459	244,314	17,628	(1,044)	5,312	13,360

APPENDIX 4
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($000)

	FY12 Final				FY13 Proposed				Change from FY12 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
Distribution & Pumping	**881,820**	**79,213**	**215,696**	**281,459**	**910,412**	**75,795**	**226,430**	**302,736**	**28,593**	**(3,417)**	**10,733**	**21,278**
618 Northern High NW Tran Sections 70 & 71	1,000	-	1,000	-	1,000	-	1,000	-	-	-	-	-
677 Valve Replacement	20,032	3,550	7,577	326	22,104	3,950	4,365	5,210	2,072	400	(3,212)	4,884
678 Boston Low Service-Pipe & Valve Rehabilitation	23,691	-	-	-	23,691	-	-	-	-	-	-	-
683 Heath Hill Road Pipe Replacement	19,358	(10)	-	-	19,358	(10)	-	-	-	-	-	-
689 James L. Gillis Pump Station Rehabilitation	33,419	-	-	-	33,419	-	-	-	-	-	-	-
692 NHS - Section 27 Improvements	3,308	1	1,427	1,757	3,475	1	777	2,574	167	-	(650)	817
693 NHS - Revere & Malden Pipeline Improvement	33,612	2,949	5,768	1,000	35,288	2,938	4,241	4,215	1,676	(11)	(1,527)	3,215
702 New Connect Mains-Shaft 7 to WASM 3	31,632	5,409	10,346	10,559	32,639	5,555	10,664	11,100	1,007	146	318	541
704 Rehabilitation of Other Pump Stations	55,144	12,158	-	25,000	55,144	12,158	-	25,000	-	-	-	-
706 NHS-Connecting Mains from Section 91	2,360	-	-	-	2,360	-	-	-	-	-	-	-
708 Northern Extra High Service New Pipelines	6,690	25	3,033	-	7,479	13	2,907	926	789	(12)	(126)	926
712 Cathodic Protection Of Distrubution Mains	1,458	-	-	1,317	1,527	-	-	1,386	69	-	-	69
713 Spot Pond Supply Mains Rehabilitation	66,127	2,452	2,850	347	66,187	582	4,644	483	60	(1,870)	1,794	136
714 Southern Extra High Sections 41 & 42	3,657	-	-	-	3,657	-	-	-	-	-	-	-
719 Chestnut Hill Connecting Mains	29,361	447	6,341	5,111	29,906	25	6,046	6,374	545	(422)	(295)	1,263
720 Warren Cottage Line Rehabilitation	1,205	-	-	-	1,205	-	-	-	-	-	-	-
721 South Spine Distribution Mains	70,668	19,446	2,247	31,365	72,509	19,897	1,118	33,884	1,841	451	(1,129)	2,519
722 NIH Redundancy & Storage	79,070	10,172	49,213	19,052	82,491	9,076	50,325	22,457	3,421	(1,096)	1,112	3,405
723 Northern Low Service Rehabilitation Section 8	20,233	2,328	4,779	13,068	21,698	2,268	4,149	15,224	1,465	(60)	(630)	2,156
724 Northern High Service - Pipeline Rehabilitation	-	(2)	-	-	-	(2)	-	-	-	-	-	-
725 Hydraulic Model Update	598	-	-	-	598	-	-	-	-	-	-	-
727 SEH Redundancy & Storage	97,179	5,471	21,138	68,902	101,849	5,313	23,495	71,373	4,670	(158)	2,357	2,471
730 Weston Aqueduct Supply Mains	265,772	9,745	99,351	95,775	276,166	8,965	112,117	94,184	10,394	(780)	12,766	(1,591)
731 Lynnfield Pipeline	5,042	4,508	21	-	5,016	4,503	-	-	(26)	(5)	(21)	-
732 Walnut St. & Fisher Hill Pipeline Rehabilitation	2,717	563	-	-	2,717	563	-	-	-	-	-	-
733 NHS Pipeline Rehabilitation 13-18 & 48	-	-	-	-	-	-	-	-	-	-	-	-
734 Southern Extra High Pipelines-Sections 30, 39,40, & 44	-	-	-	-	-	-	-	-	-	-	-	-
735 Section 80 Rehabilitation	8,485	-	606	7,879	8,928	-	582	8,346	443	-	(24)	467
Other	**43,163**	**40,163**	**8,812**	**(121,302)**	**43,453**	**41,262**	**9,418**	**(122,732)**	**290**	**1,099**	**606**	**(1,432)**
753 Central Monitoring System	16,992	1,325	-	-	16,992	1,325	-	-	-	-	-	-
763 Distribution Systems Facilities Mapping	1,799	228	535	-	1,799	228	535	-	-	-	-	-
764 Local Water Infrastructure Rehabilitation Assistance Program	7,488	-	-	-	7,488	-	-	-	-	-	-	-
765 Local Water Pipeline Improvement Loan Program	-	37,988	(2,546)	(126,518)	-	39,365	(2,546)	(127,896)	-	1,377	-	(1,378)
766 Waterworks Facility Asset Protection	16,884	621	10,824	5,218	17,174	343	11,430	5,164	290	(278)	606	(54)
Business & Operations Support	**107,140**	**47,435**	**16,773**	**-**	**108,119**	**42,455**	**22,732**	**-**	**978**	**(4,980)**	**5,959**	**-**
881 Equipment Purchase	15,655	7,498	2,900	-	16,237	7,353	3,627	-	582	(145)	727	-
925 Technical Assistance	1,200	800	400	-	1,200	400	800	-	-	(400)	400	-
930 MWRA Facility - Chelsea	9,851	(36)	-	-	9,815	(72)	-	-	(36)	(36)	-	-
931 Business Systems Plan	38,800	8,407	8,385	-	39,294	7,432	9,854	-	494	(975)	1,469	-
932 Environmental Remediation	1,556	88	-	-	1,479	11	-	-	(77)	(77)	-	-
933 Capital Maintenance Planning	11,549	7,297	533	-	10,888	6,558	611	-	(661)	(739)	78	-
934 MWRA Facilities Management	2,151	2,151	-	-	2,151	1,264	887	-	-	(887)	887	-
935 Alternative Energy Initiatives	26,377	21,231	4,554	-	27,055	19,510	6,953	-	678	(1,721)	2,399	-

APPENDIX 5

Master Plan/CIP Status

Master Plan Priority Ratings - Wastewater

Priority One **Critical/Emergency** Risk moderate to high/Consequence very high

Projects which:

Resolve emergencies or critical threats to public health or worker health and safety

Prevent imminent failure of the system and significant loss of service

---

Priority Two **Essential Projects** Risk variable/Consequences high

Projects which are essential to:

Critical facility assessment

Fix existing reliability or capacity problems during dry weather flow conditions

Reduce sanitary sewer overflows from the MWRA system

Address facilities in poor condition where the ability to provide uninterrupted service or adequate flow is compromised.

Upgrade or maintain emergency backup facilities in poor condition

Meet minimum hydraulic performance requirements and service needs

Implement MWRA's approved CSO control plan

Maintain wastewater effluent and residuals quality

To comply with mandated legal, regulatory or statutory requirements

---

Priority Three **Necessary Projects** Risk moderate to high/Consequence moderate to low

Projects which are necessary to:

Improve public health and worker safety

Restore the system's infrastructure where it is seriously deteriorated

Improve hydraulic performance

Significantly improve the effectiveness, efficiency, or reliability of system operations and service delivery including where appropriate, the ability to monitor the system

Maintain consumer confidence

To comply with other legal, regulatory or statutory requirements

---

Priority Four **Important Projects** Risk moderate/Consequences low

Projects which are important to:

Maintain the integrity of the system's infrastructure

Produce significant cost savings or revenue gains for MWRA

Monitor system needs and plan appropriate longer-term responses

Provide acceptable working conditions at field sites and at maintenance support facilities

Implement the regional I/I plan

Priority Five **Desirable Projects** Risk/Consequence both low

Projects which are desirable because they would:

Yield worthwhile cost savings, revenue gains, or efficiency improvements for MWRA

Protect the long term value and usefulness of system assets

Solve future problems and conditions which are expected to arise in the latter half of the planning period

Be beneficial towards the improved operation of a local system

Master Plan Priority Ratings - Water

Priority One **Critical/Emergency** Risk moderate to high/Consequence very high
Projects which:

Resolve emergencies or critical threats to public health or worker health and safety

Prevent imminent failure of the system and significant loss of service

---

Priority Two **Essential Projects** Risk variable/Consequences high
Projects which are essential to:

Critical facility assessment

Fix existing reliability problems related to "single points of failure"

Upgrade or maintain emergency back-up facilities in operational condition

Address facilities in poor condition where the ability to provide uninterrupted service, sanitary protections or adequate flow is compromised.

Meet minimum hydraulic performance requirements and service needs including adequate distribution storage in areas with a critical shortfall of storage

To comply with mandated legal, regulatory or statutory requirements

---

Priority Three **Necessary Projects** Risk moderate to high/Consequences moderate to low
Projects which are necessary to:

Improve public health and worker safety

Restore the system's infrastructure where it is seriously deteriorated

Significantly improve the effectiveness, efficiency, or reliability of system operations and service delivery including where appropriate, the ability to monitor the system

Preserve water quality during distribution

Maintain consumer confidence

To comply with other legal, regulatory or statutory requirements

---

Priority Four **Important Projects** Risk moderate/Consequence low
Projects which are important to:

Maintain the integrity of the system's infrastructure

Improve hydraulic performance or add distribution storage

Produce significant cost savings or revenue gains for MWRA

Monitor system needs and plan appropriate longer-term responses

Provide acceptable working conditions at field sites and at maintenance support facilities

Maintain efforts to manage system demands

Provide broader environmental benefits

Priority Five **Desirable Projects** Risk/Consequence both low

Projects which are desirable because they would:

Yield worthwhile cost savings, revenue gains, or efficiency improvements for MWRA

Protect the long term value and usefulness of system assets

Solve future problems and conditions which are expected to arise in the latter half of the planning period

Be beneficial towards the improved operation of a local system

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY09-13	Beyond FY 13	Comment
FY13 Budget Cycle									
S. 542 Carroll Water Treatment Plant									
S.75530.7406 Technical Assistance 7	2	FY13	2-Jan	Sep-12	Sep-14	563	157	406	
S.75530.7407 Technical Assistance 8	2	FY13	2-Jan	Sep-12	Sep-14	563	157	406	
FY13 Master Plan Totals - 2 projects						**$1,126**	**$314**	**$812**	
FY12 Budget Cycle									
S. 132 Corrosion and Odor Control									
S. 10491.7364 System Wide Odor Control Study	2	FY12	3	Jul-18	Jul-20	1,000	0	1,000	
S.145 I&P Facility Asset Protection									
S.10490.7362 Caruso PS HVAC & Fire Upgrade	3	FY12	2	Apr-12	Mar-14	1,000	500	500	
S.10488.7361 Delauri Pump Station Electrical Room Cooling	3	FY12	2	Jul-12	Jul-13	250	188	62	
S.10486.7359 Prison Point and Cottage Farm CSO Rehabilitation	3	FY12	2	Jul-13	Jun-18	1,000	45	955	
S.10485.7358 Prison Point Dry Weather Flow and Stripping Improvements	3	FY12	3	Jan-13	Dec-15	750	63	687	
S.10501.7389 Prison Point Gearbox Rebuilds	3	FY12	2	Jun-11	Dec-11	440	440	0	
S.10500.7375 Pump Station Rehabilitation - Preliminary Design and Study	3	FY12	2	Jul-14	Jun-19	750	0	750	
S.10503.7393 Section 156 Rehabilitation Design/Build	2	FY12	2	Jun-11	Jun-12	2,000	2000	0	
S.10502.7392 Section 156 Rehabilitation Owners Representative	2	FY12	2	Jun-11	Jun-12	200	200	0	
S.210 Clinton Wastewater Treatment Plant									
S.19950.7377 Phosphorous Removal	3	FY12	2	Jan-13	Jan-16	3,500	292	3,208	
S. 623 Dam Projects									
S.60131.7370 Goodnough Dike Drainage Improvements	3	FY12	2	Jul-13	Jul-14	1,000	0	1,000	
S. 704 Rehabilitation of Other Pump Stations									
S.75522.7383 Pump Station Rehabilitation	4	FY12	3	Jul-19	Jun-24	25,000	0	25,000	
S. Waterworks Facility Asset Protection									
S. 75520.7381 Shaft 9 Rehabilitation	2	FY12	3	Jul-13	Jul-16	2,000	0	2,000	
FY12 Master Plan Totals - 13 projects						**$ 38,890**	**$ 3,728**	**$ 35,162**	
FY11 Budget Cycle									
S.145 I&P Facility Asset Protection									
S.10481.7328 Interceptor # 5 Milton	2	FY11	2	Jul-13	Jul-16	4,000	0	4,000	
S.10482.7329 Interceptor Renewal # 6 Chelsea	2	FY11	2	Jul-13	Jul-16	11,000	0	11,000	
S.10469.7281 Cottage Farm Fuel System Upgr	3	FY11	3	Mar-11	Sep-11	300	300	0	
S.10484.7344 Som/Marginal Gate Replacement	3	FY11	3	Jul-10	Nov-10	300	300	0	
S.542 Carroll Water Treatment Plant									
S.53464.7315 Technical Assistance 5	2	FY11	2	Aug-10	Aug-12	563	563	0	
S.53465.7316 Technical Assistance 6	2	FY11	2	Aug-10	Aug-12	563	563	0	
S.713 Spot Pond Supply Mains - Rehab									
S.60116.7336 Section 50 Pipe Rehab Design /ESDC/RI	3	FY11	3	Jul-12	Jun-15	500	250	250	
S.60117.7337 Section 50 Pipe Rehab Const	3	FY11	3	Jul-13	Jun-14	1,500	0	1,500	
S.765 Local Water Pipeline Imp. Loan Program									
S.75513.7339 Local Water System Loans	3	FY11	3	Aug-10	Jan-00	200,000	35,000	165,000	
S.75514.7340 Local Water System Repayment	3	FY11	3	Aug-11	Jan-00	(200,000)	-3,000	-197,000	
S.753 Central Monitoring System									
S.75512.7338 Winsor Dam High Line Replacement	3	FY11	3	Jan-11	Dec-11	1,000	1,000	0	
FY11 Master Plan Totals - 9 projects						**$ 19,726**	**$ 34,976**	**$ (15,250)**	

Appendix 5
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Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY09-13	Beyond FY 13	Comment
FY10 Budget Cycle									
S.128 I/I Local Financial Assistance									
S.10471.7293 Grants-Phase VII	**3**	FY10	3	Aug-09	Jun-18	18,000	4,950	13,050	**One Initiative - 3 subphases**
S.10472.7294 Loans - Phase VII	**3**	FY10	3	Aug-09	Jun-18	22,000	6,050	15,950	
S.10473.7295 Repayments-Phase VII	**3**	FY10	3	Aug-10	Jun-23	(22,000)	(1,320)	(20,680)	
S.10474.7296 Grants-Phase VIII	**3**	FY10	3	Aug-13	Jun-21	18,000	0	18,000	**One Initiative - 3 subphases**
S.10475.7297 Loans - Phase VIII	**3**	FY10	3	Aug-13	Jun-21	22,000	0	22,000	
S.10476.7298 Repayments-Phase VIII	**3**	FY10	3	Aug-14	Jun-26	(22,000)	0	(22,000)	
S.210 Clinton Wastewater Treatment Plant									
S.32749.7277 Clinton Digester Cleaning & Rehabs	**3**	FY10	2	Nov-09	May-11	1,500	1,500	0	
S.32750.7278 Clinton Aeration Effciency Improvement	**3**	FY10	3	May-10	May-11	372	372	0	
S.145 I&P Facility Asset Protection									
S.32752.7280 Inter Ren # 4 Everett Sect 23/24/156	**2**	FY10	2	Jul-15	Jul-16	3,000	0	3,000	
S.32751.7279 Inter Ren # 3 Camb/Some Sect 26/27	**2**	FY10	2	Jul-13	Jul-14	5,000	0	5,000	
S.616 Quabbin Transmission System									
S.92366.7282 Ware River Intake Valve Replancement	**3**	FY10	3	Jul-14	Jul-17	1,200	0	1,200	
S.604 MetroWest Tunnel									
S.92367.7283 Valve Chamber Storage Tank Access Imp	**3**	FY10	2	Jul-11	Jul-13	3,000	2,500	500	
S.702 New Connecting Mains - Shaft 7 to WASM 3									
S.92368.7284 Section 75 Extension	**3**	FY10	3	Oct-15	Oct-19	4,400	0	4,400	
S.931 Business Systems Plan									
S.92434.7285 Cyber Security	**2**	FY10	2	Sep-11	Sep-12	1,200	1,200	0	
S.92435.7286 Lawson System Upgrade	**2**	FY10	2	Sep-13	Sep-15	1,550	0	1,550	
S.92436.7287 Laboratory Infor Mgmt Sys (LIMS)	**2**	FY10	2	Sep-14	Sep-16	600	0	600	
S.92437.7288 PRE-Treatment Infor Mgmt Sys (PIMS)	**2**	FY10	2	Sep-14	Sep-16	600	0	600	
S.92436.7289 Document Control System Software Application Replacement	**None**	FY10	1	Mar-10	Mar-11	250	250	0	**While specific mention of the need to replace the InfoStar record drawings indexing tool is made in the Wastewater and Waterworks Master Plan books (pgs. 13-11 & 13-12 and 9-7 & 9-8 respectively, there is no line item estimate provided in Attachment 2A which details dollar estimates for each new project in the Master Plan.**
FY10 Master Plan Totals - 14 projects						**$ 58,672**	**$ 15,502**	**$ 43,170**	
FY09 Budget Cycle									
S.145 I&P Facility Asset Protection									
S.10418.6936 Interceptor Renewal No. 2	2	FY09	2	Jul-12	Jul-14	5,429	1,953	3,476	
S.10457.7216 Interceptor Renewal #7 Study	2	FY09	2	Jul-08	Jun-09	300	300	0	
S.10458.7217 Interceptor Renewal #7 Constr	2	FY09	2	Jul-09	Jun-12	1,000	1,000	0	
S.10460.7219 NI Mech & Elec Replacements	3	FY09	3	Jun-09	Jun-12	3,800	3,800	0	
S.130 Siphon Structure Rehabilitation									
S.10293.6224 Design/CS/RI	2	FY09	3	Jun-12	Sep-16	476	114	362	**Lower consequence after review**
S.10294.6225 Construction	2	FY09	3	Sep-14	Sep-15	1,189	0	1,189	**Lower consequence after review**
S.147 Randolph Trunk Sewer Relief									
S.10461.7220 Study	3	FY09	3	Jul-11	Jun-13	750	656	94	
S.132 Corrosion & Odor Control									
S.10406.6919 FES/FERS Biofilters Design	3	FY09	3	Jul-09	Apr-13	995	995	0	
S.10456.7215 FES/FERS Biofilters Const.	3	FY09	3	Apr-11	Apr-12	2,140	2,140	0	
S.206 DI Treatment Plant Asset Protection									
S.19278.6967 STG System Modifications-Des	3	FY09	3	Oct-08	May-12	750	751	0	
S.19284.6973 STG System Mods-Constr	3	FY09	3	May-10	May-12	2,500	2,500	0	

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S.616 Quabbin Transmission System									
S.60103.7229 Oakdale Phase 1A Elec Des	3	FY09	1	Jul-09	Oct-13	921	915	6	**Rising safety and other concerns**
S.60104.7230 Oakdale Phase 1A Elec Constr	3	FY09	1	Jan-11	Oct-12	2,150	2,150	0	**Rising safety and other concerns**
S.722 NIH Redundancy & Covered Storage									
S.68250.6892 Section 80 Design CS/RI	3	FY09	3	Jan-11	May-15	1,524	962	562	
S.68249.6891 Section 80 Construction	3	FY09	3	May-13	May-15	6,096	0	6,096	
S.931 Business Systems Plan									
S.92410.7238 Laboratory Instrument Data Mgmt	3	FY09	3	Mar-09	Mar-10	250	250	0	
S.92411.7239 Major Laboratory Instrumentation	4	FY09	3	Mar-09	Mar-10	1,000	1,000	0	
FY09 Master Plan Totals - 11 projects						**$ 31,270**	**$ 19,486**	**$ 11,785**	
FY08 Budget Cycle									
S.104 Braintree-Weymouth Relief Facilities									
S.10060.5310 Rehab Sections 624 & 652	1	FY08	2	May-10	Jun-13	4,000	4,000	0	
S.10452.7193 Rehab of Section 624 Des	1	FY08	2	Jul-09	Jun-13	1,000	1,000	0	
S.132 Corrosion & Odor Control									
S.10405.6918 FES Tunnel Rehab	2	FY08	2	Dec-15	Jun-17	6,800	0	6,800	
S.10453.7196 FES Tunnel Rehab Des	2	FY08	2	Jul-15	Jun-17	1,700	0	1,700	
S.136 West Roxbury Tunnel									
S.10400.6897 Tunnel Design	1	FY08	1	Mar-08	Sep-10	16,000	8,500	7,500	
S.10401.6898 Tunnel Construction	1	FY08	1	Mar-11	Mar-17	64,000	24,900	39,100	
S.142 Wastewater Meter Sys-Equip Replace									
S.10451.7191 Wastewater Metering Asset Protection	2	FY08	2	Jul-15	Jan-00	20,000	0	20,000	
S.145 I&P Facility Asset Protection									
S.10444.7144 Nut Island Headworks Fire Alarm/Wire	1	FY08	1	Jul-09	Jun-10	200	200	0	
S.10445.7161 HW Fac. Plan Upgrades 3 Older HWKS	1	FY08	2	Jun-10	Dec-28	28,000	3,690	24,310	
S.10446.7162 PS/CSO Condition Assessment	2	FY08	2	Jul-11	Jun-14	3,000	1,900	1,100	
S.10447.7163 Interceptor AP-Interc Renewal Des #1	2	FY08	2	Feb-08	Dec-10	200	184	16	
S.10448.7164 Interceptor AP-Interc Renew #1 Const	2	FY08	2	Dec-10	Jun-11	1,600	1,600	0	
S.10455.7206 HW Facility Plan Upgrades Des	1	FY08	1	Jan-10	Dec-28	7,000	1,480	5,520	
S.146 D.I. Cross Harbor Tunnel									
S.10454.7199 Tunnel Shaft Repairs Plan/Des/Const	2	FY08	2	Jul-14	Jun-17	5,000	0	5,000	
S.200 DI Plant Optimization									
S.19311.7121 DI As needed Tech Design	1	FY08	1	Sep-13	Jun-27	26,450	0	26,450	
S.206 DI Treatment Plant Asset Protection									
S.19285.6974 Alternative Energy Initiatives	5	FY08	2	Jan-08	Dec-08	7,000	5,000	2,000	**Priority changed to reflect acceleration of green energy initiatives.**
S.19293.7055 Digester Mod 1&2 Pipe Replc.		FY08	1	Apr-08	Oct-09	8,000	6,000	2,000	
S.19312.7122 DI Digester Sludge Pump Repl Des	1	FY08	1	Jul-09	Nov-11	906	507	399	
S.19313.7123 DI Digester Sludge Pump Repl Const	1	FY08	1	Nov-10	Nov-11	3,624	2,023	1,601	
S.19314.7124 DI Elec Equip Upgrade Ph.5	1	FY08	1	Jan-12	Jan-14	20,662	2,635	18,027	
S.19315.7125 DI Equipment Replacement Projection	2	FY08	2	Jul-08	Jun-27	41,538	700	40,838	
S.19316.7126 Future SSPS VFD Replacements Des	1	FY08	1	Jul-15	Nov-18	4,800	0	4,800	
S.19317.7127 Future SSPS VFD Replacements Constr	1	FY08	1	Nov-16	Nov-18	19,200	0	19,200	
S.19318.7128 Future NMPS VFD Replacements Des	1	FY08	1	Jul-17	Nov-20	4,420	0	4,420	
S.19319.7129 Future NMPS VFD Replacements Constr	1	FY08	1	Nov-18	Nov-20	17,680	0	17,680	
S.19320.7130 Future Misc. VFD Replacements Des	1	FY08	1	Jul-17	Nov-20	1,333	0	1,333	
S.19321.7131 Future Misc. VFD Replacements Constr	1	FY08	1	Nov-18	Nov-20	5,334	0	5,334	
S.19322.7132 DI Switchgear Replacement Design	1	FY08	1	Jul-17	Apr-22	3,250	0	3,250	
S.19323.7133 DI Switchgear Replacement Constr	1	FY08	1	Apr-19	Apr-22	13,000	0	13,000	
S.19324.7134 DI PICS Replacement Construction	1	FY08	1	Jul-21	Jul-22	5,400	0	5,400	

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S.19325.7135 DI Dystor Membrane Replacements	1	FY08	1	Jul-14	Oct-14	3,000	0	3,000	
S.19326.7136 DI CTG Rebuilds	1	FY08	1	Jul-14	Jul-16	6,000	0	6,000	
S.19327.7137 DI Centrifuge Replacements Des	1	FY08	1	Jul-13	Oct-15	4,160	0	4,160	
S.19328.7138 DI Centrifuge Replacements Constr	1	FY08	1	Oct-14	Oct-15	16,640	0	16,640	
S.19329.7139 DI Cryogenics Plant-Equip Repl Des	1	FY08	1	Jul-13	May-16	1,600	0	1,600	
S.19330.7140 DI Cryogenics Plant-Equip Repl Constr	1	FY08	1	Nov-14	May-16	6,400	0	6,400	
S.19331.7141 Laboratory As needed Tech Des		FY08	1	Jul-08	Jun-27	4,000	500	3,500	
S.19332.7142 Future Sodium Hypo Tank Rehab	1	FY08	1	Jul-16	Jul-18	10,000	0	10,000	
S.19333.7167 Leak Protection System Upgrade	2	FY08	2	Jul-08	Jul-09	1,138	1,139	-1	
S.19334.7168 Barge Berth and Fac. Replacement	2	FY08	2	Jul-10	Jun-27	2,265	1,265	1,000	
S.19335.7169 South Systm PS Lube System Repl	2	FY08	2	Dec-08	Dec-10	2,019	2,018	1	
S.19336.7170 DI Grit and Odor Control Air Handlers	3	FY08	2	Jan-09	Jan-10	3,265	1,265	2,000	**Condition determined to be worse than when Master Plan Priority Ratings assigned.**
S.19337.7171 Central Lab Fume Hood Replacement		FY08	2	Jul-08	Jul-12	1,632	1,631	1	
S.19338.7172 DI PICS Dist. Proc. Units Replac	2	FY08	2	Jul-14	Jul-16	8,000	0	8,000	
Deer Island Equipment & Replacement Drop-downs	2	FY08	2			20,572	25,904	-5,332	
S.271 Residuals Asset Protection									
S.26069.7143 Residual Plant System Reliability	1	FY08	1	Sep-07	Sep-09	870	580	290	
S.26070.7145 Residuals Pellet Plant Upgrade Design	1	FY08	1	Jul-10	Jun-18	4,000	4,000	0	
S.26071.7146 Residuals Pellet Plant Upgrade Constr	1	FY08	1	Jul-13	Jul-18	4,000	0	4,000	
S.26093.7187 Utility Upgrades Des.	1	FY08	1	Jan-00	Jan-00	0	0	0	
S.26094.7188 Utility Upgrades Const.	1	FY08	1	Jul-16	Jul-18	6,000	0	6,000	
S.26072.7147 Condition Assessment/Fac Plan	1	FY08	1	Jul-08	Jun-10	1,000	1,000	0	
S.26074.7149 Six Rotary Dryer Replacements Constr	1	FY08	1	Jul-13	Jul-16	60,000	0	60,000	
S.26076.7151 Six Air Scrubber Replacements Constr	1	FY08	1	Jul-15	Jul-17	9,000	0	9,000	
S.26078.7153 Plant MCC Replacements Const	1	FY08	1	Jul-16	Jul-18	4,500	0	4,500	
S.26079.7173 FRSA Pier Rehab Des	1	FY08	1	Dec-07	Jun-10	140	112	28	
S.26080.7174 FRSA Pier Rehab Const.	1	FY08	1	Dec-08	Jun-10	560	560	0	
S.26082.7176 Rehab Rail System Const.	1	FY08	1	Jul-16	Jul-18	3,000	0	3,000	
S.26084.7178 Replace 9 Pellet Storage Silos Const.	1	FY08	1	Jul-15	Jul-17	6,000	0	6,000	
S.26086.7180 Sludge Conveyor Replacement Const.	1	FY08	1	Jul-14	Jul-15	3,000	0	3,000	
S.26088.7182 Sludge Storage Tank Rehab	1	FY08	1	Jul-15	Jul-16	3,000	0	3,000	
S.26090.7184 Upgrade Pumping System Const.	1	FY08	1	Jul-14	Jul-16	6,000	0	6,000	
S.26092.7186 Replace 12 Centrifuges Const.	1	FY08	1	Jul-14	Jul-16	36,000	0	36,000	
S.26096.7190 Odor Control System Upgrade Const.	1	FY08	1	Jul-17	Jul-18	1,500	0	1,500	
S.542 John J. Carroll Water Treatment Plant									
S.53457.7085 Ancillary Mods Const 2	2	FY08	2	Jan-08	Jun-13	6,080	5,616	464	
S.53458.7192 Ancil Mods Design 3	2	FY08	2	Jan-08	Jan-10	750	613	137	
S.53459.7208 Ancillary Mods Design 4	2	FY08	2	Jan-08	Jan-10	750	613	137	
S.550 Low Service Storage Near Spot Pond									
S.53401.6456 Env Rev Con Des Owners Rep	2	FY08	2	Apr-09	Sep-14	2,500	2,152	348	
S.53402.6457 Design/Build	3	FY08	2	Apr-12	Apr-14	36,093	13,977	22,116	**Priority revised as project added to CIP**
S.53447.6868 Easement/Land Acquisition		FY08	2	Apr-09	Apr-14	630	563	67	
S.597 Winsor Dam Hydroelectric									
S.60033.6277 Detail Design	4	FY08	2	Jul-09	Feb-11	359	359	0	**Priority revised as project added to CIP**
S.60044.6526 Construction	4	FY08	2	Aug-10	Feb-11	1,406	1,406	0	**Priority revised as project added to CIP**
S.60077.7017 Design and Construction		FY08	2	Oct-07	Jun-09	2,000	1,750	250	
S.60087.7114 Winsor Power Station Pipe Des	1	FY08	2	Sep-08	Jun-12	1,012	1,012	0	
S.60088.7115 Winsor Power Station Pipe Constr Ph1	1	FY08	2	Apr-10	Jun-12	4,047	4,047	0	

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S.60095.7197 Shft 12 Quabbin Aqdct Sluice Gate Des	2	FY08	2	Jul-08	Jun-12	400	400	0	
S.60096.7198 Shft 12 Quabbin Aqdct Sluice Gate Con	2	FY08	2	Jul-09	Jun-12	1,600	1,600	0	
S.60101.7212 Winsor Power St. Chapman Valve Repair		FY08	2	Mar-09	Dec-09	509	509	0	
S.614 Metropolitan Tunnel Loop									
S.60035.6273 Redundancy StudyTunnel Insp Fea Study	1	FY08	1	Mar-08	Feb-10	3,500	3,208	292	
S.618 Northern High NW Trans Sect 70-71									
S.60063.6895 Planning	2	FY08	2	Jul-10	Jun-12	1,000	1,000	0	
S.623 Dam Projects									
S.60089.7154 Engineering Studies for Dam Risk	1	FY08	1	Jul-07	Jun-09	460	230	230	
S.60094.7194 Immediate Repair Dams	2	FY08	2	Mar-10	Jun-11	3,255	3,255	0	
S.60100.7211 Immediate Repair Dams-Design	2	FY08	2	Jul-08	Jun-11	814	814	0	
S.624 Wachusett Aqueduct Pressurization									
S.60090.7156 Wachusett Aqueduct Pressurization Des	1	FY08	1	Jul-11	Jun-16	20,000	7,000	13,000	
S.60091.7157 Wachusett Aqueduct Pressurization Con	1	FY08	1	Jul-13	Jun-16	80,000	0	80,000	
S.625 Long Term Redundancy									
S.60092.7159 Long Term Redundancy Des	1	FY08	1	Jul-13	Jun-23	20,000	0	20,000	
S.60093.7160 Long Term Redundancy Construction	1	FY08	1	Jul-14	Dec-23	80,000	0	80,000	
S.677 Valve Replacement									
S.68300.7195 Valve Replacement 8&9 Construction	2	FY08	2	Jul-10	Jun-16	5,000	2,500	2,500	
S.719 Chestnut Hill Connecting Mains									
S.68052.6302 Construction- Chp 149	2	FY08	2	Jul-10	Jul-12	3,431	3,431	0	
S.68267.6982 Construction-Chp 30	2	FY08	2	Jul-10	Jul-12	2,220	2,220	0	
S.721 Southern Spine Distribution Mains									
S.68299.7155 Southern Spine Sect 22 N Fac Plan/EIR	1	FY08	1	Jul-08	Jun-10	1,000	1,000	0	
S.722 NIH Redundancy & Covered Storage									
S.68252.6906 Section 89/29 Redundancy Design	1	FY08	1	Jul-08	Jun-13	5,059	5,000	59	
S.68282.7066 Sec 89&29 Redundancy Constr	1	FY08	1	Jul-10	Jun-13	19,224	14,949	4,275	
S.68283.7067 NIH Storage Fin Des/CS/RI	1	FY08	1	Jul-08	Sep-12	2,024	2,024	0	
S.68284.7068 NIH Storage Construction	1	FY08	1	Sep-10	Sep-12	8,094	8,094	0	
S.68294.7116 Section 89/29 Rehab Design	1	FY08	1	Jul-13	Jun-17	1,012	0	1,012	
S.68295.7117 Section 89/29 Rehab Construction	1	FY08	1	Jul-15	Jun-17	4,047	0	4,047	
S.68296.7118 NIH Gillis Redundancy Design	1	FY08	1	Jul-13	Jun-18	2,024	0	2,024	
S.68297.7119 NIH Gillis Redundancy Construction	1	FY08	1	Jul-15	Jun-18	8,094	0	8,094	
S.727 SEH Redundancy & Storage									
S.53397.6452 Concept Plan/Prelim Des/Env Rev	1	FY08	2	Feb-07	Aug-08	840	125	715	
S.53398.6453 SEH Storage Final Des/CS/RI	2	FY08	2	Jul-09	Jun-14	2,024	1,539	485	
S.53399.6454 SEH Storage Construction	2	FY08	2	Jul-12	Jun-14	8,094	4,550	3,544	
S.68135.6444 SEH Red Loop Final Des/CA/RI	2	FY08	2	Jul-09	Jun-14	4,047	3,217	830	
S.68136.6445 SEH Redund Loop Construction	2	FY08	2	Jul-11	Jun-14	21,248	12,634	8,614	
S.68292.7112 Design Sect 77/88 Rehab	2	FY08	2	Jul-18	Jun-23	1,012	0	1,012	
S.68293.7113 Section 77/88 Rehab	2	FY08	2	Sep-20	Jun-23	4,047	0	4,047	
S.931 Business Systems Plan									
S.92404.7200 Computer Center - OCC Infrastructure		FY08	2	Jul-14	Jun-16	1,500	0	1,500	
S.92405.7201 Net 2020		FY08	2	Jul-09	Jun-12	1,500	1,500	0	
S.92406.7203 SAN II		FY08	2	Jul-11	Jun-12	600	600	0	
S.92407.7204 SAN III		FY08	2	Jul-14	Jun-15	600	0	600	
S.92408.7205 Telecommunications		FY08	2	Jul-13	Jun-15	750	0	750	
FY08 Master Plan Totals - 67 projects						**$ 955,014**	**$ 217,800**	**$ 737,214**	

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY09-13	Beyond FY 13	Comment
Total Projects from the Master Plan:	**116**								
Total $$ of Projects from the Master Plan	**$1,104,698**								

APPENDIX 6

Project Status Overview

Appendix 6
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 for 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. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
104 Braintree-Weymouth Relief Facilities		**$233,961**	**$227,932**	**97.4%**	**97.4%**		
10001_5333	Geotechnical - Marine	443	443	Complete	100.0%		
10044_5332	Geotechnical - Land	8	8	Complete	100.0%		
10045_5311	Facilities Planning - Phase 1	331	331	Complete	100.0%		
10046_5312	EIR - Phase 1	514	514	Complete	100.0%		
10047_5313	Design 1/CS/RI	18,882	18,882	Complete	100.0%		
10048_5314	Land Acquisition	13,221	12,857	97.2%	97.2%		Jun-10
10049_5315	Tunnel Construction/Rescue	83,551	83,551	Complete	100.0%		
10050_5316	Intermediate Pump Station-Construction	47,445	47,445	Complete	100.0%		
10051_5303	North Weymouth Relief Interceptor	4,705	4,705	Complete	100.0%		
10052_5373	HDD Siphon - Construction	16,357	16,357	Complete	100.0%		
10054_5375	B-W Replacement Pump Station	17,728	17,728	Complete	100.0%		
10055_5308	Design - Rehab	24	24	Complete	100.0%		
10056_5309	Construction - Rehab	255	255	Complete	100.0%		
10057_5324	Final EIR/Facility Plan	1,111	1,111	Complete	100.0%		
10058_5331	Design 2/CS/RI	15,265	14,870	97.4%	97.4%		Dec-11
10060_5310	Rehabilitation of Section 624 - Const.	2,506	2,504	Complete	99.9%		
10061_5951	Technical Assistance	144	144	Complete	100.0%		
10251_6016	Sedimentation Testing	96	96	Complete	100.0%		
10263_6072	Legal	825	834	Complete	101.1%		
10265_6074	Hazardous Waste	8	8	Complete	100.0%		
10278_6119	Marine Pipeline - Design	1,100	1,100	Complete	100.0%		
10302_6368	Mill Cove Siphon - Construction	2,749	2,749	Complete	100.0%		
10354_6631	Community Technical Assistance	1,111	1,111	Complete	100.0%		
10375_6766	Geotechnical Consultant	56	56	Complete	100.0%		
10378_6792	IPS/RPS Communication System	225	225	Complete	100.0%		
10470_7290	Wetlands Replication	700	24	3.4%	3.4%		Sep-12
10480_7327	Mill Cove Sluice Gates - Construction	600	0	Future	0.0%	Jan-13	
10493_7366	Braintree-Weymouth Improvements	4,000	0	Future	0.0%	Apr-13	

	Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
128 I/I Local Financial Assistance		**$122,585**	**$101,943**	**83.2%**	**83.2%**		
10232_5300	Community I/I Grants	0	5,800	NA	NA		
10233_5393	Community I/I Loans	0	17,278	NA	NA		
10234_5394	Community I/I Loan Repayments	0	-17,278	NA	NA		
10273_6084	Phase II - Grants	15,929	10,129	63.6%	63.6%		May-06
10274_6085	Phase II - Loans	47,664	30,386	63.8%	63.8%		May-06
10282_6170	Phase II - Repayments	-47,664	-30,386	63.8%	63.8%		May-11
10315_6505	Phase III - Grants	0	16,650	NA	NA		
10316_6506	Phase III - Loans	0	20,350	NA	NA		
10317_6507	Phase III - Repayments	0	-20,112	NA	NA		
10348_6609	Public Participation	6	6	Complete	100.0%		
10368_6736	Phase IV - Grants	34,650	18,000	51.9%	51.9%		May-10
10369_6737	Phase IV - Loans	42,350	22,000	51.9%	51.9%		May-10
10370_6738	Phase IV - Repayments	-42,350	-19,385	45.8%	45.8%		May-15
10407_6925	Phase V - Grants	18,000	16,561	92.0%	92.0%		May-12
10408_6926	Phase V - Loans	22,000	20,241	92.0%	92.0%		May-12
10409_6927	Phase V - Repayments	-22,000	-13,446	61.1%	61.1%		May-17
10441_7107	Phase Vl - Grants	18,000	9,944	55.2%	55.2%		Jun-15
10442_7108	Phase Vl - Loans	22,000	12,154	55.2%	55.2%		Jun-15
10443_7109	Phase Vl - Repayments	-22,000	-3,952	18.0%	18.0%		Jun-20
10471_7293	Phase VII - Grants	18,000	3,370	18.7%	18.7%		Jun-18
10472_7294	Phase VII - Loans	22,000	4,119	18.7%	18.7%		Jun-18
10473_7295	Phase VII - Repayments	-22,000	-485	2.2%	2.2%		Jun-23
10474_7296	Phase VIII - Grants	18,000	0	Future	0.0%	Aug-13	
10475_7297	Phase VIII - Loans	22,000	0	Future	0.0%	Aug-13	
10476_7298	Phase VIII - Repayments	-22,000	0	Future	0.0%	Aug-14	
130 Siphon Structure Rehabilitation		**$2,671**	**$940**	**35.2%**	**35.2%**		
10253_6017	Planning	938	938	Complete	100.0%		
10280_6165	Land Acquisition	2	2	Complete	100.0%		
10293_6224	Design/CS/RI	495	0	Future	0.0%	Jan-13	
10294_6225	Construction	1,236	0	Future	0.0%	Apr-15	
131 Upper Neponset Valley Sewer		**$54,944**	**$53,777**	**97.9%**	**97.9%**		
10256_6031	Design/CS/RI	4,585	4,585	Complete	100.0%		
10266_6075	Legal	131	66	50.4%	50.4%		Apr-08
10290_6191	Sewer Sections 685-686 - Replacement	37,005	37,005	Complete	100.0%		
10311_6450	Land Acquisition	2,602	1,502	57.7%	57.7%		Apr-08
10352_6629	Sewer Section 687 Replacement - Const	7,664	7,664	Complete	100.0%		
10393_6830	Boston Paving	611	610	Complete	99.8%		
10439_7072	Resident Engineering/Inspection	2,347	2,345	Complete	99.9%		
132 Corrosion & Odor Control		**$16,140**	**$3,003**	**18.6%**	**18.6%**		
10279_6137	Planning/Study	587	587	Complete	100.0%		
10323_6549	Land Acquisition	3	3	Complete	100.0%		
10325_6551	Legal	2	2	Complete	100.0%		
10327_6553	Design/CS/RI	1,788	1,788	Complete	100.0%		
10373_6743	Interim Corrosion Control	622	622	Complete	100.0%		
10405_6918	FES Tunnel Rehab - Construction	6,800	0	Future	0.0%	Dec-17	
10406_6919	FES/FERS Biofilters - Design	1,032	0	Future	0.0%	Jul-14	
10453_7196	FES Tunnel Rehab - Design	1,700	0	Future	0.0%	Jul-17	
10456_7215	FES/FERS Biofilters - Construction	1,605	0	Future	0.0%	Apr-16	
10491_7364	System-wide Odor Control - Study	1,000	0	Future	0.0%	Jul-18	
10492_7365	NI System-wide Odor Cntrl-Eval & Des	1,000	0	Future	0.0%	Jul-14	

	Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
136 West Roxbury Tunnel		**$11,487**	**$10,285**	**89.5%**	**89.5%**		
10299_6230	Inspection	344	344	Complete	100.0%		
10329_6566	Tunnel Easements & Permits	54	54	Complete	100.0%		
10330_6567	Legal	2	2	Complete	100.0%		
10331_6568	Land Acquisition	440	440	Complete	100.0%		
10332_6569	Construction	6,674	6,674	Complete	100.0%		
10333_6570	Design/CS/RI	1,412	1,412	Complete	100.0%		
10366_6709	Technical Assistance	8	8	Complete	100.0%		
10400_6897	Tunnel - Design	1,553	1,351	87.0%	87.0%		
10401_6898	Tunnel Inspection	1,000	0	Future	0.0%	Sep-19	
137 Wastewater Central Monitoring		**$20,839**	**$19,782**	**94.9%**	**94.9%**		
10301_6232	Planning	563	563	Complete	100.0%		
10319_6532	Design and Integration Services	6,502	6,344	97.6%	97.6%		
10320_6533	Construction 1 (CP1)	7,662	7,662	Complete	100.0%		
10321_6534	Construction 2 (CP2)	5,139	5,139	Complete	100.0%		
10322_6535	Technical Assistance	7	7	Complete	100.0%		
10398_6861	Equipment Prepurchase	65	65	Complete	100.0%		
10490_7363	Wastewater Redundant Communications	900	0	Future	0.0%	Nov-12	
139 South System Relief Project		**$4,939**	**$3,439**	**69.6%**	**69.6%**		
10309_6419	Archdale - CS/RI	5	5	Complete	100.0%		
10310_6420	Archdale - Construction	211	211	Complete	100.0%		
10318_6519	Sections 70 & 71 HLS - Evaluation	215	215	Complete	100.0%		
10345_6595	Outfall 023 - Design	1	1	Complete	100.0%		
10346_6596	Outfall 023 - Cleaning	1,098	1,098	Complete	100.0%		
10347_6605	Land Acquisition/Easements	5	5	Complete	100.0%		
10349_6611	Sections 70 & 71 HLS - Construction	417	417	Complete	100.0%		
10350_6616	Milton Financial Assistance	1,488	1,488	Complete	100.0%		
10386_6801	Outfall 023 - Structural Impovements	1,500	0	Future	0.0%	Jan-18	
141 Wastewater Process Optimization		**$10,300**	**$930**	**9.0%**	**9.0%**		
10367_6733	Planning	930	930	Complete	100.0%		
10412_6930	North System Hydraulic Study	558	0	Future	0.0%	Nov-11	
10413_6931	Somerville Sewer - Design	200	0	Future	0.0%	Oct-14	
10414_6932	Somerville Sewer - Construction	1,019	0	Future	0.0%	Mar-17	
10415_6933	Siphon - Planning	150	0	Future	0.0%	Nov-16	
10416_6934	Manhole Structure Flood Protec-Design	500	0	Future	0.0%	Jan-15	
10417_6935	Manhole Structure Flood Protec-Const.	5,000	0	Future	0.0%	Jul-17	
19401_7412	Hydr Flood Engr Analysis N. Sy	1,942	0	Future	0.0%	Jul-13	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
142 Wastewater Meter System-Equipment		**$26,578**	**$5,138**	**19.3%**	**19.3%**		
10371_6739	Planning / Study	100	0	Future	0.0%	Jan-13	
10379_6793	Equipment Purchase & Installation	5,278	5,138	97.3%	97.3%		Jun-08
10410_6928	Design	200	0	Future	0.0%	Jul-14	
10411_6929	Construction	1,000	0	Future	0.0%	Jan-16	
10451_7191	WW Metering Asset Protect/Equip Purch	20,000	0	Future	0.0%	Jul-13	
145 Facility Asset Protection		**$254,743**	**$9,799**	**3.8%**	**3.8%**		
10380_6795	Prison Point HVAC Upgrades-Construct.	2,246	600	26.7%	26.7%		Mar-12
10381_6796	Remote Headworks Heating Syst Upgrade	1,175	1,175	Complete	100.0%		
10382_6797	Alewife Brook Pump Stn Rehab - Const.	6,666	0	Future	0.0%	May-13	
10383_6798	Rehab of Section 93A Lexington	1,566	1,566	Complete	100.0%		
10387_6802	Chelsea Creek Upgr ESDC/REI	2,048	0	Future	0.0%	Sep-13	
10392_6829	Technical Assistance	78	50	64.1%	64.1%		Nov-08
10394_6842	Sections 80 & 83	365	365	Complete	100.0%		
10395_6843	Section 160	1,581	1,581	Complete	100.0%		
10396_6857	Survey	11	11	Complete	100.0%		
10397_6858	Permits	8	8	Complete	100.0%		
10399_6886	Remote Headworks Concept Plan	739	688	93.1%	93.1%		Sep-09
10418_6936	Interceptor Renewal No. 2	9,193	0	Future	0.0%	Jul-16	
10419_6937	Alewife Brook Pump Stn Rehab - Des/CA	250	197	78.8%	78.8%		Oct-11
10420_6938	Prison Point HVAC Upgrades - Design	452	379	83.8%	83.8%		Mar-13
10423_6987	93 A Force Main Replacement	462	462	Complete	100.0%		
10424_7004	Mill Brook Valley Sewer Section 79&92	542	542	Complete	100.0%		
10427_7033	Hingham Pump Stn Isolation Gate-Const	125	0	Future	0.0%	Sep-11	
10428_7034	Alewife Brook PS Final Des/CA/REI	1,500	0	Future	0.0%	Jan-12	
10431_7037	Caruso PS Improve Des/CA/REI	594	0	Future	0.0%	Aug-12	
10440_7073	Land/Easements	103	103	Complete	100.0%		
10444_7144	Nut Island Headworks Fire Alarm/Wire	285	285	Complete	100.0%		
10445_7161	Chelsea Creek Upgr Construction	51,195	0	Future	0.0%	Sep-13	
10446_7162	Pump Stns & CSOs Condition Assessment	3,000	0	Future	0.0%	Jun-12	
10448_7164	Interceptor Renewal No.1 - Construct.	3,800	0	Future	0.0%	Feb-15	
10455_7206	Chelsea Creek Upgr Design/CA	6,683	1,011	15.1%	15.1%		Mar-18
10457_7216	Malden&Melrose Hydraulics&Struc-Study	300	0	Future	0.0%	Jan-14	
10458_7217	Malden&Melrose Hydraulics&Struc-Const	1,000	0	Future	0.0%	Jan-15	
10459_7218	Nut Island Fire Pump Building - Study	300	0	Future	0.0%	Jan-13	
10460_7219	NI Mechanical&Electrical Replacements	3,000	0	Future	0.0%	Jul-13	
10463_7237	Headworks Effluent Shaft - Study	500	0	Future	0.0%	Jul-15	
10464_7248	Melrose Sewer	654	654	Complete	100.0%		
10467_7279	Inter Ren. No. 3 Camb/Some Sect 26&27	5,000	0	Future	0.0%	Jul-18	
10468_7280	Inter Ren. No. 4 Evrtt Sect 23/24/156	3,000	0	Future	0.0%	Jul-16	
10469_7281	Cottage Farm Fuel System Upgrade	375	0	Future	0.0%	Feb-12	
10477_7312	NI Elec & Grit/Sreens Conveyance-Des	1,125	121	10.8%	10.8%		Oct-15
10478_7313	NI Elec & Grit/Sreens Conveyance-Con	7,066	0	Future	0.0%	May-13	
10481_7328	Interceptor Renewal No. 5 - Milton	4,000	0	Future	0.0%	Jul-17	
10482_7329	Interceptor Renewal No. 6 - Chelsea	11,000	0	Future	0.0%	Jul-18	
10484_7344	Somer/Marginal Influent Gates Replace	364	0	Future	0.0%	Jul-11	
10485_7358	PP Dry Weather Flow&Strip Pump Improv	750	0	Future	0.0%	Jan-13	
10486_7359	PP/CF CSO Rehab Prelimin Design/Study	1,000	0	Future	0.0%	Jul-12	
10487_7360	System Relief & Contingency Planning	500	0	Future	0.0%	Jul-13	
10488_7361	DeLauri PS Improvements	420	0	Future	0.0%	Jul-12	
10489_7362	Caruso PS Impovements - Const	2,181	0	Future	0.0%	Dec-13	
10500_7375	Pump Stn. Rehab-Prelim. Design/Study	750	0	Future	0.0%	Jan-15	
10501_7389	Prison Pt Pump & Gearbox Rebuild	440	0	Future	0.0%	Apr-12	
10503_7393	Sect 156 Rehab - Design/Build	2,529	0	Future	0.0%	Jul-11	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
10504_7410	Interceptor Ren #2 Des/CA/REI	2,000	0	Future	0.0%	Jan-14	
10505_7421	Sect 4,5,6 North Met Design CS/RI	1,000	0	Future	0.0%	Jul-13	
10506_7422	Sect 4,5,6 North Met Construction	4,000	0	Future	0.0%	Jul-15	
10507_7423	Rehab of Sects 186 and 4 Construction	3,000	0	Future	0.0%	Jan-13	
10510_7429	Ward St. HWKS Upgr Des ESDC/REI	6,860	0	Future	0.0%	Sep-15	
10511_7430	Ward St. Headworks Construction	45,052	0	Future	0.0%	Sep-17	
10512_7431	Columbus Park HWKS Upgr Des ESDC/REI	6,860	0	Future	0.0%	Sep-19	
10513_7432	Columbus Park Headworks Construction	45,052	0	Future	0.0%	Sep-21	
146 D.I. Cross Harbor Tunnel Inspection		**$5,000**	**$0**	**Future**	**0.0%**		
10454_7199	Tunnel Shaft Repairs - Plan/Des/Const	5,000	0	Future	0.0%	Jul-16	
147 Randolph Trunk Sewer Relief		**$750**	**$0**	**Future**	**0.0%**		
10461_7220	Study	750	0	Future	0.0%	Jul-15	
206 DI Treatment Plant Asset Protection		**$583,273**	**$117,067**	**20.1%**	**20.1%**		
18045_6196	DITP Roof Replacements	2,300	2,300	Complete	100.0%		
19162_6241	DISC Application	250	125	50.0%	50.0%		Jun-14
19176_6422	Pump Packing Replacement	732	732	Complete	100.0%		
19177_6423	Demineralizer Construction	51	51	Complete	100.0%		
19182_6478	Equipment Replacement Projection	25,000	0	Future	0.0%	Jul-18	
19188_6538	Ancillary Mods - Construction 4	10,565	0	Future	0.0%	Nov-14	
19193_6594	Equipment Condition Monitoring	1,777	1,777	Complete	100.0%		
19204_6668	Expansion Joint Repair - Design	149	149	Complete	100.0%		
19205_6669	Expansion Joint Repair - Construct. 1	305	305	Complete	100.0%		
19217_6704	Expansion Joint Repair - Construct. 2	2,000	0	Future	0.0%	Feb-12	
19218_6705	Expansion Joint Repair - Construct. 3	529	0	Future	0.0%	May-14	
19220_6721	As-needed Design Phase 6-1	1,850	1,205	65.1%	65.1%		May-12
19221_6722	As-needed Design Phase 6-2	1,850	939	50.8%	50.8%		May-12
19222_6723	Eastern Seawall Design - 1	514	0	Future	0.0%	Jan-13	
19223_6724	Eastern Seawall Construction - 1	2,204	0	Future	0.0%	May-14	
19227_6728	Digester Gas Flare #4 - Design	446	0	Future	0.0%	Jun-13	
19228_6729	Digester Gas Flare #4 - Construction	1,003	0	Future	0.0%	Oct-14	
19230_S464	Roof Replacement - Phase I	2,750	2,750	Complete	100.0%		
19231_6742	Drive Chain Replacement	264	264	Complete	100.0%		
19236_6763	Busduct Replacement (2+22)	196	196	Complete	100.0%		
19237_6764	Reline Hypochlorite Tanks 1 & 3	1,691	1,691	Complete	100.0%		
19238_6765	CTG Modifications	482	482	8.0%	8.0%		
19239_6767	Electrical Equipment Upgrade-Const 2	1,913	1,913	Complete	100.0%		
19241_6791	Document Format Conversion	145	56	38.6%	38.6%		Jun-14
19243_6811	Outfall Modification - Inspection	174	174	Complete	100.0%		
19244_6812	Secondary Clarifier Access	275	275	Complete	100.0%		
19245_6813	Transformer Replacement	2,538	877	34.6%	34.6%		Jun-15
19250_6849	Reline Hypochlorite Tanks 2 & 4	2,242	2,242	Complete	100.0%		
19252_6851	Chemical Pipe Replacement - Design	520	0	Future	0.0%	Sep-12	
19253_6852	Chemical Pipe Replacement - Construct	2,115	0	Future	0.0%	Jan-14	
19254_6853	Sodium Hypo Pipe Replacement - Design	2,115	0	Future	0.0%	Jun-12	
19255_6854	Sodium Hypo Pipe Replacement - Const.	7,404	0	Future	0.0%	Nov-13	
19256_6855	Electrical Equipment Upgrade-Const. 3	15,066	14,316	95.0%	95.0%		Aug-11
19258_6875	WTF VFD Replacement - Construction	3,776	0	Future	0.0%	Jan-13	
19259_6876	Heat Loop Pipe Replacement - Constr 1	615	615	Complete	100.0%		
19260_6877	Miscellaneous VFD Replacements	2,625	932	35.5%	35.5%		Jun-14
19263_6880	LOCAT Scrubber Replacement - Design	900	0	Future	0.0%	Nov-12	
19264_6881	Grit Air Handler Replacements	1,752	1,752	Complete	100.0%		
19265_6882	CEMS Equipment Replacement	100	102	Complete	102.0%		
19266_6883	Heat Loop Pipe Replacement - Const. 2	1,488	1,488	Complete	100.0%		
19267_6884	PICS Replacement - Construction	1,302	0	Future	0.0%	Jul-11	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
19268_6899	Primary&Second Clarifier Rehab-Const	59,633	50,743	85.1%	85.1%		Feb-12
19270_6901	Electrical Equipment Upgrade-Const 4	5,000	0	Future	0.0%	Jan-12	
19271_6902	NMPS VFD Replacement - Design/ESDC	1,947	1,089	55.9%	55.9%		Jul-15
19272_6903	NMPS VFD Replacement - Construction	24,079	0	Future	0.0%	Dec-11	
19273_6904	Fire Alarm System Replacement-Design	2,100	0	Future	0.0%	Jan-12	
19274_6963	Gravity Thickener Rehab - Design	978	0	Future	0.0%	Feb-12	
19276_6965	Primary&Second Clarifier Rehab-Design	2,049	1,186	57.9%	57.9%		Feb-13
19277_6966	Gravity Thickener Improvements-Constr	1,085	679	62.6%	62.6%		Jun-12
19278_6967	STG System Modifications - Design	406	406	Complete	100.0%		
19279_6968	Electrical Equipment Upgrade 3 - REI	1,207	1,030	85.3%	85.3%		Nov-11
19280_6969	Fuel Transfer Pipe Replacement-Design	1,150	0	Future	0.0%	Nov-18	
19281_6970	Fuel Transfer Pipe Replacement-Const.	2,942	0	Future	0.0%	Feb-20	
19282_6971	NMPS Motor Control Center - Design	350	0	Future	0.0%	Nov-11	
19283_6972	NMPS Motor Control Center - Constr	1,000	0	Future	0.0%	Nov-11	
19284_6973	STG System Modifications - Construct.	2,568	2,546	Complete	99.1%		
19287_7005	Digester Chiller Replacement	635	635	Complete	100.0%		
19288_7006	Dystor Tank Membrane Replacement	640	640	Complete	100.0%		
19289_7051	Fire Alarm System Replacement - Const	16,000	0	Future	0.0%	Feb-13	
19290_7052	Digester & Storage Tank Rehab Des/ESDC	3,000	0	Future	0.0%		
19291_7053	Thick Primary Sludge Pump Repl-Design	575	0	Future	0.0%	Sep-12	
19292_7054	Thick Primary Sludge Pump Repl-Constr	2,551	27	1.1%	1.1%		Apr-15
19293_7055	Digester Modules 1 & 2 Pipe Replacemt	6,960	0	Future	0.0%	Aug-11	
19294_7056	LOCAT Scrubber Replacement - Constr.	4,082	0	Future	0.0%	May-14	
19295_7057	Centrifuge Backdrive Replacement	2,790	26	0.9%	0.9%		Jan-14
19296_7058	Switchgear Replacement - Design	1,213	0	Future	0.0%	Nov-12	
19297_7059	Switchgear Replacement - Construction	4,082	0	Future	0.0%	Feb-12	
19298_7060	Power Consultant Recommned - Design	2,097	2,097	Complete	100.0%		
19299_7061	Power System Improvements - Construct	8,640	3,381	39.1%	39.1%		Sep-13
19300_7062	NMPS VFD Replacement - REI	2,000	0	Future	0.0%	Jul-12	
19301_7063	Heat Loop Pipe Replacement - Const. 3	11,355	11,329	Complete	99.8%		
19303_7088	Ancillary Modifications - Final Des 4	2,326	0	Future	0.0%	Oct-12	
19304_7089	Sodium Hypo Tank Liner Removal	196	196	Complete	100.0%		
19305_7090	As-needed Design Phase 5-1	955	955	Complete	100.0%		
19306_7091	As-needed Design Phase 5-2	1,056	1,056	Complete	100.0%		
19307_7094	TPP Fuel System Mod REI	500	0	Future	0.0%	Feb-12	
19309_7111	HVAC Equipment Replacement - Des/ESDC	3,500	0	Future	0.0%	Jan-12	
19310_7110	HVAC Equipment Replacement - Const.	17,101	0	Future	0.0%	Aug-13	
19311_7121	DI As-needed Technical Design	21,050	0	Future	0.0%	May-15	
19313_7123	Digester Sludge Pump Repl - Construct	4,383	1,338	30.5%	30.5%		Oct-13
19314_7124	Electrical Equipment Upgrade Phase 5	23,162	0	Future	0.0%	Oct-13	
19316_7126	Future SSPS VFD Replacements - Design	4,800	0	Future	0.0%	Jul-15	
19317_7127	Future SSPS VFD Replacements - Const.	19,200	0	Future	0.0%	Nov-16	
19318_7128	Future NMPS VFD Replacements - Design	4,420	0	Future	0.0%	Jun-21	
19319_7129	Future NMPS VFD Replacements - Const.	17,680	0	Future	0.0%	Sep-22	
19320_7130	Future Misc. VFD Replacements-Design	1,333	0	Future	0.0%	Jul-12	
19321_7131	Future Misc. VFD Replacements-Const.	5,334	0	Future	0.0%	May-13	
19322_7132	DI Switchgear Replacement - Design	4,500	0	Future	0.0%	Jul-15	
19323_7133	DI Switchgear Replacement - Construct	16,000	0	Future	0.0%	Apr-18	
19324_7134	DI PICS Replacement - Construction	5,400	0	Future	0.0%	Feb-21	
19325_7135	DI Dystor Membrane Replacements	3,000	0	Future	0.0%	Jul-14	
19326_7136	DI CTG Rebuilds	6,000	0	Future	0.0%	Jun-13	
19327_7137	DI Centrifuge Replacements - Design	4,160	0	Future	0.0%	Jul-13	
19328_7138	DI Centrifuge Replacements-Construct	16,640	0	Future	0.0%	Oct-14	
19329_7139	Cryogenics Plant-Equip Replace-Design	1,600	0	Future	0.0%	Jul-13	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
19330_7140	Cryogenics Plant-Equip Replace-Const.	3,800	0	Future	0.0%	Nov-14	
19332_7142	Future Sodium Hypo Tank Rehab	10,000	0	Future	0.0%	Jul-17	
19334_7168	Barge Berth and Facility Replacement	2,265	0	Future	0.0%	Apr-12	
19335_7169	South Systm PS Lube System Replace.	2,900	0	Future	0.0%	Jul-18	
19336_7170	E/W Odor Control Air Handler Replace.	2,000	0	Future	0.0%	Jun-25	
19338_7172	PICS Distributed Process Units Replac	8,000	0	Future	0.0%	Feb-21	
19339_7275	NMPS & WTF Butterfly Valve Replace.	2,500	0	Future	0.0%	Mar-12	
19345_7373	Digester & Storage Tank Rehab - Const.	21,700	0	Future	0.0%	Jun-14	
19346_7374	Clarif W3H Flush Syst	2,000	0	Future	0.0%	Feb-12	
19347_7394	Clarifier Ph 2 Des	3,000	0	Future	0.0%	Jul-12	
19348_7395	Clarif Rehab2 Const	27,000	0	Future	0.0%	Nov-13	
19349_7396	Clarif Tip Tube Repl	4,000	0	Future	0.0%	Jul-12	
19351_7397	Cryo Compressor Replac	1,500	0	Future	0.0%	Jan-12	
19352_7398	Cryo Chillers Replac	1,100	0	Future	0.0%	Jan-12	
19353_7399	As-Needed Des 7-1	2,700	0	Future	0.0%	May-12	
19354_7400	As-Needed Des 7-2	2,700	0	Future	0.0%	May-12	
19355_7401	TPP Boiler Ctrl Replac	1,000	0	Future	0.0%	Jun-12	
19356_7413	Sod Hypo Repl REI	600	0	Future	0.0%	Nov-13	
19557_7414	NMPS Harmonic Filter Repl	6,000	0	Future	0.0%	May-13	
19558_7415	Fuel Pipe Cementing	750	0	Future	0.0%	Jan-12	
19559_7416	Electr Equip Upgr 4 REI	700	0	Future	0.0%	Jan-12	
19560_7419	NMPS MCC Ph 2 REI	603	0	Future	0.0%	Nov-12	
19561_7420	NMPS MCC Ph 2 Const	6,086	0	Future	0.0%	Nov-12	
19562_7424	Roof Replacement Phase 3	1,000	0	Future	0.0%	Jan-13	
19563_7426	Fire Systm Repl REI	1,200	0	Future	0.0%	Feb-13	
19564_7427	Grav Thick Ctr Col Repl	1,000	0	Future	0.0%	Dec-11	
19565_7428	Grav Thicknr Rehab	5,786	0	Future	0.0%	Jul-13	
210 Clinton Wastewater Treat Plant		**$9,044**	**$649**	**7.2%**	**7.2%**		
19302_7075	Clinton Soda Ash Replacement	267	267	Complete	100.0%		
19308_7095	Clinton Permanent Standby Generator	230	230	Complete	100.0%		
19340_7276	Clinton Plant-Wide Concrete Repair	1,500	63	4.2%	4.2%		Feb-15
19341_7277	Clinton Digester Cleaning & Rehab	1,800	89	4.9%	4.9%		Dec-13
19342_7278	Clinton Aeration Effciency Improvement	1,746	0	Future	0.0%	Dec-11	
19400_7411	PhosRemov Constr	3,000	0	Future	0.0%	Jun-13	
19950_7377	Phos Remov Des/ESDC	500	0	Future	0.0%	Mar-12	
211 Laboratory Services		**$2,293**	**$1,173**	**51.2%**	**51.2%**		
19152_6197	Metals Lab Fume Hood Replacem - Const	933	16	1.7%	1.7%		Feb-12
19249_6848	Metals Lab Fume Hood Replacem - Desig	391	188	48.1%	48.1%		Feb-12
19251_6850	Metals Lab Modification - Construction	969	969	Complete	100.0%		

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
271 Residuals Asset Protection		**$147,930**	**$345**	**0.2%**	**0.2%**		
26069_7143	Residual Facility Plan / EIR	870	0	Future	0.0%	Jul-13	
26070_7145	Residuals Facility Upgrade - Design	4,000	0	Future	0.0%	Jan-14	
26071_7146	Residuals Facility Upgrade-Construct.	10,000	0	Future	0.0%		
26072_7147	Condition Assess/Tech & Reg Review	1,060	345	32.5%	32.5%		Dec-12
26074_7149	Six Rotary Dryer Replacements-Const.	57,000	0	Future	0.0%	Jul-14	
26076_7151	Six Air Scrubber Replacements-Const.	8,000	0	Future	0.0%	Jul-16	
26078_7153	Plant MCC Replacements - Construction	4,500	0	Future	0.0%	Jul-17	
26082_7176	Rail System Rehabilitation - Construct.	3,000	0	Future	0.0%	Jul-17	
26084_7178	Replace 9 Pellet Storage Silos-Const.	6,000	0	Future	0.0%	Jul-16	
26086_7180	Sludge Conveyor Replacement - Const.	3,000	0	Future	0.0%	Jul-15	
26088_7182	Sludge Storage Tank Rehab - Const.	3,000	0	Future	0.0%	Jul-16	
26090_7184	Upgrade Pumping System - Construction	6,000	0	Future	0.0%	Jul-15	
26092_7186	Replace 12 Centrifuges - Construction	34,000	0	Future	0.0%	Jul-16	
26094_7188	Utility Upgrades - Construction	6,000	0	Future	0.0%	Jul-17	
26096_7190	Odor Control System Upgrade - Const.	1,500	0	Future	0.0%	Jul-18	
324 CSO Support		**$50,449**	**$49,007**	**97.1%**	**97.1%**		
32400_5790	Technical Assistance	228	228	Complete	100.0%		
32401_5791	Planning/EIR	10,769	10,769	Complete	100.0%		
32403_5716	Master Planning	21,763	21,763	Complete	100.0%		
32407_5970	Technical Assistance - Geotech	61	61	Complete	100.0%		
32409_5795	Modeling	300	300	Complete	100.0%		
32411_5767	SOP Program	1,957	1,957	Complete	100.0%		
32645_6036	Watershed Planning	877	877	Complete	100.0%		
32648_6150	Technical Review	794	529	66.6%	66.6%		Dec-20
32658_6169	Land Acquisition/Easement	13,225	12,497	94.5%	94.5%		Jun-14
32691_6372	System Assessment	476	27	5.7%	5.7%		Dec-20
339 North Dorchester Bay		**$227,854**	**$218,375**	**95.8%**	**95.8%**		
10426_7032	North Dorchester Outfall-Design/CA/RI	1,010	40	4.0%	4.0%		Apr-13
32660_6220	Tunnel - Design/ESDC	23,518	23,015	97.9%	97.9%		Aug-12
32661_6244	Tunnel - Construction (Ch30)	147,531	147,396	Complete	99.9%		
32662_6245	Dewatering Pump Station & Sewers-Con	27,286	25,448	93.3%	93.3%		Apr-11
32726_6993	Tunnel & Facilities - CM Services	10,244	8,318	81.2%	81.2%		Apr-12
32732_7012	Pleasure Bay - Construction	3,195	3,195	Complete	100.0%		
32733_7013	Design/ESDC/Facilities	4,888	4,601	94.1%	94.1%		May-12
32744_7103	Tunnel Rescue/Emergency Response	793	793	Complete	100.0%		
32745_7259	Ventilation Building - Construction	5,430	5,353	Complete	98.6%		
32746_7345	Communication Systems	216	216	Complete	100.0%		
32747_4094	No. Dorchester Outfall Dredging-Const	3,742	0	Future	0.0%	Sep-12	
341 Dorchester Bay Sewer Separation (Commercial Point)		**$64,725**	**$59,871**	**92.5%**	**92.5%**		
32650_6154	Design	17,738	15,656	88.3%	88.3%		Jun-14
32665_6248	Construction	46,987	44,215	94.1%	94.1%		Jun-14
346 Cambridge Sewer Separation		**$56,391**	**$28,189**	**50.0%**	**50.0%**		
32654_6161	Design/CS/RI	22,280	12,364	55.5%	55.5%		Jun-16
32672_6255	Construction	34,111	15,825	46.4%	46.4%		Dec-15
355 MWR003 Gate & Siphon		**$4,169**	**$0**	**Future**	**0.0%**		
32722_6952	Design	1,527	0	Future	0.0%	Apr-12	
32723_6953	Construction 1	600	0	Future	0.0%	Sep-13	
32755_7409	Construction 2	2,042	0	Future	0.0%	Aug-14	
359 Reserved Channel Sewer Separation		**$62,323**	**$20,094**	**32.2%**	**32.2%**		
32727_6994	Construction	48,125	12,218	25.4%	25.4%		Dec-15
32734_7014	Design	14,198	7,876	55.5%	55.5%		Jun-16

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
360 Brookline Sewer Separation		**$25,413**	**$8,037**	**31.6%**	**31.6%**		
32736_7076	Design/CS/RI	4,794	3,329	69.4%	69.4%		Jun-13
32737_7077	Construction	20,619	4,708	22.8%	22.8%		Nov-12
542 Carroll Water Treatment Plant		**$427,971**	**$378,178**	**88.4%**	**88.4%**		
53293_5023	Study 1	444	444	Complete	100.0%		
53294_5024	Study 2	2,368	2,368	Complete	100.0%		
53296_5042	EIR / Conceptual Design	5,808	5,808	Complete	100.0%		
53300_5997	Technical Assistance	72	72	Complete	100.0%		
53301_5017	Wachusett WTP - Design/CS/RI	46,606	46,606	Complete	100.0%		
53304_5157	Permit Fees	79	77	97.5%	97.5%		Mar-14
53367_6118	Cryptosporidium Inactivation Study	150	150	Complete	100.0%		
53371_6134	Management Support - Design	1,730	1,730	Complete	100.0%		
53375_6182	AWWARF Study	650	650	Complete	100.0%		
53376_6206	Emerg Discharge Reserv Water Mgmt Study	1,454	1,454	Complete	100.0%		
53377_6207	Wachusett and Cosgrove Intakes - CP1	15,489	15,489	Complete	100.0%		
53378_6208	Construction Management / RI	31,438	31,438	Complete	100.0%		
53390_6365	Cosgrove Disinfection - Phase II	2,169	2,169	Complete	100.0%		
53391_6397	Cosgrove Disinfection - Phase I	150	150	Complete	100.0%		
53392_6401	Distribution Water Consultant	3	3	Complete	100.0%		
53393_6406	Immediate Disinfection - MECO	10	10	Complete	100.0%		
53406_6479	Cosgrove Disinfection Fac. - Underwater	217	217	Complete	100.0%		
53410_6485	Community Chlorine Analyzers	49	49	Complete	100.0%		
53412_5522	Wachusett Aqueduct Interim Rehab. - CP2	23,400	23,400	Complete	100.0%		
53413_6488	Sitework & Storage Tanks - CP3	67,368	67,368	Complete	100.0%		
53414_6489	Treatment Facilities - CP4	145,871	145,871	Complete	100.0%		
53416_6491	Late Sitework - CP6	4,088	4,088	Complete	100.0%		
53418_6494	OCIP	5,107	5,107	Complete	100.0%		
53419_6495	Professional Services	2,752	2,752	Complete	100.0%		
53420_6497	Marlboro MOA	5,859	5,859	Complete	100.0%		
53421_6520	CWTP- MECO	128	128	Complete	100.0%		
53425_6613	Site Security Services	1,264	1,264	Complete	100.0%		
53426_6650	Existing Facilities Modifications - CP7	5,000	0	Future	0.0%	Jul-12	
53427_6670	CSX Crossing	65	65	Complete	100.0%		
53428_6671	Wachusett Algae - Design CS/RI	450	0	Future	0.0%	Jul-14	
53432_6691	Public Health Research	1,703	1,703	Complete	100.0%		
53435_6756	Security Equipment	571	571	Complete	100.0%		
53437_6773	Cosgrove Screens, CP8 - Construction	3,238	3,238	Complete	100.0%		
53443_6815	AWWARF - Evaluation Ozone & UV	302	302	Complete	100.0%		
53445_6827	Fitout / Construction	1,500	548	36.5%	36.5%		
53448_6889	Wachusett Algae - Construction	1,800	0	Future	0.0%	Feb-15	
53450_6923	CWTP Ultraviolet Disinfection-Des/ESDC/R	4,394	1,162	26.4%	26.4%		Apr-15
53451_6924	CWTP Ultraviolet Disinfection-Constr.	29,477	780	2.6%	2.6%		Mar-14
53452_6939	As-needed Technical Assistance #1	491	491	Complete	100.0%		
53453_6951	Existing Fac Modif., CP7 - Design	1,843	636	34.5%	34.5%		
53455_6989	As-needed Technical Assistance	702	702	Complete	100.0%		
53456_7084	Ancillary Modifications - Construct. 1	160	160	Complete	100.0%		
53457_7085	Ancillary Modifications - Construct. 2	6,471	2,203	34.0%	34.0%		Apr-15
53458_7192	Ancillary Modifications - Design 3	299	299	Complete	100.0%		
53459_7208	Ancillary Modifications - Design 4	527	527	Complete	100.0%		
53464_7315	Technical Assistance 5	563	47	8.3%	8.3%		Sep-12
53465_7316	Technical Assistance 6	563	21	3.7%	3.7%		Sep-12
53470_7376	CWTP Storage Tank Roof Drainage Sys.	2,000	0	Future	0.0%	Jan-15	
75530_7406	Technical Assistance 7	563	0	Future	0.0%	Sep-12	
75531_7407	Technical Assistance 8	563	0	Future	0.0%	Sep-12	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
543 Quabbin Water Treatment Plant		**$17,667**	**$10,767**	**60.9%**	**60.9%**		
53363_6043	Quabbin WTP - Design/CA/RI	3,794	3,794	Complete	100.0%		
53380_6210	Permit Fees	12	10	83.3%	83.3%		Dec-13
53381_6211	Utilities	13	13	Complete	100.0%		
53382_6212	Construction	5,071	5,071	Complete	100.0%		
53433_6706	Ware Fire Department - MOA	25	25	Complete	100.0%		
53434_6711	Water Quality Analysis Equipment	49	49	Complete	100.0%		
53439_6775	Quabbin UVWTP - Design/CA/RI	1,791	664	37.1%	37.1%		Oct-14
53440_6776	Quabbin UVWTP - Construction	5,770	0	Future	0.0%	May-12	
53442_6804	Quabbin UVWTP -Study/Pilot	1,142	1,142	Complete	100.0%		
545 Blue Hills Covered Storage		**$40,680**	**$39,970**	**98.3%**	**98.3%**		
53385_6215	Technical Support & Permit Compliance	104	26	25.0%	25.0%		Dec-15
53386_6216	Design / Build	37,661	37,545	Complete	99.7%		
53460_7213	Roadway Resurfacing - Design	59	0	Future	0.0%	Jul-13	
53461_7214	Roadway Resurfacing - Construction	299	0	Future	0.0%	Apr-14	
68025_6139	EIR/Preliminary Design/OR	2,557	2,399	93.8%	93.8%		
550 Spot Pond Storage Facility		**$59,175**	**$5,702**	**9.6%**	**9.6%**		
53400_6455	Environmental Review	233	233	Complete	100.0%		
53402_6457	Design / Build	49,361	0	Future	0.0%	Nov-11	
53447_6868	Easement/Land Acquis/Permits	6,000	5,100	85.0%	85.0%		Dec-14
53462_7233	Owners' Representative	2,892	369	12.8%	12.8%		Jul-15
53463_7314	Early Construction Water Connection	689	0	Future	0.0%	Jul-11	
597 Winsor Station Pipeline		**$26,196**	**$1,347**	**5.1%**	**5.1%**		
60032_6276	Preliminary Permit, Study & Licensing	38	38	Complete	100.0%		
60033_6277	Quabbin Aqueduct TV Inspection	2,682	0	Future	0.0%	Apr-13	
60077_7017	Hatchery Pipeline - Design/ESDC/RI	719	0	Future	0.0%	Jan-12	
60087_7114	Quabbin Aqueduct & WPS Upg. Design/CA/RI	2,320	524	22.6%	22.6%		Aug-15
60088_7115	Winsor Station Rehab & Improvement	8,932	0	Future	0.0%	Apr-13	
60095_7197	Shaft 12 Construction	8,398	0	Future	0.0%	Apr-13	
60096_7198	Shaft 2 Construction	316	0	Future	0.0%	Apr-13	
60101_7212	Winsor Station Chapman Valve Repai	416	416	Complete	100.0%		
60105_7234	Purchase of Sleeve Valves	368	368	Complete	100.0%		
60106_7235	Hatchery Pipeline - Construction	2,006	0	Future	0.0%	Jul-13	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
604 MetroWest Tunnel		**$711,616**	**$669,795**	**94.1%**	**94.1%**		
59794_5043	Study	415	415	Complete	100.0%		
59795_5044	Design/EIR - Tunnel/ESDC	37,939	37,939	Complete	100.0%		
59796_5048	Sudbury Pipe Bridge - Construction	296	296	Complete	100.0%		
59798_6054	West Tunnel Segment - CP1	147,787	147,787	Complete	100.0%		
59799_5284	Construction Managementt/Resident Inspec	39,428	39,428	Complete	100.0%		
59804_5976	Technical Assistance	131	131	Complete	100.0%		
59805_5139	Land Acquisition	6,259	6,259	Complete	100.0%		
59806_5141	Hultman Study	1,864	1,864	Complete	100.0%		
60012_6037	DEP Permit Fees	58	56	96.6%	96.6%		Sep-14
60013_6055	Middle Tunnel Segment - CP2	245,809	245,809	Complete	100.0%		
60014_6056	MHD Salt Sheds - CP5	1,314	1,314	Complete	100.0%		
60015_6059	Shaft 5A - CP3	5,872	5,872	Complete	100.0%		
60017_6063	Local Supply Contingency - Design/CA/RI	859	859	Complete	100.0%		
60018_6067	Community Technical Assistance	297	297	Complete	100.0%		
60020_6117	Professional Services	731	731	Complete	100.0%		
60021_6122	OCIP	26,022	26,022	Complete	100.0%		
60022_6128	Hultman Leak Repair	307	307	Complete	100.0%		
60023_6129	Framingham MOU	2,444	2,444	Complete	100.0%		
60024_6130	Local Supply Contingency - Construction	4,298	4,298	Complete	100.0%		
60025_6131	Local Supply Contingency - Legal/Easemen	9	9	Complete	100.0%		
60026_6140	Hultman Repair Bands	28	28	Complete	100.0%		
60029_6203	Loring Road Storage Tanks - CP-8	41,368	41,368	Complete	100.0%		
60030_6204	Testing & Disinfection - CP7	3,612	3,612	Complete	100.0%		
60031_6205	Upper Hultman Rehab - CP6B	8,785	0	Future	0.0%	Mar-12	
60038_6366	Southboro MOA	255	255	Complete	100.0%		
60039_6367	Weston MOA	1,006	1,006	Complete	100.0%		
60040_6374	East Tunnel Segment - CP3A	55,976	55,976	Complete	100.0%		
60042_6430	Hultman Investigation and Repair	1,604	1,604	Complete	100.0%		
60043_6492	Hultman Repair Bands 98-99	116	116	Complete	100.0%		
60053_6762	Wayland MOA	35	35	Complete	100.0%		
60054_6777	Equipment Prepurchase	198	198	Complete	100.0%		
60058_6856	Hultman Rehab - CP9	3,257	3,257	Complete	100.0%		
60059_6872	Interim Disinfection	1,245	1,245	Complete	100.0%		
60066_6911	Hultman Interconnect - Final Design/CA/I	6,388	4,409	69.0%	69.0%		Sep-14
60072_6950	Valve Chamber Modifications - Design CA/	1,112	0	Future	0.0%	Jul-13	
60073_6975	Lower Hultman Rehab -CP6A	51,814	33,578	64.8%	64.8%		Mar-13
60083_7082	Hultman Interconnect - RI Services	2,500	888	35.5%	35.5%		Sep-14
60085_7105	CP6 Easements	175	26	14.9%	14.9%		Apr-14
60086_7106	CP6A Demolition	57	57	Complete	100.0%		
60109_7283	Valve Chamber & Storage Tank Access Impr	3,000	0	Future	0.0%	Jul-13	
60128_7367	Shaft 5 Electrical Upgrade	1,000	0	Future	0.0%	Jan-19	
60129_7368	Shaft 5A/5 Surface Piping Inspect./Resto	1,500	0	Future	0.0%	Jan-14	
75525_7755	Valve Chamber Modifications - Constructi	4,447	0	Future	0.0%	Jan-15	

	Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
616 Quabbin Transmission System		**$13,589**	**$4,744**	**34.9%**	**34.9%**		
60055_6828	Facilities Inspection	1,005	1,005	Complete	100.0%		
60075_7007	Equipment Pre-purchase	534	534	Complete	100.0%		
60103_7229	Oakdale Phase 1A Electrical - Design	800	322	40.3%	40.3%		Jan-14
60104_7230	Oakdale Phase 1A Electrical - Constructi	2,268	0	Future	0.0%	Jan-12	
60108_7282	Ware River Intake Valve Replacement	1,200	0	Future	0.0%	Jul-14	
60112_7332	CVA Intake Motorized Screens Replacement	500	0	Future	0.0%	Jul-17	
60113_7333	Wachusett Lower Gatehouse Rehab	2,200	0	Future	0.0%	Jul-14	
60135_7378	Rehabilitate Oakdale Turbine	1,000	0	Future	0.0%	May-20	
60136_7379	Geo-Thermal Heat Wachusett Gatehouse	200	0	Future	0.0%	May-19	
60137_7380	Rehab Wach. Gatehouse Chamber 4 Piping	1,000	0	Future	0.0%	Jan-19	
75491_6690	Oakdale Valves - Phase 1 Construction	1,811	1,811	Complete	100.0%		
75496_6831	Oakdale Valves - Phase 1 Study & Design	1,070	1,070	Complete	100.0%		
617 Sudbury/Weston Aqueduct Repairs		**$4,308**	**$660**	**15.3%**	**15.3%**		
60056_6838	Sudbury Aqueduct Inspection	370	370	Complete	100.0%		
60057_6839	Technical Assistance	25	25	Complete	100.0%		
60070_6947	Weston Aqueduct Inspection	150	0	Future	0.0%	Jul-14	
60076_7016	Sudbury Short-Term Repairs	400	0	Future	0.0%	Jul-13	
60110_7317	Sudbury Short-Term Repairs - Phase 2	2,098	0	Future	0.0%	Jul-14	
60130_7369	Ash Street Sluice Gates	1,000	0	Future	0.0%	Jan-15	
75486_6617	Hazardous Material Sudbury Aqueduct	265	265	Complete	100.0%		
618 Northern High NW Tran Sections 70 & 71		**$1,000**	**$0**	**Future**	**0.0%**		
60063_6895	Planning	1,000	0				
621 Watershed Land		**$19,000**	**$13,900**	**73.2%**	**73.2%**		
60081_7069	Land Acquisition	19,000	13,900	73.2%	73.2%		Jun-12
623 Dam Projects		**$5,729**	**$719**	**12.6%**	**12.6%**		
60094_7194	Dam Safety Modificat. & Repairs - Constr	2,243	0	Future	0.0%	Aug-11	
60100_7211	Dam Safety Modificat. & Repairs Design/C	1,535	719	46.8%	46.8%		Jun-14
60118_7346	Oakdale Dam Permits	1	0	Future	0.0%	Jan-12	
60119_7347	Oakdale Dam - Design/ESDC/RI	200	0	Future	0.0%	Jan-14	
60120_7348	Oakdale Dam Removal - Construction	750	0	Future	0.0%		
60131_7370	Goodnough Dike Drainage Improvements	1,000	0	Future	0.0%	Jul-14	
625 Long Term Redundancy		**$355,681**	**$1,260**	**0.4%**	**0.4%**		
60035_6273	Water Transmission Redundancy Plan	1,919	1,260	65.7%	65.7%		Sep-11
60090_7156	Cosgrove Redund PS Des/ESDC/RI	8,719	0	Future	0.0%	Jan-12	
60091_7157	Cosgrove Redundancy PS Construction	43,596	0	Future	0.0%	Aug-13	
60092_7159	Sudbury Aqueduct - Design/CA/RI	48,630	0	Future	0.0%	Jul-14	
60093_7160	Sudbury Aqueduct Slipline - Construction	89,962	0	Future	0.0%	Jul-18	
60107_7291	MWWST/Sudbury Aqueduct Connection Const	148,581	0	Future	0.0%	Jul-17	
60122_7352	Sudbury Aqueduct - MEPA Review	5,316	0	Future	0.0%	Mar-12	
60123_7353	Chestnut Hill Final Connection - Constru	3,700	0	Future	0.0%	Jul-17	
60126_7356	Tops of Shafts Rehab - Design/CA/RI	1,052	0	Future	0.0%	Jan-18	
60127_7357	Tops of Shafts Rehab - Construction	4,206	0	Future	0.0%	Jan-20	

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677 Valve Replacement		**$22,104**	**$9,338**	**42.2%**	**42.2%**		
67559_5126	Construction 1	718	718	Complete	100.0%		
67560_5124	Technical Assistance	113	113	Complete	100.0%		
68005_6088	Equipment Purchase	4,038	1,112	27.5%	27.5%		Jun-18
68012_6105	Construction 2	1,357	1,357	Complete	100.0%		
68039_6278	Construction 3	1,338	1,338	Complete	100.0%		
68079_6345	Construction 4	1,540	1,540	Complete	100.0%		
68080_6346	Construction 5	1,389	1,389	Complete	100.0%		
68126_6435	Construction 6	1,572	1,572	Complete	100.0%		
68127_6436	Construction 7	2,990	194	6.5%	6.5%		Apr-13
68239_6859	Permits	1	1	Complete	100.0%		
68240_6860	Easements	6	6	Complete	100.0%		
68300_7195	Construction 8	2,935	0	Future	0.0%	Jan-17	
68307_7236	Construction 9	2,935	0	Future	0.0%	Dec-19	
68330_7417	Phase 8 Design/CA/RI	587	0	Future	0.0%	Jan-16	
68331_7418	Phase 9 Design/CA/RI	587	0	Future	0.0%	Dec-17	
692 NHS - Section 27 Improvements		**$3,475**	**$124**	**3.6%**	**3.6%**		
67769_6333	Section 27 - Construction	3,351	27	0.8%	0.8%		Nov-19
68192_6589	Easements	23	0	Future	0.0%	Apr-16	
68211_6712	Technical Assistance	64	60	93.8%	93.8%		Mar-18
68229_6809	Surveying	37	37	Complete	100.0%		
693 NHS - Revere & Malden Pipeline Improvement		**$35,288**	**$26,833**	**76.0%**	**76.0%**		
67780_5185	Revere & Malden - Design/CS/RI	1,786	1,786	Complete	100.0%		
67781_5186	Revere Beach - Construction	6,314	6,314	Complete	100.0%		
67782_5176	Malden Section 53 - Construction	10,026	10,026	Complete	100.0%		
67784_5177	Revere Section 53 - Construction	2,938	2,938	Complete	100.0%		
67785_5191	Control Valves - Construction	949	949	Complete	100.0%		
67786_5179	DI Pipeline Cleaning & Lining - Construc	158	158	Complete	100.0%		
67787_5178	Winthrop Cleaning & Lining - Constructio	575	575	Complete	100.0%		
67790_6335	Sections 68 & 53A - Construction	5,805	0	Future	0.0%	Jul-17	
67791_5986	Technical Assistance	246	246	Complete	100.0%		
67792_5238	Linden Square - Construction	1,849	1,849	Complete	100.0%		
67793_5239	Linden Square - Construction Admin.	125	125	Complete	100.0%		
67996_6033	Road Restoration - Design/CA/RI	77	77	Complete	100.0%		
67997_6034	Road Restoration - Construction	1,714	1,714	Complete	100.0%		
68020_6113	Malden Section 53 - Landscaping	20	20	Complete	100.0%		
68033_6183	Sidewalk Restoration	54	54	Complete	100.0%		
68258_6958	Shaft 9A-D Extension - Construction	1,200	0	Future	0.0%	Mar-19	
68265_6978	Easements	30	0	Future	0.0%		
68280_7049	Permits	5	0	Future	0.0%		
75526_7402	Sections 68&53A Design/CA/RI	1,162	0	Future	0.0%	Jul-15	
75527_7403	Shaft 9A-D Design/CA/RI	253	0	Future	0.0%	Mar-17	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
702 New Connect Mains-Shaft 7 to WASM 3		**$32,639**	**$9,839**	**30.1%**	**30.1%**		
67846_5163	Routing Study	397	397	Complete	100.0%		
68035_6199	Watertown MOU	167	167	Complete	100.0%		
68110_6383	CP1- Design/CA/RI	3,533	3,533	Complete	100.0%		
68111_6384	Des/CA/RI DP2/4 Meter 120	1,278	1,278	Complete	100.0%		
68112_6385	CP3 - Final Design/CA/RI	1,534	0	Future	0.0%	Oct-14	
68114_6387	CP1 A&B - Easements	17	17	Complete	100.0%		
68115_6388	CP3 - Easements	40	0	Future	0.0%	Jan-16	
68117_6390	CP5 - Easements	29	22	75.9%	75.9%		Jan-11
68119_6392	CP3 - South Segment	7,031	0	Future	0.0%	Oct-16	
68121_6394	CP5 - Northeast Segment	5,453	4,426	81.2%	81.2%		Nov-11
68174_6548	CP2- Clean&Line Sections 59&60 - Constr	4,725	0	Future	0.0%	Jan-18	
68175_6547	CP2 -Easements	33	0	Future	0.0%	May-17	
68255_6955	Replacement of Section 25 - Design/CA/RI	510	0	Future	0.0%	Apr-16	
68256_6956	Replacement of Section 25 - Construction	2,548	0	Future	0.0%	Apr-18	
68286_7086	Section 59 & 60 - Design/CA/RI	945	0	Future	0.0%	Jan-16	
68315_7284	Section 75 Extension	4,400	0	Future	0.0%	Oct-15	
704 Rehabilitation of Other Pump Stations		**$55,144**	**$30,058**	**54.5%**	**54.5%**		
67885_5153	Preliminary Design	351	351	Complete	100.0%		
68017_6110	Design/CS/RI	2,546	2,546	Complete	100.0%		
68072_6304	Construction II & C	639	639	Complete	100.0%		
68102_6375	Rehab of 5 Pump Stations	21,848	21,848	Complete	100.0%		
68179_6557	Legal	6	6	Complete	100.0%		
68204_6676	Proprietary Equipment Purchases	158	158	Complete	100.0%		
68266_6980	Design 2 CS/RI	4,596	4,510	98.1%	98.1%		Jun-11
75522_7383	Pump Station Rehabilitation	25,000	0	Future	0.0%	Jul-19	
708 Northern Extra High Service New Pipelines		**$7,479**	**$3,632**	**48.6%**	**48.6%**		
67970_5242	Design/CA/RI	588	588	Complete	100.0%		
67972_6340	Construction	3,032	3,032	Complete	100.0%		
68162_6522	Sections 34 & 45 - Construction	3,154	0	Future	0.0%	Jul-16	
68176_6554	Public Participation	5	0	Future	0.0%		
68177_6555	Legal	5	0	Future	0.0%		
68210_6707	Technical Assistance	54	8	14.8%	14.8%		Jan-17
68215_6749	PLC Equipment Purchases	4	4	Complete	100.0%		
68281_7050	Permits	5	0	Future	0.0%		
75528_7404	Section 34 & 45 Design/CA/RI	631	0	Future	0.0%	Jul-14	
712 Cathodic Protection Of Distrubution Mains		**$1,527**	**$141**	**9.2%**	**9.2%**		
68002_6058	Planning Phase I	108	108	Complete	100.0%		
68129_6438	Test Station Installation 2	462	0	Future	0.0%	Jun-19	
68130_6439	Test Station Installation 3	462	0	Future	0.0%	Jun-20	
68131_6440	Test Station Installation 4	462	0	Future	0.0%	Jun-21	
68216_6751	Technical Assistance	33	33	Complete	100.0%		

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713 Spot Pond Supply Mains Rehabilitation		**$66,187**	**$60,980**	**92.1%**	**92.1%**		
60114_7334	Sec 4 Webster Ave Bridge Pipe Rehab Des	500	0	Future	0.0%	Jan-13	
60115_7335	Sec 4 Webster Ave Bridge Pipe Rehab Con	1,500	0	Future	0.0%	Jan-14	
60116_7336	Section 50 Pipe Rehab - Design/ESDC/RI	500	0	Future	0.0%	Jul-13	
60117_7337	Section 50 Pipe Rehab - Construction	1,500	0	Future	0.0%	Jul-15	
68038_6223	Preliminary Design & Design/CA/RI	10,869	10,869	Complete	100.0%		
68059_6316	Easements & Paving - CP1	143	143	Complete	100.0%		
68060_6317	North (Medford/Melrose)	6,597	6,597	Complete	100.0%		
68106_6379	Easements - CP2	50	50	Complete	100.0%		
68107_6380	Easements - CP3	80	80	Complete	100.0%		
68108_6381	Middle (Medford/Somerville)	22,177	22,177	Complete	100.0%		
68109_6382	South (Cambridge/Boston)	17,590	17,590	Complete	100.0%		
68150_6475	Early Valve Replacement Contract	2,387	2,387	Complete	100.0%		
68151_6476	Easements - CP4	1	1	Complete	100.0%		
68153_6483	Early Valve Equipment Purchase	161	161	Complete	100.0%		
68209_6697	Construction 4 - Bridge Trusses	1,207	0	Future	0.0%	Apr-17	
68274_7003	CA/RI - CP3	925	925	Complete	100.0%		
719 Chestnut Hill Connecting Mains		**$29,906**	**$17,487**	**58.5%**	**58.5%**		
68026_6141	Pump Stn. Potable Connect.-Design/CA/RI	1,360	1,360	Complete	100.0%		
68051_6301	Preliminary Engineering	457	457	Complete	100.0%		
68052_6302	Shaft 7 Building - Design & Construct.	5,380	0	Future	0.0%	Jan-22	
68053_6303	Easements	81	81	Complete	100.0%		
68155_6501	Emergency Pump Relocation - Const.	6,502	6,502	Complete	100.0%		
68157_6503	Emergency Pump Relocation - Design/CA/RI	1,121	1,121	Complete	100.0%		
68180_6558	Boston Paving	133	133	Complete	100.0%		
68182_6560	Legal	1	1	Complete	100.0%		
68199_6623	BECo Emergency Pump Construction	431	431	Complete	100.0%		
68203_6651	Pump Station Potable Connection - Const	7,132	7,132	Complete	100.0%		
68230_6814	Equipment Pre-purchase	154	154	Complete	100.0%		
68231_6820	Demolition of Garages	72	72	Complete	100.0%		
68244_6869	Utilities	44	44	Complete	100.0%		
68267_6982	CHEPS Emergency Generation - Const.	4,432	0	Future	0.0%	Jul-16	
68268_6995	CHEPS Emerg Gener. - Final Design/CA/RI	1,108	0	Future	0.0%	Jul-14	
75521_7382	CH Underground Pump Stn. Electrcl Rehab	1,500	0	Future	0.0%	Jul-14	
721 South Spine Distribution Mains		**$72,509**	**$32,755**	**45.2%**	**45.2%**		
68083_6290	Sections 21, 43 & 22 - Design	7,776	6,403	82.3%	82.3%		May-13
68084_6291	Sections 21, 43 & 22 - Easements	134	103	76.9%	76.9%		May-12
68085_6292	Section 22 South - Construction	4,993	4,993	Complete	100.0%		
68089_6296	Section 20 & 58 - Design	2,739	0	Future	0.0%	Jun-18	
68090_6297	Section 20 & 58 - Easements	35	0	Future	0.0%	Sep-16	
68091_6298	Section 20 & 58 - Construction	12,891	0	Future	0.0%	Sep-20	
68122_6396	Adams Street Bridge	154	154	Complete	100.0%		
68193_6601	Southern High Public Participation	15	15	Complete	100.0%		
68194_6602	Southern High Extension Study	242	242	Complete	100.0%		
68228_6787	Boston Paving	3	3	Complete	100.0%		
68235_6844	Section 22 North - Construction	15,733	0	Future	0.0%		
68236_6845	Section 107 Phase 1 - Construction	6,184	6,184	Complete	100.0%		
68237_6846	Legal	5	1	20.0%	20.0%		
68238_6847	Technical Assistance	28	28	Complete	100.0%		
68247_6885	Contract 1A - Construction	2,859	2,859	Complete	100.0%		
68290_7099	Section 107 Phase 2 - Construction	15,083	11,634	77.1%	77.1%		May-12
68291_7104	Milton Pressure Regulator Valve	135	135	Complete	100.0%		
68298_7120	Section 22 North - Design/ESDC	2,500	0	Future	0.0%	Jul-18	
68299_7155	Section 22 North - Facility Plan/EIR	1,000	0	Future	0.0%	Jul-15	

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722 NIH Redundancy & Storage		**$82,491**	**$1,470**	**1.8%**	**1.8%**		
53454_6954	Concept Plan	827	797	96.4%	96.4%		
68093_6306	Easements	300	0	Future	0.0%	Jul-12	
68252_6906	Section 89/29 Redundancy - Design	4,644	7	0.2%	0.2%		Sep-17
68276_7026	Purchase Mobile Pump Unit	291	291	Complete	100.0%		
68277_7045	Short Term Improvements - Design/CA/RI	825	375	45.5%	45.5%		Sep-13
68278_7047	Permits	5	0	Future	0.0%		
68279_7048	Technical Assistance	18	0	Future	0.0%		
68282_7066	Sec 89 & 29 Redundancy Const. Phase 1	20,376	0	Future	0.0%	Nov-13	
68283_7067	Sec 89 & 29 Redundancy Const. Phase 2	20,736	0	Future	0.0%	Dec-13	
68284_7068	NIH Storage - Construction	16,541	0	Future	0.0%	Jan-19	
68294_7116	Section 89 & 29 Rehab - Design	1,397	0	Future	0.0%	Jul-14	
68295_7117	Section 89 & 29 Rehab - Construction	6,982	0	Future	0.0%	Jul-16	
68309_7260	Gillis Pump Station Improvements	3,770	0	Future	0.0%	May-12	
68310_7261	Reading/Stoneham Interconnections	2,423	0	Future	0.0%	Aug-11	
68316_7311	NIH Storage - Design	3,356	0	Future	0.0%	Jan-17	
723 Northern Low Service Rehabilitation Section 8		**$21,698**	**$2,321**	**10.7%**	**10.7%**		
68094_6321	Easements	80	0	Future	0.0%	Jul-15	
68095_6322	Section 8 - Construction	12,821	0	Future	0.0%	Jul-20	
68262_6962	Rehab Sects. 37 & 46 Chelsea/EB Constr.	3,200	0	Future	0.0%	Jul-17	
68263_6977	Permits	299	285	95.3%	95.3%		Jul-18
68264_6979	Technical Assistance	44	44	Complete	100.0%		
68275_7021	Section 97A - Construction	1,992	1,992	Complete	100.0%		
68287_7092	Section 8 - Design/CA/RI	2,564	0	Future	0.0%	Jul-17	
75529_7405	Rehab Sec 37&46 Chel/BosDes/CA/RI	697	0	Future	0.0%	Jul-15	
727 Southern Extra High Redundancy & Storage		**$101,849**	**$6,664**	**6.5%**	**6.5%**		
53397_6452	Concept Plan/Prelim. Design/Env. Review	840	527	62.7%	62.7%		Feb-12
53398_6453	Redundancy/Storage Ph 1 Final Des/CA/Rl	5,790	0	Future	0.0%	Jul-14	
53399_6454	Redundancy/Storage Phase 1 - Construct.	28,948	0	Future	0.0%	Jul-16	
68135_6444	Redundancy/Storage Ph 2 Final Des/CA/Rl	4,440	0	Future	0.0%	Jul-17	
68136_6445	University Avenue Water Main	6,137	6,137	Complete	100.0%		
68292_7112	Sections 77 & 88 Rehab - Design	1,240	0	Future	0.0%	Jul-24	
68293_7113	Sections 77 & 88 Rehab - Construction	4,960	0	Future	0.0%	Jul-26	
68302_7223	Short Term Improvements - Design/CA/RI	200	0	Future	0.0%	Jul-13	
68303_7224	Short Term Improvements - Construction	750	0	Future	0.0%	Jul-15	
68305_7226	Easements	300	0	Future	0.0%	Aug-08	
68306_7227	Permits	5	0	Future	0.0%	Aug-08	
68308_7245	Redundancy/Storage Phase 2 Construct.	22,202	0	Future	0.0%	Jul-19	
68311_7262	Phase 4, 2nd Tank - Construction	9,484	0	Future	0.0%	Jul-24	
68312_7263	Phase 4, 2nd Tank - Design	1,897	0	Future	0.0%	Jul-22	
68313_7264	Phase 3, Pump Station - Construction	11,724	0	Future	0.0%	Jul-22	
68314_7265	Phase 3, Pump Station - Design	2,931	0	Future	0.0%	Jun-20	

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730 Weston Aqueduct Supply Mains		**$276,166**	**$64,378**	**23.3%**	**23.3%**		
59774_5034	Newton Water Mains - Construction	669	669	Complete	100.0%		
59776_5975	Technical Assistance	186	186	Complete	100.0%		
67865_5147	WASM 4 - Design/CA/RI	6,013	6,013	Complete	100.0%		
68027_6142	WASMs 1 & 2 - Design/CA/RI	5,066	5,066	Complete	100.0%		
68030_6174	Appraisal / Easement	753	293	38.9%	38.9%		Oct-18
68031_6175	WASM 1, 2 & 4 - Auburndale	4,001	4,001	Complete	100.0%		
68032_6176	Meter 103 - Construction	61	61	Complete	100.0%		
68041_6280	WASMs 1 & 2 - Newton	9,219	9,219	Complete	100.0%		
68042_6281	WASMs 1 & 2 - Boston	7,039	7,039	Complete	100.0%		
68069_6312	WASMs 2 & 4 - Newton	8,282	8,282	Complete	100.0%		
68070_6313	WASM 4 - Allston & Western Ave. Sewer	17,331	17,331	Complete	100.0%		
68166_6539	WASM 3 - MEPA/Design/CA/RI	31,524	0	Future	0.0%	Jul-12	
68167_6540	Sect 36/WS/Waltham Conn. - Design/CA/RI	2,988	178	6.0%	6.0%		Dec-16
68170_6543	WASM 3 Waltham - CP2	62,582	0	Future	0.0%	Jul-15	
68171_6544	WASM 3 Belmont - CP3	77,338	0	Future	0.0%	Oct-17	
68172_6545	WASM 3 Arlington - CP4	15,889	0	Future	0.0%	Jan-20	
68173_6546	Section 28, Arlington - CP1	2,304	2,304	Complete	100.0%		
68245_6870	Survey	210	89	42.4%	42.4%		Oct-18
68269_6996	Arlington Pipe Work	401	401	Complete	100.0%		
68272_7000	WASM3 Section 12 Replacement - Constr.	2,114	2,114	Complete	100.0%		
68273_7001	WASM3 Section 12 Replacement - Design	266	266	Complete	100.0%		
68285_7083	Section 28 - Design/CA/RI	867	867	Complete	100.0%		
68301_7222	Sect 36/Watertown/Waltham Conn. Constr.	21,063	0	Future	0.0%	Jan-13	
731 Lynnfield Pipeline		**$5,016**	**$984**	**19.6%**	**19.6%**		
68187_6584	Construction Phase 2	3,785	362	9.6%	9.6%		Jan-13
68196_6619	Easement, Legal, License & Permits	200	3	1.5%	1.5%		Jul-11
68251_6905	Design/CA/RI	759	347	45.7%	45.7%		Jul-13
68289_7096	Temporary Interconnect - Phase 1 Constr	272	272	Complete	100.0%		
735 Section 80 Rehabilitation		**$8,928**	**$0**	**Future**	**0.0%**		
68249_6891	Section 80 - Construction	7,142	0	Future	0.0%	Jan-19	
68250_6892	Section 80 - Design/CS/RI	1,786	0	Future	0.0%	Jan-17	
753 Central Monitoring System		**$16,992**	**$15,705**	**92.4%**	**92.4%**		
75300_5025	Study	190	190	Complete	100.0%		
75301_5026	Design	2,651	2,651	Complete	100.0%		
75302_5027	Equipment Prepurchase	2,162	2,162	Complete	100.0%		
75303_5028	SCADA Implementation	2,101	1,814	86.3%	86.3%		Mar-12
75304_5160	Communications Structures	161	161	Complete	100.0%		
75305_5173	Construction & Start-up Services	352	352	Complete	100.0%		
75306_5171	Construction 1	209	209	Complete	100.0%		
75308_5849	Operations Center - Construction	1,499	1,499	Complete	100.0%		
75309_5987	Technical Assistance	386	386	Complete	100.0%		
75474_6125	Microwave Equipment	782	782	Complete	100.0%		
75488_6653	Microwave Comm System-Wide Backbone	1,694	1,694	Complete	100.0%		
75489_6654	Monitoring & Control - Study & Design	1,808	1,808	Complete	100.0%		
75494_6816	Microwave Communic for Waterworks Fac.	1,957	1,957	Complete	100.0%		
75495_6825	Ludlow Communications	41	41	Complete	100.0%		
75512_7338	Winsor Dam High Line Replacement	1,000	0	Future	0.0%	Mar-12	

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
763 Distribution Systems Facilities Mapping		**$1,799**	**$1,036**	**57.6%**	**57.6%**		
75458_5162	Planning and Design	936	936	Complete	100.0%		
75476_6152	Data Purchase	100	100	Complete	100.0%		
75484_6525	Records Development	763	0	Future	0.0%	Jul-12	
765 Local Water Pipeline Improvement Loan Program		**$0**	**$104,944**				
75485_6608	Community Loans	251,797	196,808	78.2%	78.2%		Jun-13
75493_6759	Community Repayment	-251,797	-98,010	38.9%	38.9%		Jun-23
75513_7339	Local Water System Assistance Loans	200,000	6,146	3.1%	3.1%		Jun-20
75514_7340	Local Water System Assistance Repayment	-200,000	0	Future	0.0%	Aug-11	
75515_7350	CVA Loans	10,000	0	Future	0.0%	Nov-10	
75516_7351	CVA Repayments	-10,000	0	Future	0.0%	Nov-11	
766 Waterworks Facility Asset Protection		**$17,174**	**$238**	**1.4%**	**1.4%**		
75490_6689	Meter Vault Manhole Retrofits	1,844	0	Future	0.0%	Sep-15	
75497_6832	Walnut Hill Tank - Design	300	0	Future	0.0%	Jan-13	
75498_6833	Walnut Hill Tank - Construction	1,000	0	Future	0.0%	Jul-14	
75501_6910	Waltham Bridge Pipe Replacement	238	238	Complete	100.0%		
75502_6920	Permits and Legal Fees	15	0	Future	0.0%	Mar-04	
75506_7023	Cosgrove Turbine Isolation - Design	480	0	Future	0.0%	Jul-13	
75509_7064	Cosgrove Valve Seat Replacement - Constr	500	0	Future	0.0%	Jul-14	
75510_7065	Cosgrove Valve Seat Replacement - Design	100	0	Future	0.0%	Jul-13	
75511_7228	Transformer at Cosgrove Intake Building	298	0	Future	0.0%	Jun-11	
75520_7381	Shaft 9 Rehab	2,000	0	Future	0.0%	Jul-13	
75523_7384	Elevated Water Storage Tank Repainting	5,000	0	Future	0.0%	Jul-13	
75524_7385	Covered Storage Tank Rehab	5,000	0	Future	0.0%	Jul-19	
75535_7425	Electrical Distr Upgr Southboro	400	0	Future	0.0%	Jul-13	
881 Equipment Purchase		**$16,237**	**$9,148**	**56.3%**	**56.3%**		
92374_6760	Security Equipment & Installation	7,112	5,367	75.5%	75.5%		Jun-13
92379_6808	ICP-MS Lab Testing Equipment	117	117	Complete	100.0%		
92411_7239	High Lift Fork Loader (Lull)	121	121	Complete	100.0%		
92416_7246	Ford Ramp Truck	122	122	Complete	100.0%		
92417_7247	Street Sweeper	182	182	Complete	100.0%		
98454_7306	Prior Vehicle Purchases	2,415	2,415	Complete	100.0%		
98455_7307	FY09-13 Vehicle Purchases	1,967	702	35.7%	35.7%		Jun-13
98456_7308	FY14-18 Vehicle Purchases	3,080	0	Future	0.0%	Jul-13	
98457_7309	FY09-13 Major Lab Instrumentation	1,000	0	Future	0.0%	Mar-12	
98467_7325	Front-End Loader	121	121	Complete	100.0%		
925 Technical Assistance		**$1,200**	**$0**	**Future**	**0.0%**		
77000_LAND	Land Appraisal	150	0	Future	0.0%		
80000_SURV	Surveying	150	0	Future	0.0%		
90000_HAZM	Hazardous Material	900	0	Future	0.0%		

	Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
931 Business Systems Plan		**$39,294**	**$24,660**	**62.8%**	**62.8%**		
92322_6015	Network - Phase I	142	142	Complete	100.0%		
92338_6014	Phase I (FY95-97)	1,146	1,146	Complete	100.0%		
92339_6013	Hardware - Phase I	441	441	Complete	100.0%		
92343_6177	Phase II (FY97-10)	4,174	4,081	97.8%	97.8%		Jun-13
92347_6362	Phase III (FY99-01)	10,747	10,748	Complete	100.0%		
92352_6508	Phase IV / Year 2000 Improvements	3,018	3,018	Complete	100.0%		
92353_6509	Phase V (FY01-10)	1,940	1,940	Complete	100.0%		
92380_6865	Phase VI (FY04-09)	2,037	2,037	Complete	100.0%		
92404_7200	Computer Center & OCC Infrastructure	1,500	0	Future	0.0%	Jul-14	
92405_7201	Net 2020 (FY10-12)	1,500	536	35.7%	35.7%		Jun-14
92406_7203	SAN II (FY12)	600	0	Future	0.0%	Jul-12	
92407_7204	SAN III (FY15)	600	0	Future	0.0%	Jul-14	
92408_7205	Telecommunications (FY14-15)	750	0	Future	0.0%	Jul-13	
92410_7238	Laboratory Instrument Data Management	250	0	Future	0.0%	Oct-12	
92412_7240	Corporate Server Infra&Document Distrib	1,000	0	Future	0.0%	Jun-12	
92418_7249	DITP/OMS	142	0	Future	0.0%	Jul-12	
92419_7250	GIS/TV Inspection	31	31	Complete	100.0%		
92420_7251	GIS Upgrades & Enhancements	314	0	Future	0.0%	Jul-12	
92422_7253	MIS Strategic Planning	500	0	Future	0.0%	Oct-12	
92423_7254	MIS Licensing	24	14	58.3%	58.3%		
92424_7255	Lawson Conversion	187	187	Complete	100.0%		
92425_7256	Cyber Security	99	89	89.9%	89.9%		Sep-11
92426_7257	Original SAN	252	249	Complete	98.8%		
92434_7285	Cyber Security	1,200	0	Future	0.0%	Sep-11	
92435_7286	Lawson System Upgrade	1,550	0	Future	0.0%	Sep-13	
92436_7287	Laboratory Info. Mangmnt System (LIMS)	600	0	Future	0.0%	Sep-14	
92437_7288	Pre-Treatment Infor Mangmnt Sys (PIMS)	600	0	Future	0.0%	Sep-14	
92438_7289	Document Cntrl Sys Software App Replac	750	0	Future	0.0%	Oct-12	
92469_7386	NET 2020 DITP/Southborough	2,100	0	Future	0.0%	Jul-12	
98472_7408	IT Continuity	1,100	0	Future	0.0%	Sep-12	
933 Capital Maintenance Planning		**$10,888**	**$6,296**	**57.8%**	**57.8%**		
19175_6421	Inventory & Evaluation - 1 & 2	2,579	2,579	Complete	100.0%		
92387_6976	As-Needed Design Contract 1	314	313	Complete	99.7%		
92393_6988	As Needed Design Contract 2	318	318	Complete	100.0%		
92399_7070	As-Needed Design Contract 5	558	558	Complete	100.0%		
92402_7101	As-Needed Design Contract 3	579	579	Complete	100.0%		
92403_7102	As-Needed Design Contract 4	344	344	Complete	100.0%		
92413_7242	As-Needed Design Contract 6	704	704	Complete	100.0%		
92414_7243	As-Needed Design Contract 7	1,077	544	50.5%	50.5%		Jan-12
92415_7244	As-Needed Design Contract 8	1,215	357	29.4%	29.4%		Feb-12
98470_7390	As-Needed Design Contract 9	1,600	0	Future	0.0%	Jul-11	
98471_7391	As-Needed Design Contract 10	1,600	0	Future	0.0%	Aug-11	
934 MWRA Facilities Management		**$2,151**	**$371**	**17.2%**	**17.2%**		
92389_6983	Design/Engineering Services	150	0	Future	0.0%	Jan-12	
92390_6984	Facilities Construction	2,001	371	18.5%	18.5%		Apr-13

Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY11	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
935 Alternative Energy Initiatives		**$27,055**	**$13,881**	**51.3%**	**51.3%**		
19285_6974	Deer Island Solar	904	904	Complete	100.0%		
92428_6974C	DI Wind	4,063	4,063	Complete	100.0%		
92430_7270	Future DI Wind Construction	4,411	0	Future	0.0%	Sep-13	
92432_6974E	Loring Road Hydro - Design	2	2	Complete	100.0%		
92439_7274	Technical Assistance - Solar	385	143	37.1%	37.1%		May-12
92440_6974B	Energy Advisory Consultant Services	59	46	78.0%	78.0%		Jun-09
92441_OP67	Wind Power Feasibility Study	386	346	89.6%	89.6%		
92442_7292	DI Photovoltaic System Phase 1 - Const.	1,119	1,119	Complete	100.0%		
92443_7274A	Technical Assistance-Energy Efficiency	500	26	5.2%	5.2%		May-12
92444_7274B	Technical Assistance - Solar II	380	90	23.7%	23.7%		May-12
92445_7274C	Tech Assistance - Emerging Technology	200	4	2.0%	2.0%		May-12
92446_7274D	Technical Assistance - Wind	750	259	34.5%	34.5%		May-12
98448_7300	Wachusett Hydro - Design & Construction	1,383	0	Future	0.0%	Jul-15	
98450_7302	Charlestown Wind - Construction	5,094	2,585	50.7%	50.7%		Aug-11
98452_7304	John J. Carroll WTP Solar-Construction	2,367	2,426	Complete	102.5%		
98459_6974F	Loring Road Hydro - Construction	1,882	1,857	Complete	98.7%		
98463_7321	DI Wind Phase II - Construction	2,500	11	0.4%	0.4%		May-14
98465_7323	Fish Hatch Pipeline Hydro	670	0	Future	0.0%	Jul-13	

APPENDIX 7

Municipality and Project Reference by Municipality

APPENDIX 7

PROJECT/MUNICIPALITY(s)

Project	Number/ Project	Community(s) Served
104	Braintree-Weymouth Relief Facilities	Braintree, Hingham, Holbrook, Randolph, Weymouth, Quincy
128	Infiltration/Inflow Local Financial Assistance Program	All Wastewater Communities
130	Siphon Structure Rehabiliation	All Wastewater Communities
131	Upper Neponset Valley Sewer System	Dedham, Boston, Brookline, Newton
132	Corrosion and Odor Control Study	All Wastewater Communities
136	West Roxbury Tunnel	Ashland, Framingham, Natick, Wellesley, Dedham, Boston, Brookline, Newton, Nedham,
137	Wastewater Central Monitoring	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
145	Interception & Pumping Facility Asset Protection	All Wastewater Communities
146	D.I. Cross Harbor Tunnel	All Wastewater Communities
147	Randolph Trunk Sewer Relief	Braintree & Randolph
206	Deer Island Treatment Plant Asset Protection	All Wastewater Communities
210	Clinton Wastewater Treatment Plant	Clinton
211	Laboratory Services	All MWRA Communities
271	Residuals Asset Protection	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
346	Cambridge CAM002-004 Sewer Separation	Cambridge
347	East Boston Branch Sewer Relief	Boston, Chelsea, Everett
355	MWR003 Gate and Siphon	Boston, Cambridge
356	Fort Point Channel Sewer Separation	Boston
357	Charles River CSO Controls	Boston, Brookline, Cambridge
358	Morrisey Boulevard Drain	Boston
359	Reserved Channel Sewer Separation	Boston
360	Brookline Sewer Separation	Brookline
361	Bulfinch Triangle Sewer Separation	Boston
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
545	Blue Hills Covered Storage	Boston, Canton, Milton, Norwood, Quincy, Brookline, Dedham, Westwood, Stoughton
550	Low Service Storage Near Spot Pond	Cambridge, Charlestown, Chelsea, East Boston, Everett, Malden, Somerville
597	Winsor Dam Hydroelectric	All Water Communities
604	MetroWest Tunnel	All Water Communities (except South Hadley Fire District #1, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
616	Quabbin Transmission System	Chicopee, South Hadley, Wilbraham
617	Sudbury/Weston Aqueduct Repairs	All Water Communities (except South Hadley Fire District #1, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
618	Northern High NW Trans Section 70-71	Stoneham, Wakefield, Melrose, Lynnfield, Saugus, Lynn, Peabody, Marblehead, Swampscott, Nahant
621	Watershed Land	All Water Communities
623	Dam Projects	All Water Communities
625	Long Term Redundancy	All Water Customers (except Chicopee, Wilbraham, South Hadley Fire District #1, Worcester, Clinton, and Leominster)
677	Valve Replacement	All Water Communities
692	Northern High Service Section 27 Improvements	Lynn, Marblehead, Nahant, Swampscott
693	Northern High Service Pipe Improvements - Revere/Malden	Boston, Lynn, Malden, Marblehead, Nahant, Peabody, Reading, 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
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
719	Chestnut Hill Connecting Mains	Boston, Brookline, Newton
721	Southern Spine Distribution Mains	Boston, Brookline, Canton, Milton, Norwood, Quincy, Dedham, Westwood, Stoughton

APPENDIX 7

PROJECT/MUNICIPALITY(s)

Project	Number/ Project	Community(s) Served
722	NIH Redundancy & Covered Storage	Reading, Stoneham, Wakefield, Winchester, Woburn
723	Northern Low Service Rehab. - Sections 8	Chelsea, Boston, Everett
727	SEH Redundancy & Storage	Boston, Brookline, Canton, Milton, Norwood, Dedham, Westwood, Stoughton
730	Weston Aqueduct Supply Mains	Weston, Newton, Boston, Watertown, Cambridge, Waltham, Belmont, Arlington, Somerville
731	Lynnfield Pipeline	Lynnfield, Saugus
735	Section 80 Rehabilitation	Wellesley and Needham
753	Central Monitoring System	All Water Communities
763	Distribution Systems Facilities Mapping	All Water Communities
765	Local Water Pipeline Imp. 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
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
935	Alternative Energy Initiatives	All MWRA Customers

APPENDIX 8

Municipality and Project Reference by Project

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality
Project Number/Project

All MWRA COMMUNITIES

211	Laboratory Services
881	Equipment Purchase
925	Technical Assistance
931	Business Systems Plan
932	Environmental Remediation
933	Capital Maintenance Planning/Development
934	MWRA Facilities Management
935	Alternatve Energy Initiatives

ALL WASTEWATER COMMUNITIES

128	Infiltration/Inflow Local Financial Assistance Program
130	Siphon Structure Rehabiliation
132	Corrosion & Odor Control Study
137	Wastewater Central Monitoring
141	Wastewater Process Optimization
142	Wastewater Metering System Equipment Replacement
145	Interception & Pumping Facilities Asset Protection
146	D.I. Cross Harbor Tunnel
147	Randolph Trunk Sewer Relief
206	Deer Island Treatment Plant Asset Protection
271	Residuals Asset Protection

ALL WATER COMMUNITIES

597	Winsor Dam Hydroelectric
621	Watershed Land
623	Dam Projects
625	Long-Term Redundancy
677	Valve Replacement
712	Cathodic Protection of Distribution Mains
753	Central Monitoring System
763	Distribution Systems Facilities Mapping
765	Local Water Pipeline Improvement Loan Program
766	Watertown Facility Asset Protection

ALL WATER COMMUNITIES (except South Hadley, Chicopee, Wibraham, Worcester, Clinton, and Leominster)

542	Walnut Hill Treatment Plant
544	Norumbega Covered Storage
604	MetroWest Tunnel

Arlington

702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
708	Northern Extra High Service - New Pipelines
713	Spot Pond Supply Mains Rehabilitation
730	Weston Aqueduct Supply Mains

Ashland

136	West Roxbury Tunnel

Bedford

702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
708	Northern Extra High Service - New Pipelines

Belmont

702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
730	Weston Aqueduct Supply Mains

Boston

131	Upper Neponset Valley Sewer System
136	West Roxbury Tunnel
139	South System Relief Project
324	CSO Support
339	North Dorchester Bay & Reserve Channel Conduits/CSO
340	South Dorchester Bay Sewer Separation (Fox Point)
341	South Dorchester Bay Sewer Separation (Commercial Pt.)
347	East Boston Branch Sewer Relief
355	MWR003 Gate and Siphon
356	Fort Point Channel Sewer Separation
357	Charles River CSO Controlls
358	Morrisey Boulevard Drain
359	Reserved Channel Sewer Separation
361	Bulfinch Triangle Sewer Separation
545	Blue Hills Covered Storage
693	Northern High Service Pipe Improvements - Revere/Malden
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
713	Spot Pond Supply Mains Rehabilitation
719	Chestnut Hill Connecting Mains
721	Southern Spine Distribution Mains
723	Northern Low Service Rehab. - Sections 8 & 57
727	SEH Redundancy & Storage
730	Weston Aqueduct Supply Mains

Braintree

104	Braintree-Weymouth Relief Facilities
147	Randolph Trunk Sewer Relief

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Brookline	
	131 Upper Neponset Valley Sewer System
	136 West Roxbury Tunnel
	357 Charles River CSO Controls
	360 Brookline Sewer Separation
	704 Rehabilitation of Other Pump Stations
	719 Chestnut Hill Connecting Mains
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Burlington	
	127 Cummingsville Replacement Sewer
Cambridge	
	324 CSO Support
	346 Cambridge CAM002-004 Sewer Separation
	355 MWR003 Gate and Siphon
	357 Charles River CSO Controls
	713 Spot Pond Supply Mains Rehabilitation
	730 Weston Aqueduct Supply Mains
Canton	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Chelsea	
	324 CSO Support
	347 East Boston Branch Sewer Relief
	713 Spot Pond Supply Mains Rehabilitation
	723 Northern Low Service Rehab. - Sections 8 & 57
Lynn	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27 Improvements
	693 Northern High Service Pipe Improvements - Revere/Malden
Lynnfield	
	618 Northern High NW Trans Section 70-71
	731 Lynnfield Pipeline
Malden	
	693 Northern High Service Pipe Improvements - Revere/Malden
	713 Spot Pond Supply Mains Rehabilitation

Municipality	Project Number/Project
Chicopee	
	543 Quabbin Water Treatment Plant
	615 Chicopee Valley Aqueduct Redundancy
	616 Quabbin Transmission System
Clinton	
	210 Clinton Wastewater Treatment Plant
Dedham	
	131 Upper Neponset Valley Sewer System
	136 West Roxbury Tunnel
	727 SEH Redundancy & Storage
Dover	
	136 West Roxbury Tunnel
Everett	
	347 East Boston Branch Sewer Relief
	713 Spot Pond Supply Mains Rehabilitation
	723 Northern Low Service Rehab. - Sections 8 & 57
Framingham	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct
Hingham	
	104 Braintree-Weymouth Relief Facilities
Holbrook	
	104 Braintree-Weymouth Relief Facilities
	617 Sudbury/Weston Aqueduct
Lexington	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	708 Northern Extra High Service - New Pipelines
Nahant	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden
Natick	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct Repairs
Needham	
	136 West Roxbury Tunnel
	735 Section 80 Rehabilitation

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Marblehead	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden
Medford	
	547 Fells Covered Storage
	702 New Connecting Mains - Shaft 7 to WASM 3
	713 Spot Pond Supply Mains Rehabilitation
Melrose	
	618 Northern High NW Trans Section 70-71
Milton	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Quincy	
	104 Braintree-Weymouth Relief Facilities
	545 Blue Hills Covered Storage
	721 Southern Spine Distribution Mains
Randolph	
	104 Braintree-Weymouth Relief Facilities
	147 Randolph Trunk Sewer Relief
Reading	
	722 NIH Redundancy & Covered Storage
Revere	
	349 Chelsea Trunk Sewer
	693 Northern High Service Pipe Improvements - Revere/Malden
Saugus	
	618 Northern High NW Trans Section 70-71
	693 Northern High Service Pipe Improvements - Revere/Malden
	731 Lynnfield Pipeline

Municipality	Project Number/Project
Newton	
	131 Upper Neponset Valley Relief Sewer
	136 West Roxbury Tunnel
	702 New Connecting Mains - Shaft 7 to WASM 3
	719 Chestnut Hill Connecting Mains
	730 Weston Aqueduct Supply Mains
Norwood	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41 and 42
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Peabody	
	618 Northern High NW Trans Section 70-71
	693 Northern High Service Pipe Improvements - Revere/Malden
	721 Southern Spine Distribution Mains
	722 NIH Redundancy & Storage
Wilbraham	
	543 Quabbin Water Treatment Plant
	616 Quabbin Transmission System
Wakefield	
	618 Northern High NW Trans Section 70-71
	722 NIH Redundancy & Covered Storage
Waltham	
	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
Watertown	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	730 Weston Aqueduct Supply Mains
Wellesley	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct Repairs
	735 Section 80 Rehabilitation

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Somerville	
	702 New Connecting Mains - Shaft 7 to WASM 3
	713 Spot Pond Supply Mains Rehabilitation
	730 Weston Aqueduct Supply Mains
South Hadley	
	543 Quabbin Water Treatment Plant
	616 Quabbin Transmission System
Stoneham	
	618 Northern High NW Trans Section 70-71
	722 NIH Redundancy & Covered Storage
Stoughton	
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Sudbury	
	617 Sudbury/Weston Aqueduct Repairs
Swampscott	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
West Roxbury	
	131 Upper Neponset Valley Relief Sewer
Weston	
	617 Sudbury/Weston Aqueduct Repairs
	730 Weston Aqueduct Supply Mains
Westwood	
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Weymouth	
	104 Braintree-Weymouth Relief Facilities
Winchester	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	722 NIH Redundancy & Covered Storage
Winthrop	
	693 Northern High Service Pipe Improvements - Revere/Malden
Woburn	
	722 NIH Redundancy & Covered Storage

APPENDIX 9

MWRA Completed Projects

Appendix 9

MWRA Completed Projects
(as of December 31, 2011)

Project	Total Cost ($000)	Completion Date	Summary
Wastewater	$4,297,578		
Waterworks	$397,138		
Business and Operations Support	$41,171		
MWRA Total	$4,735,887		

Wastewater System Improvements			
Boston Harbor Project	$3,513,290	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
S.101 Wastewater Metering System Upgrade	$7,516	Dec-93	Construction of system to provide accurate flow data.
S.102 Quincy Pump Facilities	$25,908	Sep-03	Constructed 3 new pumpstation and rehabbed force mains to ensure continuous pumping to treatment facilitities.
S.103 Hingham Pump Station	$3,027	Apr-92	Elimination of untreated sewage discharges.
S.105 New Neponset Valley Relief Sewer	$30,300	Jul-96	Relief facilities to correct structural and hydraulic deficiencies in the New Neposet Valley Interceptor Sewer System.
S.106 Wellesley Extention 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.107 Framingham Extension Relief Sewer	$47,856	Sep-04	Installation of a new force main and gravity sewer and construction of a new pumpstation.
S.108 Alewife Brk Pkwy Pump St Rehab	$1,465	May-95	Replacement of equipment, construction of building addition and wetwell modifications.
S.110 East Boston Pump Facilities	$48,234	Jan-93	Constructed to eliminate sewage back-ups.
S.113 Millbrook Valley Intermediate Relief	-$1	Mar-90	Evaluation of current siphon condition and development of a system for improved waste disposal.
S.112 Charlestown Pump Station Replacement	$32,533	Apr-93	New 93 mgd pump station to increase pumping efficiency and eliminate overflows to the Mystic River.
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.117 Slade's Siphon	$0	Sep-88	Elimination of seawater inflows and sewage overflows.
S.118 Bell Isle Siphon Rehabilitation	$79	Apr-89	Reduction of salt water infiltration and increase in system capacity.
S.127 Cummingsville Replacement Sewer	$8,999	Jul-08	Replacement and rehabilitation of existing sewers to provide additional capacity for upstream communities.
S.129 North Metropolitan Trunk Sewer	$11,997	Mar-99	Rehabilitation of a 19,700 linear-foot 100-year old sewer line.
S.138 Sewerage System Mapping	$281	Apr-04	Updated and new GIS maps of sewer system.
S.143 Regional I/I Management Planning	$169	Jun-03	Reduction in infiltration and inflow water entering the MWRA system.
S.178 Deer Island Pump and Power Station Upgrade	$32,952	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	$26,081	Jul-99	Facility rehabilitation restored headworks capacity.
S.180 D.I. Sedimentation Tank System Improvements	$1,684	Jul-89	Restoration of operating efficiency by replacing 80 inlet sluice gates and baffles, rehabilitation of control building and other improvements.
S.181 D.I. Intermediate Upgrade	$9,474	Jun-92	Upgrade of the old Deer Island treatment plant.
S.184 Nut Island Immediate Upgrade	$1,206	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.185 Clinton Wastewater Treatment Plant	$36,747	Sep-92	Upgrade existing plant to improve water quality and met standards by rehabbing and new equipment.
S.187 Deer Island Sludge Thickeners Rebuilding	$114	Sep-88	Ensuring efficient operation of Deer Island treatment plant digesters.
S.189 DI Dual Fuel Engine	$281	Jan-06	Overhaul of five diesel engines.
S.190 Deer Island Electrical Equipment Upgrade	$28	Mar-88	Restoration of system operating efficiency.
S.191 DI Chlorination Facility Rehab	$4	Mar-89	Provision of effective disinfection operation and safe working environment.

S.194 Nut Island Intermediate Upgrade	$1,507	Dec-92	Improvements to ensure effective operation of the Nut Island treatment plant.
S.196 Other Wastewater	$92	Apr-90	Removal of hazardous materials from wastewater facilities and creation of on-going safety management programs.
S.197 Deer Island Treatment Plant Outfall Repair	$1,300	Sep-97	Repair of effluent discharge Outfall 002.
S.198 Boston Harbor Performance Certification	$1,275	Dec-02	Certification required for continuous federal grant and loan programs during construction.
S.200 DI Plant Optimization	$33,456	Sep-08	Capital investment to optimize the operation of the Deer Island Treatment Plant. Remaining initiatives rolled into DI Plant Asset Protection.
S.261 Residuals	$172,056	Dec-01	Phase 1 Feb - 92 - construction of the Residuals Treatment Facility at ore River Staging Area (FRSA). Termination of the sludge discharge to Boston Harbor. Phase 2 Dec-01 - To expand the residuals processing plate at the FRSA in Quincy to provide the capacity to process the sludge quantities produced by Deer Island.
S.325 Fox Point CSO Facility	$152	Apr-89	Elimination of untreated sewage discharges.
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.327 Southwest Corridor CSO	-$6	Fall 86	Elimination of combined sewer overflows.
S.330 St. Mary's Street CSO Modifications	$17	Feb-87	Identification of solution for storm water detention.
S.332 Somerville Marginal CSO Rehabilitation	$98	Feb-89	Elimination of inadequately treated sewage discharges.
S.335 Moon Island	$1		
S.338 Cottage Farm CSO Ventilation System Repairs	$133	Sep-94	Rehabilitation of HVAC duct work.
S.342 Neponset River Sewer Separation	$2,444	Aug-02	Elimination of CSO discharges to the Neponset River.
S.343 Constitution Beach Sewer Separation	$3,769	Apr-02	Elimination of CSO discharges at the Constitution Beach CSO Facility.
S.344 Stony Brook Sewer Separation	$44,333	Sep-06	Minimize CSO discharges to the Stony Brook conduit and the Backbay Fens.
S.348 BOS019 Storage Conduit	$14,288	Mar-07	To reduce CSO activations and annual volume to the Little Mystic Channel.
S.349 Chelsea Trunk Sewer	$29,779	Jun-02	To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008.

S.350 Union Park Detention Treatment Facility	$49,583	Jun-07	To reduce the frequency and impacts of CSO discharges from outfall BOS070.
S.351 BWSC Floatables Controls	$933	Mar-02	Limit the discharge of floatable materials from 5 BWSC combined sewer outfalls.
S.353 Upgrade Existing CSO Facilities	$22,385	Aug-01	Minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay by upgrading 5 CSO treatment facilities.
S.352 Cambridge Floatables Controls	$1,087	Dec-08	Limit the discharge of floatable materials from Cambridge CSO outfalls.
S.354 Hydraulic Relief Projects	$2,295	Aug-00	Elimination of hydraulic restrictions between local and MWRA Systems.
S.402 Comprehensive Safety Action Project	$891	Nov-90	Correction of safety hazards at MWRA facilities and establishment ongoing safety management program.
S.403 Sewerage Division Management Services	$1,930	Dec-86	Provision of engineering design and construction advice.
S.924 Harbor Environmental Studies	$1,666	Jun-92	Collection and study of harbor water quality data.
Sub-Total Wastewater System Improvements	**$4,297,578**		

Waterworks System Improvements			
S.533 Local Sources of Supply	$2,112	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.535 Reservoir Risk Assessment	$647	Jun-92	Development of maps and data to determine at risk areas.
S.537 Drinking Water Quality Improvement Wachusett	$8,330	Oct-95	To comply with Safe Drinking Water Act to strengthen quality standards for water supply from Wachusett.
S.538 Sudbury Reservoir Treatment Plant Study and EIR	$447	Sep-92	Evaluation of alternative uses of the Sudbury Reservoir.
S.539 Drinking Water Quality Improvement Quabbin	$307	Nov-98	To comply with Safe Drinking Water Act to strengthen quality standards for water supply from Quabbin.
S.541 Watershed Protection	$8,500	Dec-03	To develop watershed protection measures for the MWRA/MDC reservoir system.
S.544 Norumbega Covered Storage	$106,674	Jun-08	Construction of a covered 115 million gallon reinforced concrete storage tank to meet the drinking water quality standards mandated by the federal Safe Drinking Water Act.
S.547 Fells Covered Storage	$18,004	Jun-00	Covered storage for Northern High Service System.
S.548 Nash Hill Covered Storage	$14,296	Jul-99	To improve the quality of drinking water to the three Chicopee Valley Aqueduct communities.
S.598 Wachusett Reservoir By-pass Tunnel	$15	Jan-89	Evaluation of the option of constructing a tunnel by-pass.
S.599 Dam Control Valve Replacement	$1,763	Jul-98	Valve replacement at Sudbury Reservoir in Southborough and Wachusett Dam.
S.600 Oakdale Power Station Generator Repair	$893	Sep-91	Repair of substation metering and transformer systems.
S.601 Sluice Gate Rehab	$9,158	Jun-05	Installation of motorized gates and 12 facilities rehabilitated.
S.602 Hultman – Weston Aqueduct Transfer for Hydropower	$593	May-89	Production of approximately 3,700,000 kW hours per year of electricity.
S.603 Transmission Maintenance Facility	$5,025	May-93	Construction of new waterworks maintenance facility in Southborough.
S.605 Echo Bridge Rehabilitation	$356	Sep-92	Repair and cleaning of bridge façade and construction of new surface topping.
S.606 Norumbega Chlorination Facility	$10	Mar-89	Provision of a new water disinfection facility.
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.615 Chicopee Valley Aqued. Redundancy	$8,667	Apr-08	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.
S.620 Wachusett Res Spillway Improvement	$9,498	Jul-10	Provide the necessary improvements to the Wachusett Reservoir Dam.
S.675 Water Distribution Master Plan	$1,178	Mar-93	Development of data base and recommendations for master plan.
S.676 Water Meter Modernization	$12,482	Jun-90	Rehab of 139 revenue meters
S.678 Boston Low Service Pipe & Valve Rehab	$23,691	Sep-03	Improve the condition and operability of the pipelines serving the Boston Low Service System.
S.679 Nonantum Road Pipe Rehabilitation	$2,153	Mar-97	Rehabilitation and/or replacement of deteriorated pipeline.
S.680 Orient Heights Booster Pump Station	$3	Sep-90	Construction of a booster pump station to increase pressure throughout the Orient Hieght distribution system.

S.681 Southern Service Improvements	$14,450	Oct-99	Reliability and capability improvements to pipelines and pump stations serving the Southern service area.
S.683 Heath Hill Road Pipe Replacement	$19,365	Oct-07	Repair and improve pipelines and valves in Southern High and Southern Extra High Service areas.
S.684 Commonwealth Ave Pump Station	$8,503	Dec-99	Modernize and improve station serving a major portion of Newton.
S.685 Ward Street Pump Station	$24	Aug-89	Evaluation of the feasibility of pump station rehabilitation.
S.686 Dudley Road Pump Station	$55	Jun-91	Evaluation of the feasibility of pump station rehabilitation.
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.688 Northern Intermediate High Pipelines	$973	Nov-88	Increase in pipe capacity and pressure.
S.689 James L. Gillis Pump Station Rehab	$33,419	May-02	To improve and modernize pumping facilities.
S.690 Northern Low Service Pipeline Replacement	$714	Aug-99	Repair of Section 16W with replacement and pipe slip lining methods.
S.691 Northern High Service Improvements - Lynn Pipeline	$17,271	Jun-99	Installation of a new primary supply line for the northeast section of the Northern High Service System.
S.701 Northern Extra High Service – Bedford Pipeline	$71	Jan-92	Development of a plan to supply water to Bedford.
S.706 NHS - Con. Mains from Section 91	$2,360	Jun-02	To integrate the new Section 91 pipeline with the existing grid network, improving service pressures and reliability to community meters.

S.714 Southern Extra High Sections 41 & 42	$3,657	Dec-00	To increase hydraulic capacity of the mains that carry water to the Bellevue Tanks.
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.716 Water Main Relocation in Chelsea River	$10,648	Nov-00	Relocation of the Section 8 water main over the Chelsea River.
S.720 Warren Cottage Line Rehab	$1,205	Dec-02	To improve the carrying capacity and internal condition of the Warren Cottage Line.
S.725 Hydraulic Model Update	$598	Jun-07	To modernize MWRA hydraulic and water quality modeing capabilities.
S.732 Walnut St. & Fisher Hill Pipeline Rehab.	$2,717	Mar-09	Improve water quality and hydraulic capacity of the pipeline serving City of Boston.
S.754 Domestic Device Retrofit	$9,928	Dec-93	Installation of water saving devices to reduce demand.
S.755 Leak Detection Survey	$751	Aug-90	Provision of data on the magnitude and location of water leaks.
S.756 Asbestos Abatement	$562	Aug-90	Elimination of asbestos in MWRA facilities.
S.757 PCB Abatement	$432	Aug-91	Replacement of equipment with unacceptable levels of PCB concentrations.
S.758 Rehab of Existing Facilities	$14,173	Nov-02	Upgrade various facilities in need of significant capital improvement.
S.759 Municipal Toilet Replacement	$127	Dec-90	Reduction in water consumption.
S.760 Chestnut Hill Pump Station REH	$559	Oct-94	Rehab of pump station.
S.764 Local Water Infrastr Rehab Ast Progr	$7,488	Jun-04	To provide financial support to MWRA waterworks communities to replace, rehabilitate, and maintain their waterworks system infrastructures.
Sub-Total Water System Improvements	**$397,138**		

Business & Operations Support			
S.901 Charlestown Headquarters	$4,548	Jun-91	Provision of office equipment at MWRA headquarters.
S.921 Management Information Service	$21,423	Dec-92	Enhancement to information systems to support more effective management of MWRA business activities.
S.922 Fore River Preservation	$4,946	Nov-97	Modify FRSA for on-going construction and operational support.
S.929 Affirmative Action	$403	Mar-91	Evaluation of minority participation in the MWRA procurement process.
S.930 MWRA Facility - Chelsea	$9,851	Mar-08	To improve MWRA operations by consolidating facilities.
Sub-Total Business & Operations Support	**$41,171**		

APPENDIX 10

Expected Useful Life of Capital Projects

APPENDIX 10

EXPECTED USEFUL LIFE OF CAPITAL PROJECTS

The estimated useful life of the MWRA's capital projects are summarized below:

Type of Capital Improvement	Estimated Useful Life (in years)
Buildings (includes all substantial above ground structures or enclosures)	40
Mechanical Equipment (includes pumps, chains, fans, HVAC, valves, etc.)	20
Electrical Equipment (motors, generators, motor control centers, lighting, conduit, etc)	20
Control Systems (computers, SCADA, PLCs, programming, etc)	10
Water Pipes	50 – 75
Water Pipe appurtenances (blow offs, air valves)	40
Sewer Pipes – gravity	50
Sewer Pipes – pressure	50
Sewer Pipe appurtenances (manholes, chambers)	50
Tunnels – Water	100
Tunnels – Wastewater	100
Tunnel appurtenances (shafts, control valves)	40
Distribution Reservoirs – above ground	40
Distribution Reservoirs – below ground	75 -100
Dams and Dam improvements	100
Motor Vehicles	10 – 15
Furniture and Fixtures	5 – 15
Leasehold Improvements	Period of lease
Study	5
Design – if constructed	20
Design – if not used	5
Inflow/Infiltration - Repair	20
Inflow/Infiltration - Replacement	50
Covered Storage	50