Capital Improvement Program

FISCAL YEAR 2011

MASSACHUSETTS WATER RESOURCES AUTHORITY

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Prepared under the direction of

Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
Rachel C. Madden, Director, Administration & Finance

together with the participation of MWRA staff.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

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

August, 2010

Dear Chairwoman Dunphy:

This letter transmits to the Advisory Board the MWRA's Capital Improvement Program (CIP) for Fiscal Year 2011 as approved by the MWRA's Board of Directors on June 30, 2010.

The future spending in the FY11 CIP is $2.3 billion, with projected spending of $208 million in FY11 and $1.057 billion in the current FY09-13 Cap period. The FY11 Cap projection is $1.085 billion, which is $59 million or 5.2% lower than the Base-Line Cap of $1.143 billion and is in compliance with both, the yearly, and the five-year overall Cap requirements.

The FY11 CIP represents an update to the FY10 CIP approved by the Board in June 2009 and includes staff's best estimate regarding projected spending and latest schedules with emphasis on the FY09-13 Cap period.

The FY11CIP includes an additional $351.7 million, of which $221.3 million relates to accelerated water redundancy projects, based on the recent completion of a twenty-month engineering study and the experiences of the May 2010 water main break in Weston. While water redundancy projects constitute the majority of increased spending in the FY11, the projected increase for these projects is $15 million in the current FY09-13 Cap period. It is important to note that a new phase of the Local Water Pipeline Assistance Loan Program of $210 million was added in the FY11 CIP. Although this loan program has a net zero impact on the CIP after the loans are repaid by communities, it represents an additional $34.7 million of spending during FY09-13.

The Combined Sewer Overflow (CSO) program continues to drive spending during FY09-13 accounting for $336.6 million or 32% of the total projected spending. Staff project that by the end of the cap period 97% of the total CSO program will be completed. Going forward, the Authority will continue to shift its focus from court mandated projects to critical asset protection.

The FY11 CIP includes projects that are expected to receive $33 million from the American Recovery and Reinvestment Act of 2009 ("ARRA"). Any stimulus funds received will reduce the Authority's borrowing requirement and future debt service.

A copy of the FY11 Final 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, comments and recommendations on the capital budget.

Sincerely,

Frederick A. Laskey
Executive Director

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Overview

The MWRA was created by the Massachusetts legislature in 1985 and since that time has invested over $7.2 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 John J. 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.

To arrive at the FY11 Final 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. Going forward, the mandated projects account for 36% of projected FY09-13 spending, as the main focus going forward is directed towards water redundancy and asset protection projects.

The FY11 Final Capital Improvement Program (CIP) budget totals $5.3 billion, of which $3.0 billion has been expended through FY09 and a remaining balance of $2.3 billion. The CSO program is the largest remaining program initiative in terms of spending with an FY11 Final budget of $885.3 million of which $621.6 million has been expended through FY09. The CSO Program accounts for $336.6 million or 32% of Authority spending over the FY09-13 period.

Water Redundancy

The importance of water transmission redundancy was demonstrated by the May 2010 failure of a coupling in a pressurized portion of the 17.5 mile MetroWest Tunnel which resulted in a massive water main break and the release of over 230 million gallons of water into the Charles River. The failure triggered a boil water order for the City of Boston and surrounding communities. Open reservoirs were brought on-line to ensure uninterrupted supply to affected communities. While the repair was complete within 72 hours, the incident emphasized the importance of the MWRA's transmission system redundancy.

A recently completed 20-month system engineering study on the overall transmission system confirmed that there is vulnerability within the Authority's transmission system and evaluated alternatives to provide redundancy. Although the MetroWest Tunnel provides redundancy for the Hultman Aqueduct from the Carrol Water Treatment Plant in Marlborough to the beginning of the City Tunnel in Weston, the Metropolitan area water transmission system does not currently have redundancy for the City Tunnel, the City Tunnel Extension, or the Dorchester Tunnel. The loss of tunnels would be catastrophic. In response to this study and the recent water main break in Weston, the MWRA has accelerated several redundancy initiatives, adding a net of approximately $221.3 million to the Capital Improvement Program, the majority of which were drawn from the Master Plan. This includes increases of $122.6 million and $129.6 million to the Long-term Redundancy and Weston Aqueduct Supply Mains projects, respectively. This $221.3 million accounts for 63% of

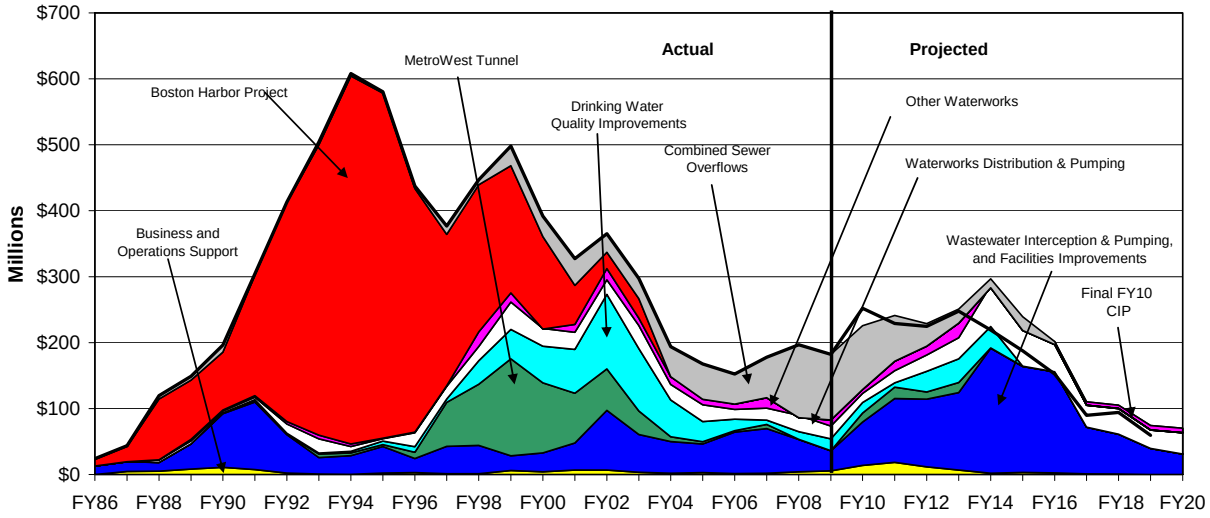
the $351.7 million increase to the FY11 Final CIP from the FY10 Final CIP. The impact of the newly added water redundancy initiatives on the FY09-13 CAP is approximately $15.0 million.

The capital investment in the MWRA's operating facilities has 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.

As the MWRA matures as an agency, a greater proportion of its capital budget is designated for Asset Protection initiatives, absent new regulatory mandates, to preserve operating assets. 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 Final budget cycle.

The graph below highlights major capital improvement spending by program categories, both completed (actual) and remaining (projected).

MWRA CAPITAL PROGRAM FY1986-2020



As indicated previously, of the total $7.2 billion expended to date, nearly 80% has funded court mandated projects such as the Boston Harbor Project, the MetroWest Supply Tunnel, the John J. Carroll Water Treatment Plant and the Combined Sewer Overflow (CSO) program. Going forward, the majority of spending will support asset protection and water redundancy initiatives.

MWRA's Green Initiatives

Building upon its track record in sustainable resource use – most notably dramatic system-wide reductions in water demand, 100% beneficial reuse of sludge, 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 and reduce the environmental impacts of its daily operations. The FY11 Final Current Expense Budget (CEB) projects that Deer Island self-generation will grow to 28% mostly due to Steam Turbine Generation (STG) operation. The MWRA is on track to meet the Governor's initiative that 30% of power demand be met by green sources. Key initiatives now underway or planned for FY11 include the following:

- Design/build to upgrade Deer Island STG generating an additional 5 million kwh/year of power from digester gas scheduled to go on-line January 2011.
- Second battery of 180 kW solar panels at Deer Island expected to go on-line March 2010.
- Installation of 1.5 MW wind turbines at Nut Island with a start up date of November 2011.
- Installation of a 1.5 MW wind turbine at the DeLauri pump station with a start up date of August 2011.
- Construction of 200 kW hydropower turbine/generator at Loring Road to generate 1.2 million kWh annually.
- Continue design/permitting of Wachusett Hydropower.
- Installation of 478kW of solar power to be installed at Carroll Water Treatment Plant in July 2011.
- Conduct additional Wind Feasibility studies at various locations to assess if additional opportunities exist.
- Retrofit of diesel-powered vehicles and equipment and continued purchase of alternative fuel vehicles. Of the 378 vehicles in MWRA's fleet, 249 are powered by alternative fuel.
- Initial responses to comprehensive energy audits at the John Carroll Water Treatment Plant, the Chelsea Facility, and Deer Island Treatment Plant facilities are already yielding energy savings.
- Conduct comprehensive energy audits of 15 MWRA pump stations and CSOs, and begin implementation of recommendations from audits of 13 pump stations and headworks completed in FY10.

MWRA will continue to assign high priority in its capital and current expense budgets to projects which demonstrate its commitment to energy efficiency and environmental sustainability and will seek to maximize grant funding to improve the economic efficiency of green energy projects.

Stimulus Funding

The MWRA was awarded $33.0 million in stimulus funding based on the American Recovery and Reinvestment Act (ARRA) signed by President Obama on February 17, 2009. This funding was distributed through the State Revolving Fund (SRF) program and is being administered as principal forgiveness loans funding eligible drinking and clean water projects. This program is projected to save the Authority an estimated $40.9 million in debt service payments. Of the $33.0 million in stimulus funding, $9.2 million will support Green Infrastructure projects, specifically the Carroll Water Treatment Plant, Deer Island photovoltaic projects, Loring Road Hydroelectric conduit, and the DeLauri Pump Station Wind Turbine initiative. To date, the MWRA has received $23.7 million of this stimulus funding.

FY11 Final CIP

As shown in Table 1 below, the MWRA's total capital budget is $5.3 billion with $3.0 billion spent through FY09 and $2.3 billion remaining to be expended. Wastewater System Improvements represent $1.2 billion or 53.9% of remaining spending while Waterworks System Improvements are $1.0 billion or 43.6% of future spending.

Table 1

`	Total Contract Amount	Payments Thru FY09	Balance 6/30/09	FY10	FY11	FY12	FY13	5-Year Total FY09-13	Beyond FY13
Wastewater System Improvements	**$2,574,720**	**$1,341,379**	**$1,233,340**	**$151,355**	**$130,787**	**$138,517**	**$100,206**	**$644,573**	**$712,478**
Interception & Pumping	799,085	494,968	304,117	3,198	13,274	23,695	20,306	67,275	243,644
Treatment	555,740	66,537	489,203	54,443	49,250	62,908	46,185	227,526	276,417
Residuals	211,741	63,811	147,930	366	694	1,363	2,174	4,597	143,333
CSO	885,280	621,634	263,646	88,858	68,821	49,883	29,607	336,586	26,478
Other	122,875	94,430	28,445	4,490	-1,252	668	1,934	8,589	22,605
Waterworks System Improvements	**2,652,482**	**1,655,269**	**$997,213**	**50,882**	**58,191**	**81,712**	**115,827**	**359,467**	**690,600**
Drinking Water Quality Improvements	656,826	526,438	130,388	14,410	4,925	31,129	37,914	106,226	42,009
Transmission	1,117,059	679,221	437,838	14,823	20,159	20,737	34,176	96,231	347,944
Distribution and Pumping	847,504	324,822	522,682	16,027	17,746	16,195	20,993	90,331	451,721
Other	31,092	124,788	-93,696	5,622	15,361	13,651	22,744	66,678	-151,075
Business & Operations Support	**105,552**	**48,606**	**56,947**	**10,022**	**19,023**	**9,748**	**8,645**	**53,112**	**9,509**
Total MWRA	**$5,332,754**	**$3,045,254**	**$2,287,500**	**$212,259**	**$208,001**	**$229,977**	**$224,678**	**$1,057,152**	**$1,412,587**

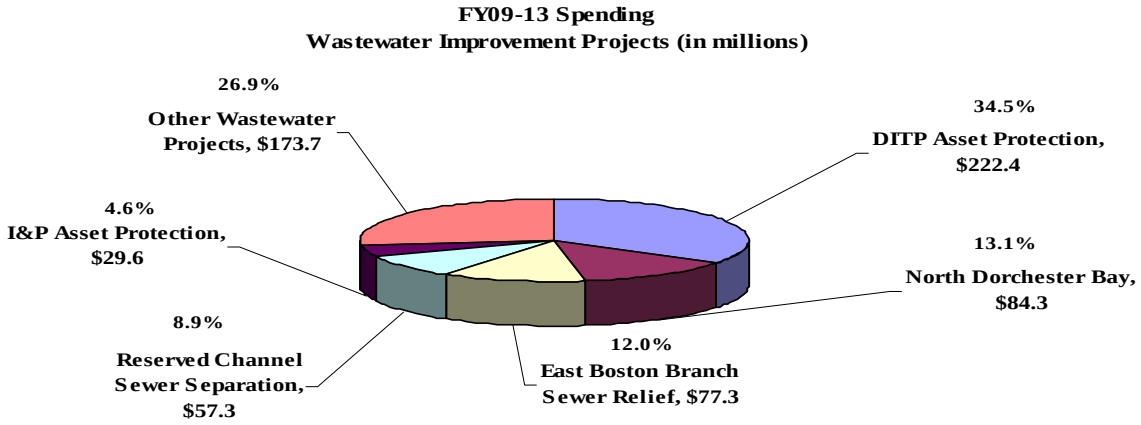
FY11 Capital Highlights

The FY11 Final CIP is $1.1 billion for FY09-13, and projected spending of $1.4 billion beyond FY13 which is primarily driven by spending on new projects from the Master Plan. The FY14-18 spending window is $995.1 million, but this forecast will grow in future budget cycles as additional Master Plan projects are incorporated into the CIP. The FY11 Final CIP includes a total of 101 new projects/sub-phases from the Master Plan, 9 added in FY11, with the highest priority ratings totaling $19.7 million. A total of $1.2 billion in new projects has been added to the CIP since the Master Plan was adopted.

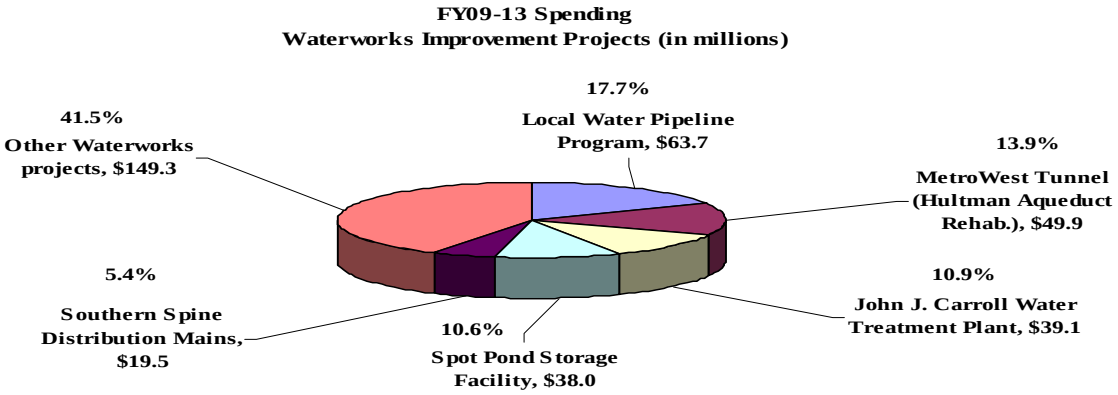
FY09-13 Spending

Wastewater System Improvements spending continues to drive CIP spending with nearly $644.6 million to be expended over the FY09-13 timeframe. The CSO program represents the largest program initiative in terms of spending, with $336.6 million, or 32% 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 $359.5 million in the FY09-13 timeframe.

As shown below, the CIP is dominated by large projects. The top 5 wastewater projects account for 73.1% of FY09-13 wastewater spending.



The top 5 waterworks projects account for 58.5% of FY09-13 waterworks spending.



Combined these projects accounts for 64.4% of total FY09-13 spending.

Major Planned Spending for Fiscal Year 2011

Capital spending in FY11 is estimated to be $208.0 million. Spending will be driven by several large projects, including the ten projects listed below, which account for over 76% of budgeted FY11 spending:

Table 2

Project	Total Contract Amount	FY11 Spending	%
S.206 DI Treatment Plant Asset Protection	$512.5	$48.3	23.2%
S.339 North Dorchester Bay	223.3	21.0	10.1%
S.359 Reserved Channel Sewer Separation	73.7	16.6	8.0%
S.765 Local Water Pipeline Improvement Loan Program	0.0	14.5	7.0%
S.935 Alternative Energy Initiatives	25.5	12.5	6.0%
S.604 Metro West Tunnel (Hultman Aqueduct Rehabilitation)	704.0	11.9	5.7%
S.346 Cambridge Sewer Separation	64.0	10.4	5.0%
S.360 Brookline Sewer Separation	29.6	10.1	4.9%
S.721 Souther Spine Distribution Mains	69.5	7.0	3.4%
S.104 Braintree Weymouth Relief Facilities	233.6	5.9	2.8%
Top 10 Spending in FY11	**$1,935.7**	**$158.2**	**76.1%**
FY11 Spending	**$5,332.8**	**$208.0**	**100.0%**

Highlights of Project Changes from the FY10 Final CIP to the FY11 Final CIP

The FY11 Final CIP represents updated spending and schedules for projects contained in the FY10 Final CIP and new spending on 25 projects and sub-phases which total $44.7 million. These additional projects and sub-phases represent those capital initiatives outside of the FY10 Final CIP that staff recommends as most essential to assure reliable service to MWRA's customers.

The FY11 Final CIP increased $351.7 million or 7.1% above the FY10 Final CIP approved by the Board in June 2009. The majority of the capital budget increase is due to: inclusion of approximately $221.3 for water redundancy projects, $44.7 million for new projects related to Interceptor Renewal, Deer Island Asset Protection, and Alternative Energy initiatives. The balance reflects updated cost estimates, the largest increase being for the Headworks Upgrades of $56.3 million, and schedule changes.

It is important to note that even with a substantial increase in the CIP between the FY10 Final and FY11 Final CIP, projected spending on projects in the FY09-13 CAP period decreased by $32.6 million, associated with underspending in FY09 and FY10.

Table 3 below describes the dollar and percent changes *by major program* between the FY10 Final and the FY11 Final CIP and for the FY09-13 timeframe.

Table 3

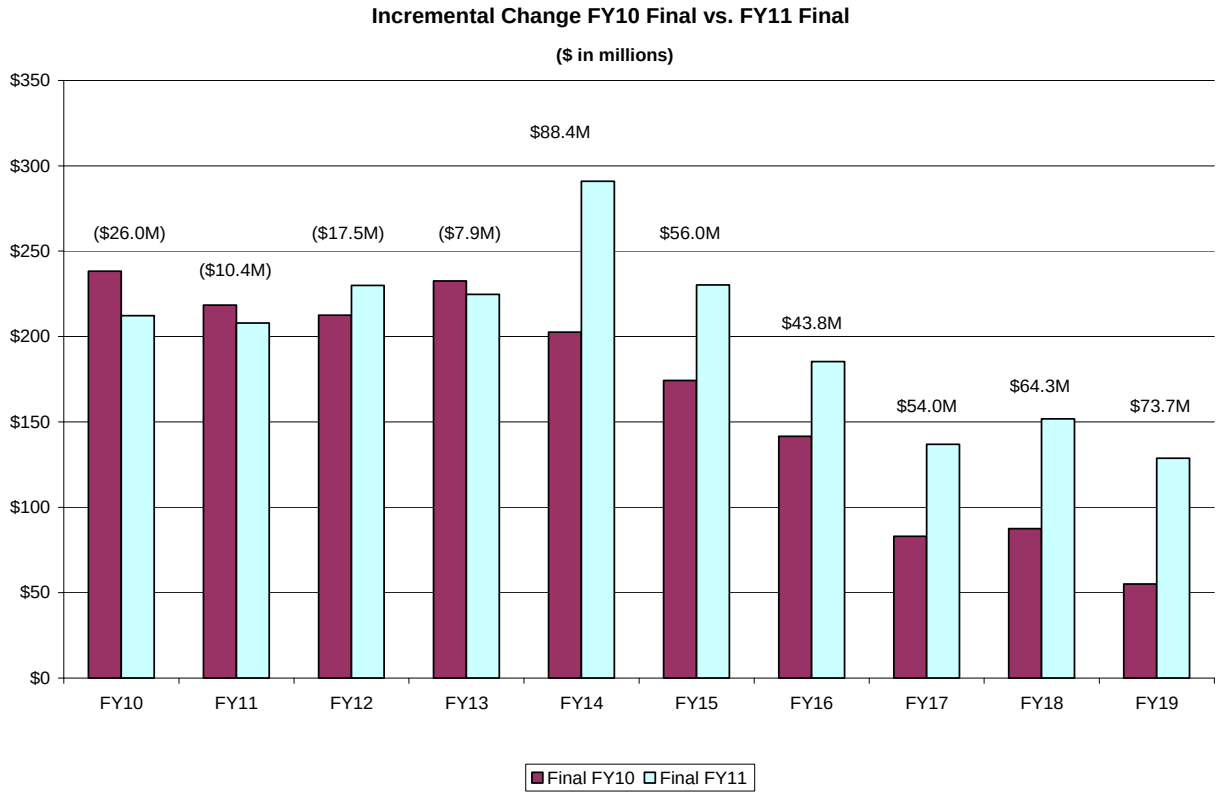
	Final FY10	Final FY11	$ Change	% Change	FY09-13 $ Change	FY09-13 % Change
Wastewater Systems Improvements	2,461.5	2,574.7	113.2	4.6%	-29.5	-4.4%
Waterworks System Improvements	2,429.6	2,652.5	222.9	9.2%	-15.4	-4.1%
Business Operations & Support	89.9	105.6	15.6	17.4%	12.3	30.3%
Total MWRA	**$4,981.0**	**$5,332.8**	**$351.7**	**7.1%**	**-$32.6**	**-3.0%**

The table below describes the major dollar changes *by project* between the FY10 Final and the FY11 Final CIP and for the FY09-13 timeframe.

Comparison of Major Changes FY10 Final and FY11 Final CIP

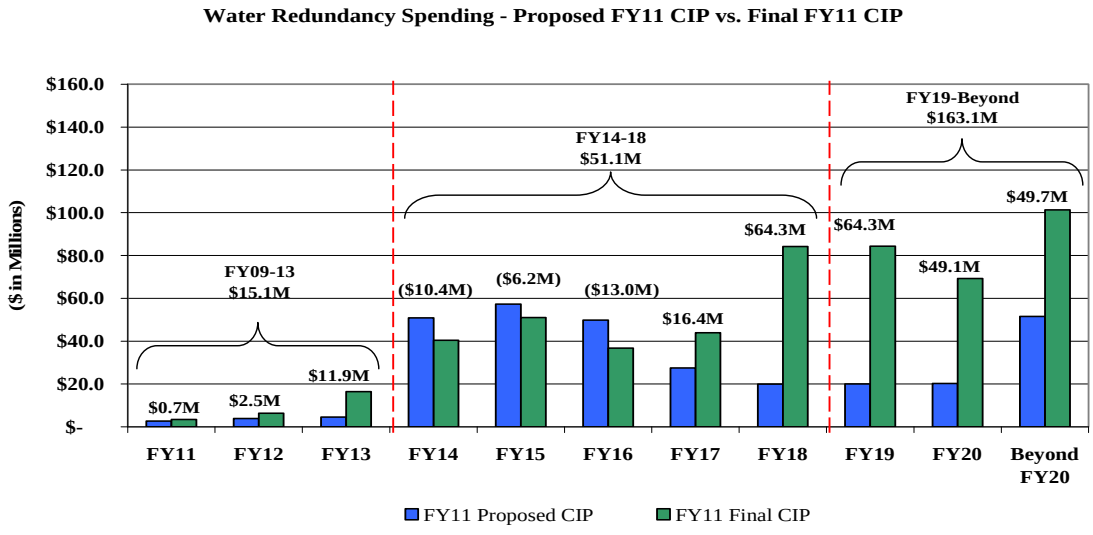
Project	FY10 Final $	FY11 Final $	Overall Impact $	FY09-13 Impact $	Beyond CAP $	Notes
Headworks Upgrades	$25.0	$81.3	$56.3	$0.2	$56.1	Revised cost estimates
Interceptor Renewal # 5 Milton	$0.0	$4.0	$4.0	$0.0	$4.0	New FY11 project
Interceptor Renewal # 6 Chelsea	$0.0	$11.0	$11.0	$0.0	$11.0	New FY11 project
Manhole Flood Protection	$0.0	$5.5	$5.5	$0.5	$5.0	New FY11 project
Hydraulic Flood Analysis - North System	$0.0	$2.5	$2.5	$2.5	$0.0	New FY11 project
West Roxbury Tunnel	$77.7	$88.8	$11.1	-$9.3	$20.4	Revised cost estimate based on draft Conceptual Design report
DI Asset Protection	$490.4	$512.5	$22.1	-$28.4	$50.5	Revised cost estimates and shift in scheduling.
Cambridge Sewer Separation	$58.0	$64.0	$6.0	-$0.2	$6.3	Revised cost estimates
Alternative Energy Initiatives	$14.1	$25.5	$11.4	$10.7	$0.6	New FY11 projects for Delauri Wind, JCWTP Solar and DI Wind
Water Pipeline Improvement Program	$0.0	$0.0	$0.0	$32.0	-$32.0	Loans of $35 million offset by repayments of $3 million in the CAP period
Water Pipeline Improvement Program (CVA)	$0.0	$0.0	$0.0	$2.7	-$2.7	Loans of $3 million offset by repayments of $300k in the CAP period
Lower Hultman CP6A	$61.9	$47.8	-$14.1	-$16.8	$2.7	Lower than budgeted award
New Connecting Mains Shaft 7 to WASM 3	$62.0	$30.1	-$31.9	-$12.7	-$19.1	Schedule shift and lower awards
Long Term Redundancy	$203.4	$326.0	$122.6	$2.1	$120.6	Revised cost estimates based on results of 20 month Water Redundancy Study.
Weston Aqueduct Supply Mains (WASM)	$129.1	$260.1	$131.0	$7.3	$123.6	Revised cost estimates based on results of 20 month Water Redundancy Study.
Other FY11 new projects (smaller)	$0.0	$12.0	$12.0	$7.8	$4.3	FY11 new projects - smaller $
Varied Schedule Shifts	$0.0	$0.0	$2.3	$34.3	-$34.3	To reflect movement in project schedules across fiscal years
TOTAL	$1,121.6	$1,471.0	$351.7	$32.6	$317.0	

The following graph displays the variance by year of the projected spending in the FY10-FY19 timeframe between the FY10 Final CIP and the FY11 Final CIP.



As indicated previously, the increase of $351.7 million between the FY10 Final and FY11 Final CIP was largely due to the inclusion of $221.3 million to support water redundancy and $78.4 million for asset protection initiatives.

The graph below illustrates the impact of the $221.3 million water redundancy projects over time.



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 the Approved Budget. 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 (FY10-FY20) is $125.1 million with $33.7 million allocated to the FY09-13 timeframe.

	Total Budget	FY09	FY10	FY11	FY12	FY13	FY09-13	Beyond 13
Contingency	$125.1	$0.0	$0.0	$10.3	$11.0	$12.4	$33.7	$91.4

Master Plan and the FY11 Final CIP

As described in the FY11 highlights section, 9 new projects were added from the Master Plan totaling $19.7 million in FY11. All projects included are high priority infrastructure improvement projects. Over $1.0 billion in capital projects have been added from the Master Plan since 2008. See Appendix 5 Master Plan/CIP Status for more details.

Number of Projects and dollars added from the Master Plan:

Budget	Project/Su phases	$ in Millions
FY08	67	$955.0
FY09	11	31.3
FY10	14	58.7
FY11	9	19.7
Total From Master	101	$1,064.7

It is important to note that much of the future spending outlined in the Master Plan is for the repair or replacement of existing infrastructure (water distribution lines, wastewater interceptors, and facility equipment), although water system redundancy is also a major theme. Staff projects that by the end of the CAP period, approximately 97% of the total CSO program will be completed. With the majority of the CSO program behind us, the Authority will continue to focus on the critical asset protection and water redundancy initiatives.

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 $1.085 billion. Including $64.8 million for contingency, $22.4 million for inflation on unawarded construction projects and a reduction of $24.8 million for the Chicopee Valley Aqueduct (CVA) projects, the FY09-13 CAP totals $1.144 billion.

Table 5

BASE-LINE CAP (June 2008)						
	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	-	0.5	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 CAP	**$ 244.4**	**$ 264.1**	**$ 230.0**	**$ 207.0**	**$ 198.4**	**$ 1,143.8**

The FY11 Final CIP FY09-13 CAP Spending

FY11 is the third year of the five-year Spending CAP. The FY11 Final CIP FY09-13 CAP cash flow totals $1.085 billion which is $59.0 million or 5.2% lower than the approved Base-Line CAP. The FY09-13 expenditure forecast decreased by $24.2 million, contingency and inflation decreased by $33.1 million and $9.3 million, respectively from the established FY09-13 Spending CAP.

Table 6

Final FY11 CIP						
	FY09	FY10	FY11	FY12	FY13	Total FY09-13
Projected Expenditures	$ 182.2	$ 212.3	$ 208.0	$ 230.0	$ 224.7	$ 1,057.2
Contingency	-	-	10.3	11.0	12.4	33.7
Inflation on Unawarded Construction	-	-	0.6	3.9	8.6	13.1
Less: Chicopee Valley Aqueduct Projects	(0.6)	(0.6)	(2.0)	(6.6)	(9.3)	(19.2)
FY09-13 CAP	**$ 181.6**	**$ 211.6**	**$ 216.9**	**$ 238.3**	**$ 236.3**	**$ 1,084.8**

Final FY11CIP - BASE-LINE CAP						
	FY09	FY10	FY11	FY12	FY13	Total FY09-13
Projected Expenditures	$ (47.8)	$ (39.4)	$ (16.3)	$ 33.3	$ 46.0	$ (24.2)
Contingency	(15.6)	(13.8)	(1.7)	(1.1)	1.0	(31.1)
Inflation on Unawarded Construction	-	(0.5)	(2.2)	(3.8)	(2.7)	(9.3)
Less: Chicopee Valley Aqueduct Projects	0.6	1.3	7.1	3.0	(6.4)	5.6
Less: Unallocated Stimulus			-			-
FY09-13 CAP ($ Change)	**$ (62.8)**	**$ (52.5)**	**$ (13.0)**	**$ 31.3**	**$ 37.9**	**$ (59.0)**
FY09-13 CAP (% Change)	**-25.7%**	**-19.9%**	**-5.7%**	**15.1%**	**19.1%**	**-5.2%**

FY11 Final CAP Comparison to the FY10 Final CAP

The FY11 Final CIP FY09-13 CAP cash flow decreased $56.9 million or 5.0% from the FY10 Final budget reflecting decreases of $32.6 million, $18.3 million, and $6.8 million in projected expenditures, contingency funds, and inflation on un-awarded construction, respectively.

Table 7

Final FY10 CIP						
	FY09	FY10	FY11	FY12	FY13	Total FY09-13
Projected Expenditures	$ 188.1	$ 238.3	$ 218.4	$ 212.5	$ 232.5	$ 1,089.7
Contingency	-	13.8	10.8	12.4	15.0	52.0
Inflation on Unawarded Construction	-	-	1.9	5.7	12.2	19.9
Less: Chicopee Valley Aqueduct Projects	(0.7)	(1.4)	(1.1)	(9.6)	(7.1)	(19.9)
FY09-13 CAP	**$ 187.4**	**$ 250.6**	**$ 230.0**	**$ 221.0**	**$ 252.7**	**$ 1,141.7**

Final FY11 CIP - Final FY10						
	FY09	FY10	FY11	FY12	FY13	Total FY09-13
Projected Expenditures	$ (5.8)	$ (26.0)	$ (10.4)	$ 17.5	$ (7.9)	$ (32.6)
Contingency	-	(13.8)	(0.5)	(1.4)	(2.7)	(18.3)
Inflation on Unawarded Construction	-	-	(1.3)	(1.8)	(3.7)	(6.8)
Less: Chicopee Valley Aqueduct Projects	0.1	0.8	(0.9)	3.0	(2.3)	0.7
Less: Unallocated Stimulus			-		-	-
FY09-13 CAP ($ Change)	**$ (5.8)**	**$ (39.0)**	**$ (13.1)**	**$ 17.3**	**$ (16.4)**	**$ (56.9)**
FY09-13 CAP (% Change)	**-3.1%**	**-15.6%**	**-5.7%**	**7.9%**	**-6.5%**	**-5.0%**

Highlights of changes from FY10 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 $29.5 million due to the combined impact of revised schedules and cost estimates of certain projects.

Interception & Pumping (I&P): ($12.4) million

- West Roxbury Tunnel project spending decreased by $9.3 million primarily due to revised schedule for Tunnel Construction.
- I & P Asset Protection project spending decreased by $7.7 million primarily due to revised cost estimate and schedule for Headworks Upgrades Design and Construction. Also, Columbus Park and Ward Street Headworks HVAC Upgrade budget deleted since work will be part of Headworks Upgrades project.
- Corrosion & Odor Control project spending decreased by $2.8 million due to revised schedules for Framingham Extension Sewer/Framingham Extension Relief Sewer Biofilters Design and Construction.
- Braintree-Weymouth Relief Facilities FY09-13 project spending increased by $5.5 million due to revised schedule for Rehabilitation of Section 624 Construction and new sub-phase for Mill Cove Sluice Gates Construction.
- Wastewater Process Optimization project spending increased by $3.0 million due to new sub-phases for Manhole Structure Flood Protection Design and Construction and Hydraulic Structure Flood Engineering Analysis North System.

Treatment: ($30.9) million

- Deer Island Treatment Plant Asset Protection total project spending decreased by $28.4 million due to revised schedules for Thickened Primary Sludge Pump Replacement, LOCAT Scrubber Replacement Construction, Chemical Pipe Replacement Construction , Future Misc VFD Replacement Construction, DI Electrical Upgrade Phase 5, Fire Alarm System Replacement, HVAC Equipment Replacement, and North Main Pump Station VFD Replacement Construction.

Combined Sewer Overflow: +$12.6 million

- Reserved Channel Sewer Separation spending in the FY09-13 period increased by $8.3 million due to updated cost estimates and projected spending.
- Brookline Sewer Separation spending increased by $5.6 million due to revised cost estimates.
- East Boston Branch Sewer Relief spending increased by $2.6 million due to change order work for both the East Boston Branch Relief Sewer and Section 38 and 207 Replacement contracts.

- Cambridge Floatables Controls spending decreased by $2.8 million due to Contract 4 work transferred to Cambridge Sewer Separation project. Also, construction of floatables control at SOM010 transferred to MWR003 Gate & Siphon project.
- Charles River CSO Controls total project spending decreased by $1.2 million due to deleting sub-phase for Existing Gate Controls System.

Waterworks System Improvements:

Waterworks System Improvements spending in the FY09-13 period decreased by $15.4 million as project spending was shifted outside the CAP. This is primarily due to revised schedules and cost estimates for several projects in Transmission and Distribution and Pumping programs.

Transmission: ($18.9) million

- Metrowest Tunnel total project spending decreased by $15.0 million in the FY09-13 timeframe primarily due to the actual award for Lower Hultman Rehabilitation (CP-6A) being less than budget.
- Winsor Dam Hydroelectric total project spending decreased by $3.2 million due to revised schedule for Winsor Power Station Rehabilitation and Improvements, Shafts 1,2,9, and 12 Rehab and Improvements, and Quabbin Aqueduct and Winsor Power Station Upgrade Design CA/RI contracts.
- Wachusett Reservoir Spillway Improvements/Winsor Dam Repairs total project spending decreased by $3.0 million due to adjustments for Cosgrove and Shaft A PCB and Wachusett Dam PCB Removal contracts.
- Long Term Redundancy total project spending increased by $2.1 million due to defined redundancy initiatives including scheduling for Cosgrove Tunnel Redundancy Pump Station Design ESDC/RI and Sudbury Aqueduct Preliminary Design/EIR.

Distribution and Pumping: ($35.5) million

- Northern Intermediate High (NIH) Redundancy and Covered Storage total project spending decreased by $18.6 million due to Gillis Pump Station Redundancy design and construction budgets transferred to Spot Pond Storage Facility project. Also, revised schedule for NIH Storage Construction due to coordination with communities on siting study and restructuring of Section 89/29 Redundancy Design as a separate sub-phase and revised schedule for NIH Storage Design.
- New Connecting Mains-Shaft 7 to WASM 3 total project spending decreased by $12.7 million due to North Segment (CP1A) budget transferred to Weston Aqueduct Supply Mains project. Lower actual award for Northeast Segment (CP5) also contributed to this decrease in spending.
- Southern Spine Distribution Mains total project spending decreased by $6.4 million primarily due to actual award for Section 107 Phase 2 being less than engineer's estimate.
- Chestnut Hill Connecting Mains total project spending decreased by $3.1 million due to revised schedules for Design and Construction pending the results of the Transmission Redundancy Study.

- Weston Aqueduct Supply Mains total project spending increased by $7.3 million due to revised cost estimates including the addition of new Waltham Connection and rehabilitation of the Watertown Section for water redundancy initiatives. Also, transfer of funds from New Connecting Mains Shaft 7 to WASM 3 project.

Other Waterworks: +$34.2 million

- Local Water Pipeline Improvement Program total project spending increased by $34.8 million due to new sub-phases added for Local Water System and Chicopee Valley Aqueduct Loans and Repayments.

Business and Operations Support:

Business and Operations Support spending in the FY09-13 period increased by $12.3 million.

- Alternative Energy increased by $11.3 million based on new energy initiatives for John J Carroll Water Treatment Plant Solar Construction, DeLauri Pump Station Wind, and Deer Island Wind Phase 2. This category will be changing as more energy related projects are identified and implementation becomes more certain.

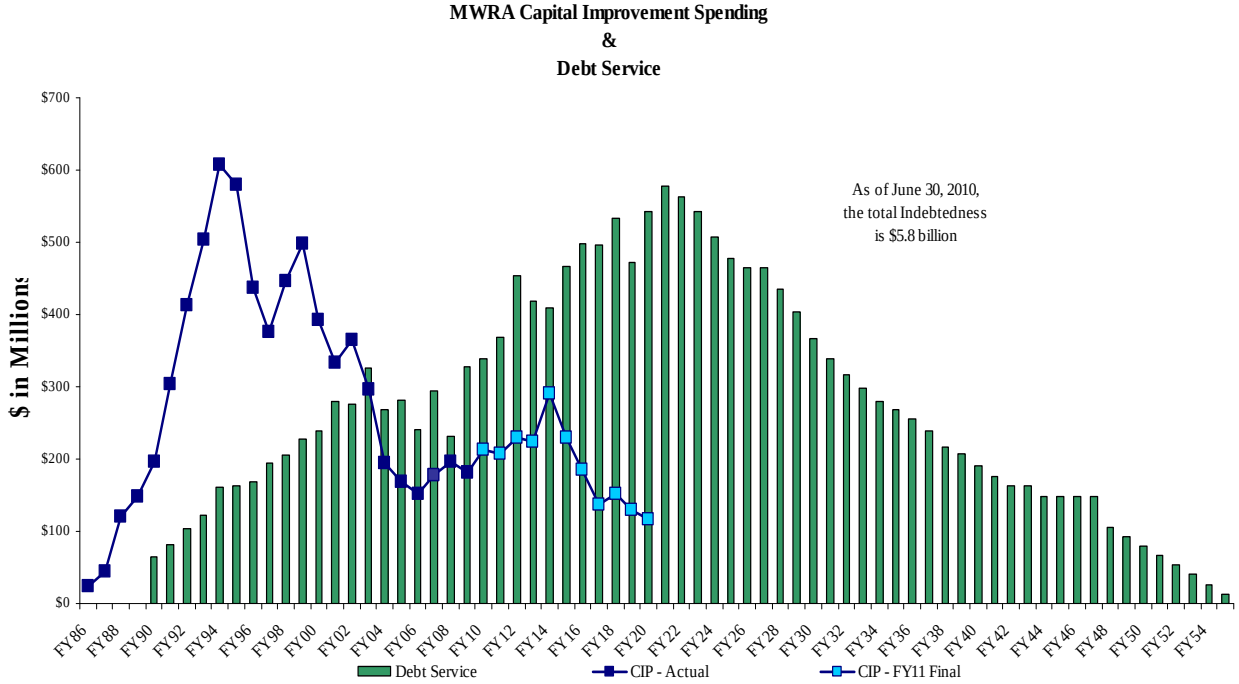
Outstanding Debt and Debt Management

The $7.2 billion spent on MWRA's modernization efforts to date, has relied heavily on debt financing. Total debt as of June 2010 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 Authority's debt service obligation as a percent of total expenses has increased from 36% in 1990 to 59% in the FY11 Final Current Expense Budget which has resulted in increased Rate Revenue Requirements. Given that the majority of the Rate Revenue Requirement is driven by debt service increases which are projected to increase significantly for the FY11-FY15 period, the coming years represent even greater challenges for the Authority.

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 June 30, 2010, the MWRA's indebtedness included $3.3 billion of senior revenue bonds, approximately $1.3 billion of subordinated revenue bonds, approximately $1.1 billion of loans with the SRF and $194 million of tax-exempt commercial paper notes.

The following graph illustrates the relationship between the MWRA's Capital Improvement Program and outstanding debt.



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 Tax Exempt Commercial Paper to minimize the financing cost of construction in process.

On May 6, 2010 the Authority restructured $75.0 million and on June 17, 2010 it defeased $47.7 million in bonds in order to decrease the FY11 through FY13 debt service requirements. These actions resulted in approximate savings of $33.9 million in FY11, $19.2 million in FY12 and $47.8 million in FY13. The FY10 defeasance was accomplished by using funds made available from the 2010 Series B refunding transaction and the FY10 surplus.

The Fiscal Year 2011 Final capital financing costs total $354.3 million. Debt service remains the largest portion of the MWRA's operating expenses, accounting for 59% of total expenses.

Future Risk Factors

Due to the very nature of the Capital Improvement Program, there will be changes to projects over time due to shifts in schedules, redefining of the scope, cost increases, 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, including:

- West Roxbury Tunnel Rehabilitation or Replacement of existing tunnel could represent $60 million in increased spending – engineering evaluation in progress (potential to increase from $80 million to $140 million depending upon field inspection results and required rehabilitation or replacement method);
- 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 always pose 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 2011

APPENDICES

MASSACHUSETTS WATER RESOURCES AUTHORITY

APPENDIX 1

Project Budget Summaries and Detail of Changes

Project Budget Summaries and Detail of Changes
Project Index

Wastewater System Improvements

Project Budget Summaries and Detail of Changes
Project Index

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.

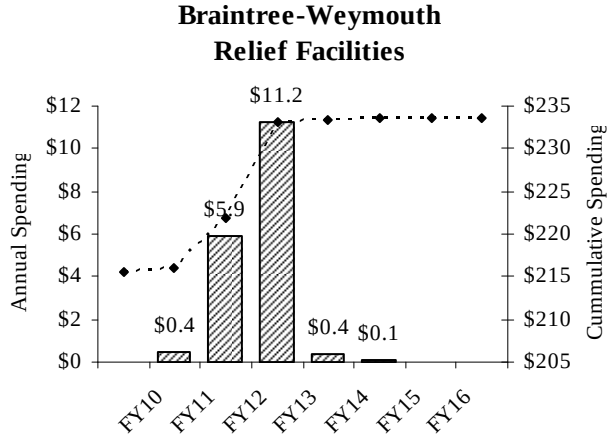
Scope

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$233,573	$215,535	$18,038	$431	$5,885	$18,442	$100	$0



Project Status 5/10	92.4%	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 awarded in June 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$238,263	$233,573	($4,690)	Aug-15	Jun-13	(26) mos.	$12,929	$18,442	$5,513

Explanation of Changes

- Project cost decreased due to revised cost estimate for Section 24 Rehabilitation and Section 624 Design being done under existing Design 2 CS/RI subphase partially offset by new sub-phase for Mill Cove Sluice Gate Construction.
- Schedule and spending accelerated due to revised schedule for Section 624 Rehabilitation based on project priorities.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$54,426	$53,722	$704	$218	$486	$1,276	$0	$0

Project Status 5/10	98.8%	Status as % is approximation based on project budget and expenditures. Construction on Sections 685 and 686 began in April 2005 and was completed in March 2008. Section 687 was awarded in October 2006 and completed in November 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$54,657	$54,426	($231)	Mar-08	Mar-08	None	$1,507	$1,276	($231)

Explanation of Changes

- Project cost and spending decreased due to balancing credit change order on Replacement 685-686.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$2,613	$940	$1,673	$0	$0	$84	$1,589	$0

Project Status 5/10	36.0%	Status as % is approximation based on project budget and expenditures. Initial Planning subphase was completed in 1998 and accounts for the payments through FY07. Design and Construction phases added as new Master Plan project phases during the Proposed FY09 CIP process.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$2,679	$2,613	($66)	Sep-15	Sep-15	None	$120	$84	($36)

Explanation of Changes

- Budget and spending changes due to revised design and construction cost estimates.

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 FES and the Wellesley Extension Sewer (WES) systems resulting in legal claims totaling several hundred thousand dollars. Severe corrosion has occurred in the West Roxbury Tunnel. This situation has prompted MWRA to add odor control chemicals at various points in the local systems and FES to try to reduce the hydrogen sulfide levels. The results have been mixed; not all of the chemicals were effective even over the short term, and none completely eliminated hydrogen sulfide.

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

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$14,647	$3,003	$11,644	$0	$0	$325	$11,319	$0

Project Status 5/10	20.5%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$14,776	$14,647	($129)	Jun-17	Jun-17	None	$3,132	$325	($2,807)

Explanation of Changes

- Cost decrease due to revised ENR inflation index.
- Spending decreased due to revised schedule for Biofilters design and construction due to project priorities.

CEB Impact

- CEB impact from the FERS Biofilters Project that was placed in the CIP. The cost of FERS chemicals (Nitrazyme and VX456) would be approximately reduced in half. The impact of this project would be approximately ($18,000) in FY15 and ($18,000) in FY16.

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.

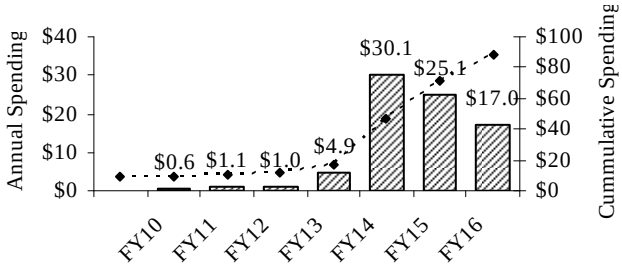
Scope

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.
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.
Construction	Rehabilitation of 1,000 feet of Section 138 and the West Portal.
Tunnel Design & Construction	Design and construction to rehab 12,500 feet of deteriorated tunnel caused by high levels of hydrogen sulfide and sewer turbulence.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$88,784	$8,918	$79,865	$608	$1,068	$7,575	$72,328	$0

West Roxbury Tunnel



Project Status 5/10	10.6%	Status as % is approximation based on project budget and expenditures. The design contract to rehabilitate the tunnel was awarded in February 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$77,733	$88,784	$11,051	Jan-15	Dec-15	11 mos.	$16,917	$7,575	($9,343)

Explanation of Changes

- Project cost increased due to revised cost estimate for the Tunnel construction contract. Schedule and spending shifted based on revised construction schedule based on actual design contract duration.

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$19,939	$19,188	$751	$612	$139	$5,992	$0	$0

Project Status 5/10	99.1%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$19,977	$19,939	($38)	Jul-09	Jul-09	None	$6,029	$5,992	($38)

Explanation of Changes

- Project cost and planned spending decreased due to balancing change for Construction 2 which is substantially complete.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$4,940	$3,440	$1,500	$0	$0	$0	$938	$562

Project Status 5/10	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 FY17.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$4,945	$4,940	($5)	Dec-18	Dec-18	None	$5	$0	($5)

Explanation of Changes

- N/A

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.
Hydraulic Flood Engr Analysis (N. System)	Evaluate the hydraulic benefit and feasibility of constructing emergency relief points in the Northern Collection system to better manage flows during extreme storm events with the goals of minimizing risk to public health and minimizing property damage.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$10,310	$930	$9,380	$0	$1,100	$3,103	$6,277	$0

Project Status 5/10	9.0%	Status as % is approximation based on project budget and expenditures. The Notice-to-Proceed for the Somerville Sewer Design is scheduled for October 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$2,365	$10,310	$7,945	Aug-14	Jun-15	10 mos.	$103	$3,103	$3,001

Explanation of Changes

- Project cost, schedule and spending changed due to new projects added for Manhole Structure Flood Protection Design and Construction and Hydraulic Structure Flood Engineering Analysis North System.

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 2004-2005. 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 it's 6th 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$26,578	$5,143	$21,436	$136	$0	$790	$7,201	$13,499

Project Status 5/10	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$26,578	$26,578	$0	Jul-25	Jul-25	None	$790	$790	$0

Explanation of Changes

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 awarded in December 2006.
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 Charlestown/Dorchester Sections 31, 32 and Sections 240, 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, 24 and 156 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.
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, and is in the final design phase.
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 remaining systems at Ward Street and Columbus Park will be reviewed under the Remote Headworks Concept Design for recommended replacement.
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 mechanical means, such as sluice gates in a diversion chamber, to isolate the station and bypass flow if required. This will allow maintenance to take place in the station without interruption of service. Final design commenced in April 2009.

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. They are discharging with less efficiency and the check valves are leaking. Staff has replaced rotating parts on the pumps over the past several years and it is difficult to maintain proper tolerances for internal pump components due to the age and wear of the pumps. The replacement is intended to increase pump reliability and efficiency at this facility and will include replacing the larger pumps, motors, and piping. The fourth station pump, the smallest one, was replaced under the SCADA contract along with three new Variable Frequency Drives for the three large pumps at this facility. Alewife Brook Pump Station has two climber screens currently in need of replacement. Past maintenance and operational issues have led to evaluating the use of grinders in lieu of conventional screens in the replacement of equipment at this facility. The design contract was awarded in April 2010.
Caruso Pump Station Generator Replacement	The Caruso Pump Station generator, which is currently 13 years old, is one of a few existing generators of this type made by Wakesha. The manufacturer is no longer making spare parts and there is only a limited quantity of available spare parts at this time, which may not be readily available in the future. This project is to replace the generator, due to obsolescence, with a newer model with readily available parts to ensure reliable back-up power at this facility.
Chelsea Screenhouse Sluice Gate Engineering Study	The Chelsea Screenhouse has seven hydraulic gates used to 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. Corrective actions can be performed under the CEB. Additional engineering review or study may be necessary if any operational problems occur once recommendations are implemented. Sufficient funds remain available to provide more services.
Prison Point & Cottage Farm Washdown System Piping Design and Construction	At both the Prison Point and Cottage Farm CSO Facilities the piping system that provides water for washing down the detention tanks, wet wells and screen room areas after storm activations is made of PVC and cast iron. The glued joints in the plastic pipe are problematic. The pipe and associated hangers and hardware are twenty years old in some instances. The replacement of these systems will include upgrading existing materials, connections, and installing necessary pressure controls.
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.

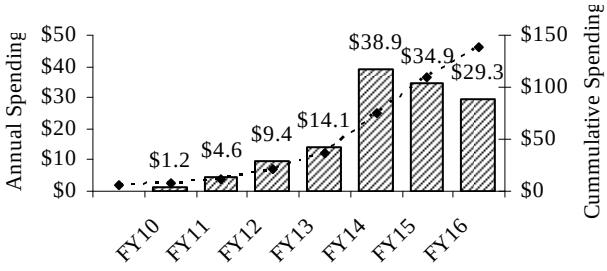
Sub-phase	Scope
Nut Island Headworks Fire Alarm/Wire Conduit	This project will replace the existing obsolete and problematic fire alarm system and faulty wiring at Nut Island Headworks. There have been significant repair costs over the past several years to keep the system functional and to correct deteriorated 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 FY09-13 timeframe.
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 concept design reports, recommendations will be made to improve or replace these systems. These recommendations will be included in design and construction contracts.
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.
Remote Headworks Upgrades Design & 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, construction, and construction management 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.
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 ten older pump stations and CSO facilities. The ten older pump station and CSO facilities to be included in the condition assessment/facilities plan are: Alewife Brook, Caruso, Chelsea Screen House, DeLauri, Hayes, Hingham, Prison Point, Wiggins - Castle Island Terminal, Cottage Farm, and Somerville Marginal.
New Neponset VFD Replacement	Replace Variable Frequency Drive at the New Neponset Pump Station.
North Dorchester Outfall Cleaning Study/Design	This project includes the evaluation of cleaning of four outfalls in North Dorchester Bay to maintain service of the North Dorchester Bay CSO Project due to infrequent discharges from the outfalls.
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.

Sub-phase	Scope
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.
Squantum Force Main Engineering Analysis	The analysis will evaluate a portion of the Squantum Force Main in Quincy. Specifically, the project will evaluate the structural condition of the pre-stressed concrete cylinder pipe (PCCP) from Fenno Street to the connection with the High Level Sewer at Sea Street (approximately 6,300 feet). The analysis will include non-destructive testing at selected locations along the pipe route.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$159,934	$6,558	$153,376	$1,193	$4,596	$29,644	$124,081	$0

I&P Asset Protection



Project Status 5/10	4.7%	Status as % is approximation based on project budget and expenditures. The Remote Headworks Concept Design was awarded in April 2008. This phase will result in recommendations for upgrade and replacement of equipment and systems in the three headworks facilities. The Remote Headworks Heating System Upgrade work at the Chelsea Creek Headworks was completed in May 2006. Section 93A Force Main Replacement was completed in January 2007. Work on sections 80 & 83 was completed in September 2007. Work on Section 160 was completed in December 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$87,058	$159,934	$72,876	Dec-28	Jul-17	(138) mos.	$37,349	$29,644	($7,705)

Explanation of Changes

- Budget increase primarily due revised cost estimates for Headworks Upgrades Construction and new projects for Interceptor Renewal #5 Milton, Interceptor Renewal #6 Chelsea, New Neponset VFD Replacement, and North Dorchester Outfall Cleaning Study/Design.
- Schedule and spending changed primarily due to revised cost and schedule duration for Headworks Upgrades Construction. Also, Columbus Park and Ward St HVAC Upgrades budget deleted since work will be part of Headworks Upgrades project.

CEB Impact

- CEB impacts for this project have not yet been identified.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$5,000	$0	$5,000	$0	$0	$0	$5,000	$0

Project Status 5/10	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$5,000	$5,000	$0	Jun-17	Jun-17	None	$0	$0	$0

Explanation of Changes

- n/a

CEB Impact

- No additional impacts expected 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$750	$0	$750	$0	$0	$0	$750	$0

Project Status 5/10	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$750	$750	$0	Jun-13	Jun-15	24 mos.	$656	$0	($656)

Explanation of Changes

- Schedule and spending changed 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 now discharges treated effluent 9.5 miles offshore in Massachusetts Bay through a series of 55 diffusers spaced along the last 1.5 miles of the tunnel.

Project History and Background

The Deer Island Treatment Plant Asset Protection program was formerly titled "Facilities Asset Management Program" (FAMP). Since the Facilities Asset Management Program 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 has been further defined to encompass 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 projected cost placeholder for funding new projects and/or cost increases to existing projects. Funds needed for new projects identified during each CIP development phase are deducted from this placeholder and then shown under new sub-phases. In the Proposed FY09 cycle 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 the next cap period.
Equipment Condition Monitoring	Installation of temperature & vibration-monitoring equipment in NMPS and 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 Plant's high-maintenance digester gas wet scrubber system with a dry scrubber system.
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, added in FY08 as part of the Master Plan. Last completed in October 2005 and anticipated to be required every ten years (2015, 2025, 2035, etc.).
Thickened Primary Sludge Pump Replacement	Design and construction to replace the thickened primary sludge pumps in order to reduce water use and maintenance costs.
Digested Sludge Pump Replacement Design & Construction	The existing Abel pumps have operating problems, need frequent maintenance. Added per the Master Plan, new pumps with higher flow rates will be installed, reducing potential grit settlement in the pipes. Designed under As-Needed Design task order, NTP for the first of two construction contracts was issued October 2009.
Centrifuge Back-drive Replacements	Replace the centrifuge back-drives, which have become obsolete. Scheduled to commence in late FY11 and will take 2 years to complete.
Grit & East/West Odor Ctrl Air Handler Unit Replacements	Replace deteriorated air handlers. Added per the Master Plan, with $6.1M in FY09-12, then every 15 years. Grit AHU replacement began July 2008, to be completed in May 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	Newly identified in FY08, added to the Master Plan. To replace obsolete fire alarm monitoring & control systems. Design in FY12, replace in FY13/14 and every 15 - 20 years. Estimated cost is $4.8M per cycle.
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 FY11, replace in FY13-15 and then every 15 years. Additional scope items (including central lab fume hood replacements) increased the cost for FY11 by $4.1M. Funding for future replacements will need to be added in later CIP cycles.
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. Units started up in 1996. Included in the Master Plan; replace four centrifuges every ten years beginning in FY15, at $1.3M per centrifuge.
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. Accelerated the schedule for replacement of 3 chillers at a cost of $1.1M to occur in FY11/12. Other work to commence in FY14-17 with future rehab and upgrade work occurring every 10 years.

Sub-phase *Equipment Replacement:*	**Scope**
South System Pump Station Pump Lube System Replacement	Change the pump lubrication system from using grease to one using oil. (Only requires routine maintenance after installation, not replacement). Included in the Master Plan. Cost estimate is $2.9 million, scheduled for FY11-12.
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 then added as an emergency project (and therefore was not in the Master Plan). The $8M funding was taken from the Equipment Replacement sub-phase, so no net CIP increase occurred. To be done in two segments, a $1.7M design phase was added for FY11. Scheduled for FY11-15, construction costs increased to $11.5M in the FY11 CIP cycle.
Butterfly Valve Replacements, North Main Pump Station (NMPS) & Winthrop Terminal Facility (WTF)	There are ten 60-inch butterfly valves in NMPS and five 36-inch plug valves in WTF, located upstream of the pumps, 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 FY11-13. Scope revisions were made in FY10 to include venturi meters, which increased the cost to $2.5M.

Sub-phase *Architectural:*	**Scope**
Study/Concept Design-Concrete Repairs	Study and conceptual design for installation of a protective coating on concrete in the secondary clarifiers and disinfection basins. Data collected over the past several years indicates project is 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; the second phase is scheduled to begin in FY11.
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 at $2.4M.
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 at $2.7M. Completed by February 2010.
DITP Roof Replacements Phase 2	Also added in FY10, $3M 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 to be done in FY11/12.
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. Estimated at $2.3 million for FY11-14, on a 20-year repeat cycle.

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, to be complete by February 2011. EEU-4 is scheduled to start in FY11; Cost increase of $1.2M in FY11 due to added scope items. Under the Master Plan, Phase 5 was added at $20.6M and scheduled to start in FY13.

Sub-phase *Utilities:*	**Scope**
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 FY11-14), South System Pump Station (done in FY07-08), Winthrop Terminal Facility (FY12-14), and miscellaneous smaller VFDs throughout the plant (on-going). Future replacements every 10-12 years.
Power System Improvement Design & Constr. (Contracts 7061, 7061A, 7061B)	For modifications to DITP's electrical system as recommended in the consultant report after an FY04 power outage. Design completed in FY09. Completing the construction in a series of four projects in FY09-13 (added 7061C in Final FY11, increasing the overall project cost by $424k) Two awarded in FY09, the third and fourth are scheduled to begin in FY11.
Thermal Power Plant Modifications – REI (formerly DI Electrical Mods)	Project covers REI work on one of the 3 projects above, modifications in the Thermal Power Plant. Scheduled to begin in FY11, cost estimate increased to $1.1M.
Switchgear REI for 7061 & 7061A	Project to provide REI services on two Power System Improvement projects listed above. $996k removed in the FY11 CIP, work to be done in-house.
Switchgear Replacements including future cycles added per the Master Plan	On-going program to sequentially replace obsolete electrical switchgear. Several buildings scheduled at $4M in FY11-15, others at $20M in FY17-20. 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 12 years. Transformers are replaced when the routine electrical maintenance program identifies them as being near the failure point. Avg. cost $500k/year.
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. Scheduled for FY11 at $1.9M, 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 at $4M for FY17-19; repeat cycles every 20^{+} years.
Sodium Hypochlorite Pipe Replacement	Replacement of ½ mile of PVC piping that transports sodium hypochlorite from the barge to the storage tanks with a better-suited pipe. This project will address issues with leaks, corrosion, and safety hazards in FY13-16.
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.
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 awarded at $11.2M in June 2009 to end by December 2010. Includes periodic valve replacements. No other replacement or 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. Schedule accelerated due to the failure of the leak detection system; $1.1M design to begin in FY11, construction scheduled for FY12-14 at an estimated cost of $3.4M.
North Main Pump Station Motor Control Center (MCC) Construction	Sequential replacement of the MCC equipment that has become obsolete and unreliable. Schedule accelerated for FY11due to poor condition. Designed under As-Needed Design task order, $7M construction scheduled for FY11-13.

Sub-phase *Utilities:*	**Scope**
CTG Rebuilds	Rebuilds of the combustion turbines in the Thermal Power Plant. Added from the Master Plan, now at $4M 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; includes the services of an Owners Rep.
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.

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 FY12
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 5-1, 5-2, 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. These design phases are currently scheduled to end in 2012, followed by phases added to the project listed below.
Deer Island As-Needed Technical Design	Added in FY08 as part of the Master Plan effort, this subphase will be used to continue the technical design services and/or construction support in the same fashion as the contracts listed above. This project was moved here from *Plant Optimization* in FY10. From FY12 through FY15 expect to have two contracts at $750,000 per year each, and then increase to $1M each for FY16 through FY25. The total estimated project cost is $26.45 million.

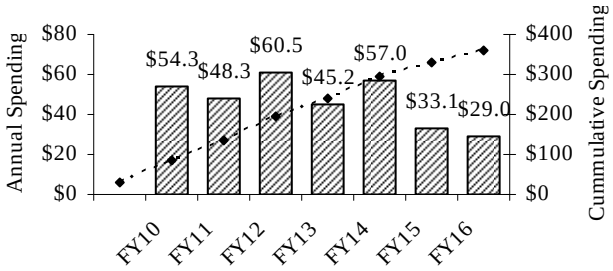
Sub-phase *Specialties:*	**Scope**
Sodium Hypochlorite Tank Liner Removal	Removed the failed lining in tank #1 of the four sodium hypochlorite storage tanks. Completed in September 2006.
Hypochlorite Tanks 1&3 Reline	Renamed the "Sodium Hypo Tank Repair 1" subphase in FY08. Included the stripping, repair 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 was complete in October 2008.
Future Sodium Hypo Tank Rehabilitation	Periodic stripping and relining of the four sodium hypochlorite tanks, based on historical experience to date. Included in the Master Plan at $2.5M for 2018, with repeat cycles every 10 years.
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.

Sub-phase *Specialties:*	**Scope**
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.
Gravity Thickener Improvements - Construction	This subphase was eliminated in the Proposed FY08 CIP, and the scope was included with the Primary Clarifier Rehab work above. Made a stand-alone project again in FY09. Three phases planned - the first phase involves replacing the covers in FY10-11. Phase 2 was added in late FY10 to address the unexpected failure of a center column in a tank, at a cost of $269k. The remainder of the project involves installing catwalks around the perimeter of several tanks, removing concrete blocks in the effluent channels, modifying the sludge thickener roofing to improve staff access and the operating efficiency of the thickeners, and replacing the center columns in the other tanks. These scope changes resulted in a project cost increase of $2.7M for FY11
Ancillary Modifications Design and Construction 4	Dropping the Preliminary Design phase and adding ESDC/REI to scope for 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 for FY10.

Expenditure Forecast (in $000s) and Project Status

Total Budget	**Payments thru FY09**	**Remaining Balance**	**FY10**	**FY11**	**FY09-13**	**FY14-18**	**Beyond FY18**
$512,501	$31,566	$480,935	$54,256	$48,274	$222,428	$167,884	$104,829

DI Asset Protection



Project Status 5/10	16.4%	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, DITP Roof Replacement Phase 2, Miscellaneous VFD Replacements, Electrical Equipment Upgrade Construction 3, Switchgear Relay Upgrade and Switchgear Automation (two of the three Power System Improvements – Construction contracts); Grit Air Handler Unit Replacement, Primary & Secondary Clarifier Rehab Design & Construction, Heat Loop Pipe Replacement Construction 3 (including the REI contract), Digester Sludge Pump Replacement Construction Phase 1, and STG System Modifications. Contracts for HVAC Equipment Replacement Design, Fuel Transfer Pipe Replacement Design, Electrical Equip. Upgrade 4, Butterfly Valve Replacement and Fire Alarm System Replacement Design are some of the larger projects expected to start in FY11. In FY11, the three largest projects projected to start are NMPS VFD Replacement, NMPS MCC Construction and Digester Modules Pipe Replacement.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$490,400	$512,501	$22,101	Jun-48	Jun-48	None	$250,852	$222,428	($28,424)

Explanation of Changes

- The project cost increase is primarily due to several revised cost estimates including NMPS VFD Rpl Construction ($6M), Electrical Equipment Upgrade Construction 4 ($1.2M), Gravity Thickener Improvements ($2.7M), HVAC Equipment Replacement Design/ESDC and Construction ($4.1M, a portion of which is offset by a $1M reduction in Central Lab Fume Hood Replacement - Design), Digester Mod 1 & 2 Pipe Replacement ($2.7M), Sodium Hypo Pipe Replacement Construction ($1.5M), Fuel Transfer Pipe Replacement Design and Construction ($2.2M), and TPP Fuel & Steam Mods-REI ($300k). The cost for an added sub-phase for Digester Mods Pipe Replacement Design ($1.7M) is offset by the deletion of the $990k Switchgear REI project and $1M reduction in the DITP Roof Replacements project.
- Spending shifted primarily due to several project schedule changes including TPS Pump Replacement Construction, LOCAT Scrubber Replacement Construction, Chemical Pipe Replacement Construction, NMPS VFD Replacement Construction, and DITP Switchgear Replacement Construction, among others

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. The STG System Modifications are expected to save ($450,000) in annual electricity costs as of FY12 and +$90,000 in RPS revenue; NMPS ($187,000 in FY15), WTF VFD Replacement ($30,000 in FY15) and Future SSPS VFD Replacements ($120,000 in FY20) are expected to result in combined annual electricity cost savings of $787,000. Transformer Replacements in FY14 ($20,000) and Electrical Equipment Upgrades 3 in FY12 and Upgrade 4 in FY14 are each expected to result in annual combined savings upon completion of $150,000. HVAC Equipment Replacement assume ($126,000) in FY16.
- 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 and FY09 CIP cycles. Additional capital reinvestment was required in the FY10 CIP. 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 bottom three projects shown below were added for FY10 based on identified needs; no new projects were added for FY11.

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	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	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. Awarded a contract for cleaning the first digester in May 2010. The tank rehab work is scheduled to begin in FY11.
Clinton Aeration Efficiency Improvement	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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$3,115	$493	$2,622	$44	$262	$2,771	$0	$0

Project Status 5/10	15.8%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$3,115	$3,115	$0	Feb-12	Feb-13	12 mos.	$2,771	$2,771	$0

Explanation of Changes

Schedule shift of Clinton Plant-Wide Concrete Repair pending completion of Plant Survey Report.

CEB Impact

- The projects are required to replace obsolete equipment and systems. The soda ash system replacement project is expected to result in decreased maintenance and/or operating costs, however the potential benefits are not quantified at this time. The standby generator will only be used as needed in an emergency, or run periodically to ensure it is in good operating condition. The aeration efficiency project is projected to reduce Clinton's electricity usage by approximately 20%. Assume ($45,000) in incremental avoided costs as of FY13. The concrete repair and digester rehab 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, construction is scheduled to commence in early FY11.
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	Renamed the "Lab Sample Area Modifications" project to cover more extensive renovations, in the Proposed FY11 cycle. 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. Design scheduled to begin in FY13, construction in FY14.
Central Lab Fume Hood Replacements Construction	Replacement of approximately 35 fume hoods in the Lab at Deer Island not included in other projects above. The first replacement cycle is scheduled for FY11 through FY15 at $2M, with future replacements expected every fifteen years.
Central Lab Fume Hood Replacements Design	**Renamed the "Laboratory As-needed Technical Design" subphase to this in FY11.** Management decision was made to design each project separately instead of using an as-needed task order contract. This project now provides the design services & construction support for the project shown above.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
6,667	$1,021	$5,646	$143	$714	$2,033	$3,705	$0

Project Status 5/10	16.3%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$9,490	$6,667	($2,823)	Jun-48	Apr-15	(404) mos.	$4,536	$2,033	($2,503)

Explanation of Changes

- Project cost and planned spending decreased due to deleting the budget for Central Lab Fume Hood Replacement Design since it will be included in the HVAC Equipment Replacement Design contract. This decrease was partially offset by revised cost estimates for Central Lab Renovations Design and Construction contracts.
- Scheduled completion dates changed due to elimination of the long term As-Needed Design project.

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 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 FY10-11.

A comprehensive Residuals Condition Assessment/Reliability Study began in May 2009 (with a study to assess the latest technology and regulatory trends planned as a second phase starting in early FY11) 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 (FY11-18). 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

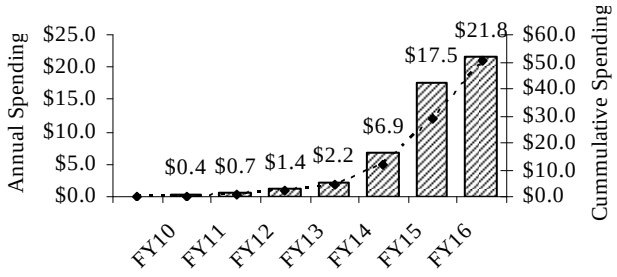
Sub-phase	Scope
Condition Assessment/ Reliability Study* (1)	Evaluate the condition of the entire facility at the mid-point of the current contract and assess other residuals processing options and regulatory changes which may provide cost-saving opportunities. First phase is a present condition assessment followed by a technology and regulatory review. Currently scheduled at $1.06M, work on this project began in late FY09.

Sub-phase	Scope
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 $870K CIP project slated to start in FY11 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 FY14, with repeat cycles in FY29 and FY44. 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 2016, with repeat cycles every 15 years (FY31 and FY46).
Plant MCC Construction* (1)	Replacement of the motor control center (MCC) equipment. Estimated at $1.5M over two years starting in FY17 with repeat cycles every 15 years (FY32 and FY47).
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 FY17, with repeat cycles in FY32 and FY47 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 FY16. Based on the Master plan, the replacement cycle repeats in FY31 and FY46.
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 FY30 and FY45.
Sludge Storage Tank Rehab* (2)	Rehabilitation of the sludge storage tanks and related valves. Estimated at $1M over one year beginning in FY16, with repeat cycles in FY31 and FY46.
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 FY15. Future replacement or rehab cycles recur in 15-year intervals, in FY30 and FY45 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 FY15. Based on the Master plan, the centrifuges may need to be replaced again in FY33.
Utility Upgrades - Construction* (2)	Upgrades to the water, sewer, electrical, and telephone systems. Estimated at $2M over two years beginning in FY17. Repeat cycles every 15 years (FY32 & FY47).
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 FY18, with repeat cycles in FY33 and FY48.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$147,930	$0	$147,930	$366	$694	$4,596	$60,542	$82,792

Residuals Asset Protection



Project Status 5/10	0.0%	Status as % is approximation based on project budget and expenditures. The Residuals Plant Condition Assessment/Reliability Study began in May 2009. Award of the Technology & Regulatory Review contract is anticipated to occur in early FY11.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$147,870	$147,930	$60	Jun-48	Jun-48	None	$5,869	$4,596	($1,272)

Explanation of Changes

- Project cost increased slightly due to an updated estimate for the Technology & Regulatory Review project.
- FY09-13 spending changed due to revised schedules for Residuals Upgrades Design and Construction.

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 to meet short-term CSO control requirements pursuant to federal regulations (including EPA Nine Minimum Controls) and to develop a long-term control plan to bring Boston area CSOs into compliance with the Federal Clean Water Act and State 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 series 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 Nine Minimum Controls compliance documentation by January 1, 1997. 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 (with modifications made through April 2006), which produced a revised plan for CSO control that conformed to EPA's 1994 policy.

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 1980s and the 1990s 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 85% 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 limited 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 expected 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 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 revises these milestones and adds 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 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 will 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 first set of the series of variances was issued by DEP in September 2007 (for Alewife Brook/Upper Mystic River) and October 2007 (for Lower Charles River Basin). These extensions are in effect until September and October 2010, respectively, when it is expected that new three-year extensions will be issued.

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 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 continues to face cost and schedule challenges, including the general uncertainty associated with construction of tunnels and related shafts, such as with the North Dorchester Bay storage tunnel, and the need to coordinate work where major projects by others are also in construction, such as in East Boston. 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 objectives.

MWRA commenced implementation of the long-term CSO control plan in 1996. Updated project schedules are presented in Table 2. By July 2010, MWRA and the CSO communities had completed 26 of the 35 projects in the plan, and 8 projects were in design or construction. The one remaining project is scheduled for design commencement by April 2012. With this level of completion, MWRA has achieved significant progress in reducing CSO discharges to Boston Harbor and its tributaries. Together with improvements to MWRA's wastewater conveyance and treatment systems, including the upgraded Deer Island Treatment Plant and associated pump stations, the completed CSO projects have reduced the total annual volume of CSO discharge in a typical rainfall year from 3.3 billion gallons in 1988 to 552 million gallons, an 83% reduction. In addition, up to 80% of the remaining overflow receives treatment at MWRA's four CSO treatment facilities. While December 2015 is the required completion date for the final component of MWRA's long-term CSO control plan, the bulk of the

remaining work is scheduled to be completed well in advance of that date. For example, the North Dorchester Bay CSO project, which is the largest single component of the MWRA's CSO program and comprises over half of the remaining budget to be expended is scheduled for completion by May 2011.

Table 1

Receiving Water	CSO Discharge Goals (typical rainfall year)		Projects*	Capital Cost* ($ million)
	Activations	**Volume (million gallons)**		
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 Connection Upgrades • Somerville Baffle Manhole Separation • Cambridge Floatables Control (portion)	68.4
Mystic River/Chelsea Creek Confluence and Chelsea Creek	1 untreated and 39 treated @ Somerville Marginal	0.6 60.6	• Somerville Marginal CSO Facility Upgrade • Somerville Baffle Manhole Separation • Hydraulic Relief at BOS017 • Chelsea Trunk Sewer Replacement • Chelsea Branch Sewer Relief • CHE008 Outfall Repairs • East Boston Branch Sewer Relief (portion)	78.9
Charles River (including Stony Brook and Back Bay Fens)	2 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 • Charles River Interceptor Gate Controls • Brookline Sewer Separation • Bulfinch Sewer Separation • MWRA Outfall Closings and Floatables Control • Cambridge Floatables Control (portion)	95.5
Inner Harbor	6 untreated and 17 treated @ Prison Point	9.6 243.0	• Prison Point CSO Facility Upgrade • Prison Point Optimization • BOS019 Storage Conduit • East Boston Branch Sewer Relief (portion)	62.9
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	259.5
Reserved Channel	3 untreated	1.5	• Reserved Channel Sewer Separation	73.7
South Dorchester Bay	Eliminate		• Fox Point CSO Facility Upgrade (interim improvement) • Commercial Pt. CSO Facility Upgrade (interim improvement) • South Dorchester Bay Sewer Separation	126.7
Neponset River	Eliminate		• Neponset River Sewer Separation	2.4
Regional			• Planning, Technical Support and Land Acquisition	50.9
TOTAL **Treated**		**413.3** **384.8**		**885.3**

*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.

Table 2

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	Aug 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
Charles River Interceptor Gate Controls and Additional Connections		Jan 08	Jan 10[(1)]	Jan 11[(1)]
Optimization Study of Prison Point CSO Facility		Mar 06	Mar 07	Mar 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	Sep 12
Somerville Baffle Manhole Separation			Apr 96	Dec 96
Cambridge/Alewife Brook Sewer Separation	CAM004 Outfall and Detention Basin		Jul 10[(2)]	Jul 12[(2)]
	CAM004 Sewer Separation	Jan 97	Jul 98	Dec 15[(2)]
	CAM400 Manhole Separation	Oct 08	Jan 10[(2)]	Mar 11[(2)]
	Interceptor Connection Relief/ Floatables Control	Oct 08	Jan 10[(2)]	Oct 10[(2)]
	MWR003 Gate and Rindge Ave. Siphon	Apr 12[(2)]	Nov 13[(2)]	Jan 15[(2)]
Region-wide Floatables Control and Outfall Closings		Sep 96	Mar 99	Dec 07

[1] MWRA is seeking Federal Court approval to delete this project and these Schedule Seven construction milestones as recommended from its interceptor optimization study.
[2] Proposed new schedule that incorporates 27-month delay due to wetlands appeal as well as new information from Cambridge design updates. MWRA is seeking Federal Court approval to revise respective Schedule Seven milestone.

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 and provide a high level of separate stormwater control to greatly reduce 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 by storing most of the overflows and pumping them back into the interceptor system after storms. Outfall BOS019 discharges to the Little Mystic Channel in Charlestown.
Chelsea Trunk Sewer Relief	Control CSO discharges at Outfalls CHE002, CHE003, CHE004, and CHE008 by relieving a local trunk sewer and the MWRA Chelsea Branch Sewer and by repairing Outfall CHE008. These outfalls discharge to the Mystic/Chelsea Confluence and Chelsea Creek. 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 to MWRA CSO outfalls along the Lower Charles River Basin that are not associated with treatment facilities.
MWR003 Gate and Siphon	Minimize CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan, and also provide flood control in extreme storms by providing a control gate at outfall MWR003 and relieving MWRA's Rindge Ave. Siphon.
Charles River CSO Controls	Bring the MWRA's "Brookline Connection" into service, implement Cottage Farm influent gate controls and other facility inflow controls, and evaluate and implement interceptor optimization measures that may further reduce CSO discharges to the Charles River Basin.

Project	Purpose
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.
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 Charles River, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of this sewer separation 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.
Neponset River Sewer Separation	Eliminate CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean Beach) by separating combined sewer systems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with Outfalls BOS093 and BOS095.
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.
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 consolidation storage tunnel to Savin Hill Cove, 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 CSO discharges to the Charles River 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 Charles River, 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 and easements required for CSO project implementation.

Expenditure Forecast (in $000s) and Program Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$885,280	$621,634	$263,646	$88,858	$68,821	$336,586	$26,054	$424

Program Status 5/10	79.8%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$878,003	$885,280	$7,277	Dec-15	Dec-15	None	$323,970	$336,586	$12,615

Explanation of Changes

- **MWRA Managed +$1.9M**
  Project Changes: Charles River CSO Controls ($1.2M), East Boston Branch Sewer Relief +$2.6M, MWR003 Gates & Siphon +$.7M.

- **Community Managed +$4.7M**
  Project Changes: Cambridge Sewer Separation +$6.0M, Brookline Sewer Separation +$5.6M, Reserved Channel Sewer Separation ($4.9M), Cambridge Floatables Control ($2.8M).

- **CSO Planning & Support +$.7M**
  Project Changes: Land/Easement +$.7M

CEB Impact

- Completion and start-up of these projects will result in a total net increase of $450,000 (in FY10 dollars) by FY12. By year, the CEB impact is as follows:

Fiscal Year	CEB Impact	Explanation
2012	$450,000	Estimate for operation, maintenance, and odor control for infrastructure associated with North Dorchester Bay project.
2017	350,000	Estimate for periodic cleaning of the tunnel.

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 by May 2006. The court schedule requires MWRA to complete the North Dorchester Bay tunnel and related facilities (including dewatering pumping station, sewers and ventilation building) by May

2011. 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.

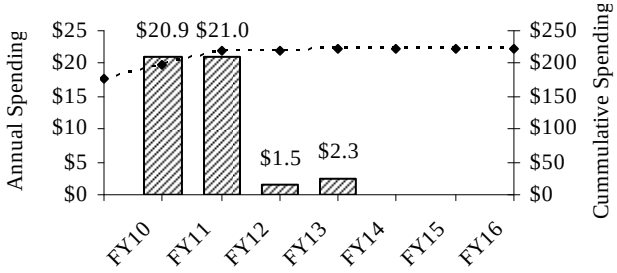
Scope

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$223,299	$177,531	$45,767	$20,942	$21,025	$84,256	$0	$0

North Dorchester Bay



Project Status 5/10	88.4%	Status as % is approximation based on project budget and expenditures. The Tunnel Construction contract NTP was issued on August 31, 2006. The Tunnel and Facilities Construction Management Services contract was awarded in October 2005. In June 2006, the Authority executed a MOU with Massport for the Authority's construction on Massport land including the tunnel mining shaft and the dewatering pumping station. Construction of Pleasure Bay Drain Improvements was substantially complete on March 28, 2006. The Authority issued the NTP for Final Design services for related CSO facilities in November 2006. The Dewatering Pump Station & Sewers construction contract was awarded in April 2009. The Ventilation Building construction contract was awarded in October 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$223,441	$223,299	($142)	May-11	May-11	None	$84,400	$84,256	($144)

Explanation of Changes

- Project cost and planned spending decrease associated with lower award amount for the Ventilation Building Construction partially offset by credit change orders associated with the Tunnel contract being less than anticipated and amendment for additional construction administrative services.

CEB Impact

- Estimate $450k/year as of FY12 for operation, maintenance and odor control for infrastructure associated with this project. Estimate of $350K in FY17 for periodic cleaning of the tunnel.

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.

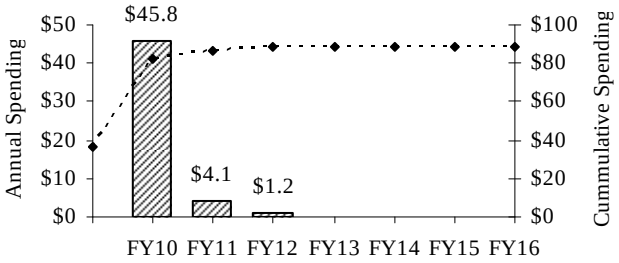
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
88,037	$36,947	$51,090	$45,836	$4,082	$77,331	$0	$0

East Boston Branch
Sewer Relief



Project Status 5/10	92.4%	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 construction began in July 2008. Section 38 & 207 contract was awarded in April 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$85,446	$88,037	$2,591	Jul-10	Jul-10	None	$74,740	$77,331	$2,591

Explanation of Changes

- Project cost and planned spending increase due to additional change orders for East Boston Branch Relief Sewer and Section 38 and 207 Replacement contracts.

CEB Impact

- No impacts identified at this time.

S. 348 BOS019 Storage Conduit

Project Purpose and Benefits

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

This project is intended to reduce CSO activations and annual volume to the Little Mystic Channel (Upper Inner Harbor) from 18 to 2 discharges per year and from 8 million gallons to 0.4 million gallons, respectively, a greater than 90% reduction. The project will bring CSO discharges at outfall BOS019 into compliance with the state receiving water quality designation B(cso).

Project History and Background

In compliance with Schedule Seven, MWRA issued the notice to proceed with construction to Walsh Construction of Illinois on March 31, 2005. The BOS019 storage conduit comprises two, parallel 10-foot by 17-foot conduits, each 280 feet in length, providing 670,000-gallons of off-line storage that will capture CSO discharges at outfall BOS019 from all but the two largest storms in a typical year. The project reduces CSO activations to the Little Mystic Channel from 18 to 2 times per year and reduces annual discharge volume from 8 million gallons to 0.4 million gallons. The new facility includes a small pump station to dewater the stored flows into the collection system when available capacity in the local BWSC sewer system has returned after storms have past. Appurtenant equipment also includes an odor control system, diversion chambers and motor control center. The operation of this facility is conducted remotely from the Operations Control Center via a System Control and Data Acquisition (SCADA) system. Construction reached substantial completion in March 2007.

Scope

Sub-phase	Scope
Design (Contract 6258)	Project reassessments and preliminary design for BOS019 storage conduit and Fort Point Channel storage conduit/sewer separation. Final design for BOS019 storage conduit only.
BOS019 Storage Conduit Construction (Contract 6260)	Construction of the BOS019 storage conduit commenced March 31, 2005 and was substantially complete on March 31, 2007.
Construction Management Services (Contract 7008)	Resident engineering and inspection services for the BOS019 storage conduit.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$14,288	$14,288	$0	$0	$0	($44)	$0	$0

Project Status 5/10	100.0%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in March 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$14,288	$14,288	$0	Mar-07	Mar-07	None	($44)	($44)	$0

Explanation of Changes

CEB Impact

- No additional impacts are identified at this time.

S. 350 Union Park Detention Treatment Facility

Project Purpose and Benefits

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

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

Project History and Background

This project improves water quality in the Fort Point Channel by providing treatment of CSO discharged from BWSC's Union Park Pumping Station. The existing pumping station, constructed in 1976, provides flood control for the South End neighborhood of Boston. The Final EIR called for the detention/treatment facility to be constructed adjacent to the existing pumping station, on property owned by BWSC at the intersections of Albany, Malden, and Union Park Streets in the South End. Flows pass through the new treatment facility before entering the pumping station wet well. Construction of the treatment facility commenced in March 2003 and was substantially complete in April 2007.

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

Some layout changes within the existing pumping station optimize use of available space and minimize aboveground construction. The pumping station remained in service during construction of the treatment facility. Operation and maintenance of the new treatment facility and the existing pumping station is integrated and is conducted by a private operator under contract to both MWRA and BWSC.

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

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$49,583	$49,583	$0	$0	$0	($227)	$0	$0

Project Status 5/10	100%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in April 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$49,583	$49,583	$0	Jun-07	Jun-07	None	($227)	($227)	$0

Explanation of Changes

- Project completed.

CEB Impact

- No additional impacts are 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 connecting the Alewife Brook Sewer and Alewife Brook Conduit; and floatables control consisting of an in-line net in outfall MWR003. In 2009, MWRA moved the recommended plan for interceptor 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, 2007, and expected to be sequentially reissued through 2020.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction.
Construction	Construction of an automated gate and associated controls at Outfall MWR003, 150 feet of new siphon, interceptor relief at Outfall SOM01A and floatables controls at outfalls MWR003 and SOM01A.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$3,489	$0	$3,489	$0	$0	$445	$3,044	$0

Project Status 5/10	0.0%	Status as % is approximation based on project budget and expenditures. Design contract is now expected to be awarded in April 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$2,839	$3,489	$650	Apr-14	Jan-15	9 mos.	$1,352	$445	($907)

Explanation of Changes

- Revised cost estimate to account for transfer of Interceptor Connection Relief and floatables controls at SOM01A from the Cambridge Floatables Control project.
- Schedule changed in accordance with the City of Cambridge's new Alewife CSO project schedules proposed in

September 2009.

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) developing an operational strategy for optimizing the transfer of flows between the Charles River Valley Sewer and the South Charles Relief Sewer using if appropriate 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 construction contract was substantially completed 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$4,406	$3,059	$1,347	$478	$696	$3,305	$0	$0

Project Status 5/10	78.3%	Status as % is approximation based on project budget and expenditures. Design/CA contract for the Brookline Connection/Cottage Farm was awarded in September 2006. Interceptor Optimization Engineering/Design began in January 2008. Cottage Farm Brookline Connection and Inflow Controls Construction was completed in June 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$5,651	$4,406	($1,245)	Oct-11	Oct-11	None	$4,550	$3,305	($1,245)

Explanation of Changes

- Budget decrease due to the deletion of Existing Gate Controls construction subphase from the project based on MWRA's conclusion from the results of the Charles River interceptor optimization study that no gate controls, additional interconnections or other system modifications can improve the long-term level of CSO control at Cottage Farm Facility or other Charles River CSO outfalls.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$54,171	$53,763	$409	$0	$409	$409	$0	$0

Project Status 5/10	99.2%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$54,016	$54,171	$155	Nov-06	Nov-06	None	$253	$409	$156

Explanation of Changes

- Budget and spending increased due to revised cost estimates.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$ 64,551	$58,047	$6,505	$1,014	$733	$9,661	$0	$0

Project Status 5/10	91.4%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$64,319	$ 64,551	$232	Nov-07	Jun-13	67 mos.	$9,429	$9,661	$232

Explanation of Changes

- Budget and spending increased due to revised cost estimates.
- Schedule changed to account for Dorchester Interceptor Relief work (continuing downspout disconnections and inflow removal).

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$44,333	$44,486	($154)	($288)	$134	($719)	$0	$0

Project Status 5/10	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$44,209	$44,333	$124	Sep-06	Sep-06	None	($843)	($719)	$123

Explanation of Changes

- Project cost and spending increase due to revised cost estimate.

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. The first four construction contracts were completed 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 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.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$63,985	$21,382	$42,603	$3,482	$10,363	$36,361	$9,173	$0

Project Status 5/10	38.9%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$57,979	$63,985	$6,006	Apr-15	Dec-15	8 mos.	$36,609	$36,361	($248)

Explanation of Changes

- Project cost increase due to shift of Cambridge construction contract 4, including police detail work from the Cambridge Floatables project.
- Schedule and spending shift reflects Cambridge's new project schedules proposed in September 2009

CEB Impact

- No impacts identified at this time.

S. 352 Cambridge Floatables Control

Project Purpose and Benefits

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

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

Project History and Background

Floatables control devices will be installed at each Cambridge-owned CSO outfall on the Charles River and Alewife Brook, primarily using underflow baffles. Floatables control at one location (CAM401A) was completed in 2004. The City of Cambridge is managing the work with MWRA funds and oversight

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$1,087	$1,036	$51	$51	$0	$165	$0	$0

Project Status 5/10	100%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$3,886	$1,087	($2,799)	Jun-12	Dec-08	(42) mos.	$2,963	$165	($2,799)

Explanation of Changes

- Budget, spending and schedule change due to Cambridge's Contract 4 work (Alewife interceptor connection relief and floatables controls) transferred to Cambridge Sewer Separation project. Also, construction of floatables control at SOM01A transferred to MWR003 Gate & Siphon project.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$12,062	$9,408	$2,653	$862	$1,791	$3,770	$0	$0

Project Status 5/10	85.1%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$11,867	$12,062	$195	Dec-10	Dec-10	None	$3,576	$3,770	$194

Explanation of Changes

- Budget and spending increased due to revised cost estimates.

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.

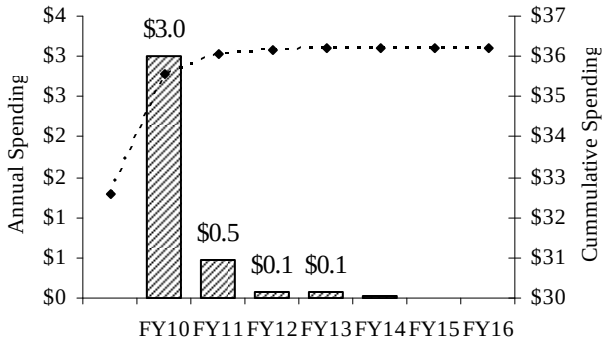
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$36,224	$32,593	$3,630	$2,992	$478	$21,527	$20	$0

Morrissey Boulevard Drain



Project Status 5/10	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$36,435	$36,224	($211)	Jun-09	Jun-09	None	$21,759	$21,527	($232)

Explanation of Changes

- Budget and spending decreased due to revised cost estimates.

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

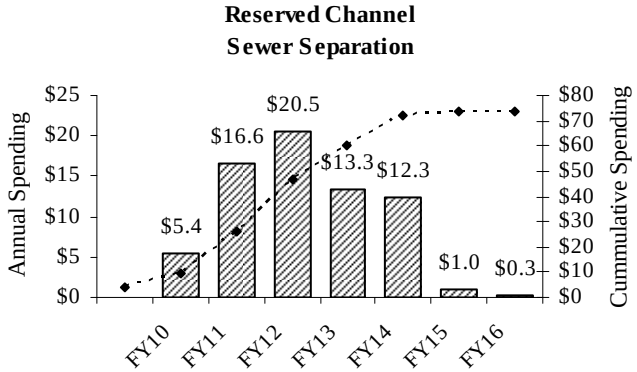
In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and the Reserved Channel. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report 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.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$73,684	$4,272	$69,412	$5,381	$16,627	$57,340	$13,627	$0



Project Status 5/10	13.1%	Status as % is approximation based on project budget and expenditures. BWSC began design in July 2006 and commenced the first of nine planned construction contracts in May 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$78,574	$73,684	($4,890)	Dec-15	Dec-15	None	$48,999	$57,340	$8,341

Explanation of Changes

- Project cost and spending changed due to updated cost estimates and updated projected spending 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

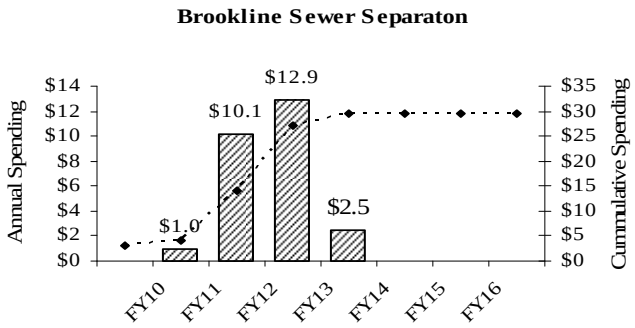
In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$29,599	$3,082	$26,517	$1,017	$10,110	$28,328	$0	$0



Project Status 5/10	16.9%	Status as % is approximation based on project budget and expenditures. The Town of Brookline began design in November 2006 and commenced the first construction contract in November 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$24,010	$29,599	$5,589	Jul-13	Jul-12	(12) mos.	$22,738	$28,328	$5,589

Explanation of Changes

- Project cost and spending changed due to revised design and construction cost estimates from Brookline.
- Schedule changed due to revised contract duration shortening project by 1 year.

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.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$9,986	$3,373	$6,614	$5,589	$1,025	$9,489	$0	$0

Project Status 5/10	89.7%	Status as % is approximation based on project budget and expenditures. BWSC began design in August 2006 and began construction in September 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$9,648	$9,986	$338	Jul-10	Jul-10	None	$9,151	$9,489	$339

Explanation of Changes

- Project cost and planned spending increase due to revised cost estimates.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$50,892	$47,179	$3,713	$1,501	$1,348	$5,190	$190	$424

Project Status 5/10	93.8%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$50,208	$50,892	$684	Dec-20	Dec-20	None	$4,566	$5,190	$624

Explanation of Changes

- Project cost and spending increased due to the potential for additional easement costs associated with the North Dorchester Bay CSO project if the larger construction easement at Conley Terminal is needed beyond the temporary easement termination date in the Massport agreement, which is February 1, 2011.

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. Through May 2010, MWRA has distributed $74.9 million in grants and $119.8 million in no-interest loans to fund 375 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$122,594	$94,149	$28,445	$4,490	($1,252)	$8,590	$28,942	($6,337)

Project Distribution Status 5/10	64.8%	Through May 2010, MWRA has distributed $74.9 million in grants and $119.8 million in no-interest loans to fund 375 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Project Repayment Status 5/10	54.0%	Through May 2010, a total of $96.1 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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$122,594	$122,594	$0	Jun-26	Jun-26	None	$6,043	$8,590	$2,547

Explanation of Changes

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

CEB Impact

None

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 beyond FY13.

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 John J. Carroll Water Treatment Plant (JJCWTP)

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 facilities.

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 John J. 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 both the D/DBP and LT2ESWT rules.

Scope

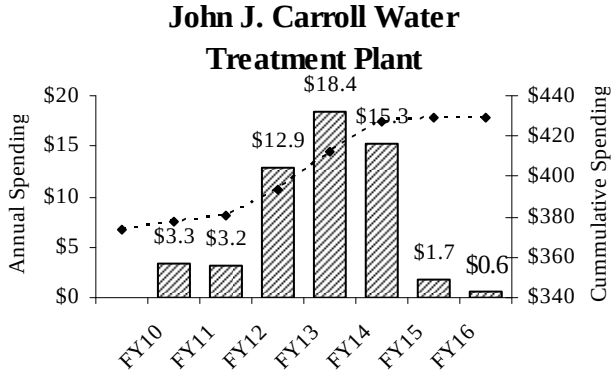
Sub-phase	Scope
Study 1	Investigation of the potential impacts of SDWA amendments on the MWRA system and evaluation of the need, feasibility, and benefits of improved treatment processes.
Study 2	Evaluation of alternative filtration, disinfection, and corrosion control processes to determine the most 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 JJCWTP.
Professional Services	As needed legal, insurance, design, and construction specialty services for the John J. Carroll Water Treatment Plant.
Marlborough MOA	Agreement to mitigate the impacts of the construction of the John J. Carroll Water Treatment Plant on Marlborough.
WHWTP – MECo	Relocation of electric power lines.
Site Security Services	Site security services at the John J. Carroll Water Treatment Plant.
CSX Crossing	Railroad track improvements adjacent to JJCWTP.
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 John J. 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 JJCWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the JJCWTP 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 John J. Carroll Water Treatment Plant.
Technical Assistance #5 and #6	Continuation of as-needed engineering technical assistance for ancillary modifications design and plant optimization.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$429,436	$374,037	$55,399	$3,330	$3,243	$39,117	$17,567	$0



Project Status 5/10	87.8%	Status as % is approximation based on project budget and expenditures. WH CP4 Treatment Plant and WH CP6 Late Site Work were substantially complete in July 2005 and January 2006, respectively. The Existing Facilities Modifications 50% design submittal was received in December 2009. 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.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$428,119	$429,436	$1,317	Dec-14	Dec-15	12 mos.	$38,983	$39,117	$134

Explanation of Changes

- Project cost increase and spending change due to new subphases added for Technical Assistance 5 and 6. Also, revised cost estimate for Ancillary Modifications Construction 2. Increase partially offset by revised cost for Fitout-Construction since warehouse work is no longer part of this contract.
- Schedule shifted for Wachusett Algae construction due to project priorities.

CEB Impact

- Expect $75,000 for operating costs for UV in FY15. Expect $20K for Wachusett Algae Facility in FY16 and $20K in FY17 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 John J. 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$17,488	$10,175	$7,313	$248	$502	$7,275	$69	$0

Project Status 5/10	58.5%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$17,329	$17,488	$159	Aug-12	Sep-12	1 mos.	$7,148	$7,275	$127

Explanation of Changes

- Project cost and spending increase due to inflation adjustment for construction due to new ENR index.

CEB Impact

- Annual incremental operating costs for UV treatment are estimated at $38,000 in FY13 and $13,000 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 will have 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 has been 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$40,681	$35,288	$5,393	$4,886	$112	$21,759	$33	$0

Project Status 5/10	97.8%	Status as % is approximation based on project budget and expenditures. Design/Build contract was awarded on November 15, 2006. The new tanks was 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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$40,746	$40,681	($65)	Jan-12	Jan-13	12 mos.	$21,827	$21,759	($69)

Explanation of Changes

- Schedule changed due to update in Roadway Resurfacing schedule.
- Budget and spending decrease due to balancing 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. This makes it possible to restore the integrated low service system. 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 15 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, it will also be possible to fill the Spot Pond Storage tank with water reduced in pressure from the high service system if needed. However, this should only be necessary during periods of very high water use when the Spot Pond Storage tank does not fill at night by gravity.

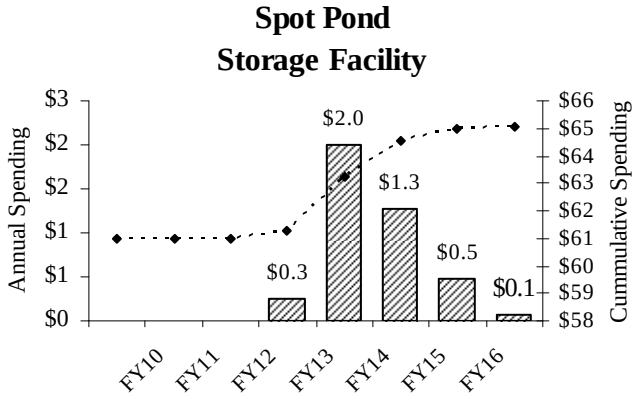
The Spot Pond Storage Facility will also include a buried backup pump station to provide redundancy to the Gillis Pump Station supplying the Northern High and Northern Intermediate High service areas.

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.
Owners'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.
New Stoneham Meter Connection/ Detention Basin	Construction of piping and meter connection to replace existing water supply to be removed as part of tank construction and construction of detention basin to control site drainage release due to new construction.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$62,547	$264	$62,283	$5,946	$1,068	$37,974	$24,340	$0



Project Status 5/10	8.5%	Status as % is approximation based on project budget and expenditures. Design Build is expected to begin in July 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$52,109	$62,547	$10,438	Mar-14	Jul-14	4 mos.	$33,305	$37,974	$4,669

Explanation of Changes

- Project cost increase due to revised Design/Build cost to include transfer of pump station from NIH Redundancy sub-phases as well as a new sub-phase set up for Early Construction Water Connection/Detention Basin.
- Schedule and spending change primarily due to revised cost and schedule for Design Build and revised expenditure forecast for Owners Representative.

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 (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 is scheduled to be bid in 2012.

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

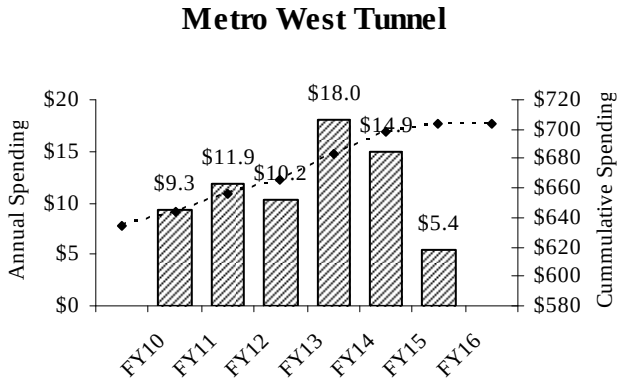
Sub-phase	Scope
Study	Study of the aqueduct/tunnel system to determine the best alternative to improve hydraulic capacity and create redundancy.
Construction-Sudbury Pipe Bridge	Rehabilitation of the Siphon Pipe Bridge at the Weston Aqueduct which experienced significant leakage.
Design/EIR-Tunnel-Engineering 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 65 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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$704,027	$634,288	$69,739	$9,279	$11,900	$49,914	$20,312	$0



Project Status 5/10	91.5%	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. Completed construction of CP9 in December 2006. 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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$713,836	$704,027	($9,809)	May-14	Sep-14	4 mos.	$64,900	$49,914	($14,985)

Explanation of Changes

- Project cost and spending decrease is primarily due to actual award for CP6A Lower Hultman Rehab being less than engineer's estimate. This decrease was partially offset by the addition of Valve Chamber Modifications work.
- Schedule changed due to actual contract duration of CP-6.
- Spending changed due to the actual award of CP6A noted above as well as a revised schedule for Valve Chamber Storage Tank Access Improvements.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$8,605	$8,605	$0	$0	$0	$34	$0	$0

Project Status 5/10	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$8,619	$8,605	($14)	Apr-08	Apr-08	None	$47	$34	($13)

Explanation of Changes

- Project cost decreased due to final cost adjustments. Contracts are completed.

CEB Impact

- None identified at this time.

S. 597 Winsor Dam Hydroelectric

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 license and rehabilitate the turbine generator at the Winsor Power 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. 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 powerhouse 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 hydropower 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 Power Station has been deleted. Hydroelectric operation will be evaluated, and if feasible, will be included in the Quabbin Release Pipeline project.

The water supply infrastructure within the Winsor Power 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:

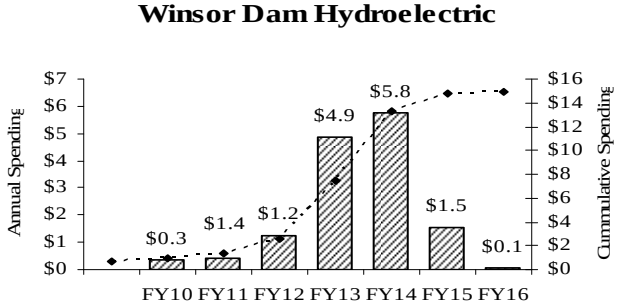
- Winsor Power Station Chapman Valve Repair & Purchase of Sleeve Valves: Immediate replacement of the existing damaged Chapman Valve with sleeve valves.
- Pipeline Replacement Phase 1 – To repair and upgrade large-diameter piping and valving in the basement of the Winsor Power Station including the bypasses;
- Quabbin Aqueduct and Winsor Power Station Upgrade - To replace the antiquated and unreliable shutter system with a sluice gate to control flow at the intake to the Quabbin Aqueduct on the shores of Quabbin Reservoir;
- Quabbin Release Pipeline- To convey cold, well-oxygenated hypolimnetic water from Quabbin Reservoir to the downstream trout hatchery via a new pipeline.

Scope

Sub-phase	Scope
Preliminary Permit Study	Study to determine project feasibility.
Winsor Power Station Rehab & Improvements	Construction to address piping improvements and building rehabilitation for water supply and Swift River discharge.
Quabbin Aqueduct and Winsor Power Station Upgrades Design and Construction	Installation of a sluice gate to control flow at Shaft 12 or Shaft 9, the intake to the Quabbin Aqueduct, thereby improving safety and reliability of the transmission system. Also, design to address station piping improvements for water supply and Swift River discharge. The work also includes rehabilitation and improvements at Shafts 1, 2, 9 and 12.
Quabbin Release Pipeline Design and Construction	Design and construction of a pipeline to convey water from the CVA to the downstream trout hatchery.
Winsor Power St. Chapman Valve Repair	Construction of replacement valving for the existing 36" Chapman BFV (design by Technical Assistance consultant).
Purchase of Sleeve Valves	For replacing the damaged Chapman BFV.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$14,866	$612	$14,254	$341	$424	$7,458	$7,370	$0



Project Status 5/10	6.6%	Status as % is approximation based on project budget and expenditures. Winsor Power Station Chapman Valve Repair commenced in February 2009. Design for Shaft 12 Quabbin Aqueduct and Winsor Power Station Upgrade notice-to-proceed was issued in December 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$15,504	$14,866	($638)	Feb-14	Jun-14	4 mos.	$10,660	$7,458	($3,202)

Explanation of Changes

- Project cost decrease due to deletion of Detail Design and Construction of Hydroelectric sub-phases. This was partially offset by revised cost estimate for Shafts 1,2,9 and 12 Rehab, Quabbin Release Pipeline and inflation adjustments due to new ENR index.
- Schedule and planned spending shift due to revised schedules for Winsor Power Station Rehab & Improvements, Shafts 1,2,9 & 12 Rehab & Improvements by adding Shafts 1,2,and 9 to scope and revised contract duration of Quabbin Aqueduct & WPS Upgrade Design CA/RI.

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. The hydraulic control facilities of the Quabbin Tunnel are 70 to 80 years old and badly in need of renewal and upgrade. Based on the findings and recommendations of this inspection phase, MWRA will add design and construction phases at a later date.

Project History and Background

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 Electrical Design & Construction	Upgrade the 60 year old Oakdale 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 Roof, Masonry Restoration & Weatherproofing	Replace the leaking roof, gutters, and repair/seal degraded windows and doors. Sealing of the building will allow more efficient heating of building space to prevent further deterioration.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$11,420	$4,423	$6,996	$121	$250	$3,068	$3,929	$0

Project Status 5/10	40.2%	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 Electrical Design phase began in October 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$8,762	$11,420	$2,658	Jul-17	Jun-18	11 mos.	$3,112	$3,068	($44)

Explanation of Changes

- Project cost increase due to new projects added for CVA Intake Motorized Screen Replacement and Wachusett Lower Gatehouse Rehab and inflation adjustment on Phase 1A Electrical Construction. Increase slightly offset by actual award for Oakdale Phase 1A Electrical Design being less than budget.
- Schedule changed due to new sub-phase for CVA Intake Motorized Screen Replacement.

CEB Impact

- None identified at this time.

S. 617 Sudbury 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 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.
Sudbury Short-Term Repairs Phase 1 and 2 Construction	Repairs needed in order to prepare the Sudbury Aqueduct for short-term use (flow test and emergency activation). Recent study indicated several issues need to be addressed before any short–term use.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$3,267	$635	$2,632	$17	$92	$1,836	$796	$0

Project Status 5/10	20.0%	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 January 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$3,179	$3,267	$88	Dec-10	Jul-13	31 mos.	$2,544	$1,836	($708)

Explanation of Changes

- Project schedule and spending changed due to revised schedule for Weston Aqueduct Inspection due to competing project priorities. Also, Sudbury Short-Term Repairs sub-phase broken out into two phases with the second phase expected to begin in FY13.

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 is to remove PCBs at the Cosgrove Intake Building and Shaft A, and the second contract is to remove PCBs from the crest of the Wachusett Dam. The third and final contract will provide removal of PCBs that have 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 will remediate 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$11,944	$9,385	$2,559	$2,526	$33	3,894	$0	$0

Project Status 5/10	96.7%	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 will reach substantial completion in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$14,950	$11,944	($3,006)	Feb-10	Jul-10	5 mos.	$6,900	$3,894	($3,006)

Explanation of Changes

- Project cost and spending decrease due to GASB 49 (Environmental Remediation) adjustments.
- Schedule changed due to actual completion date of Phase 2 PCB Remediation contract.

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.

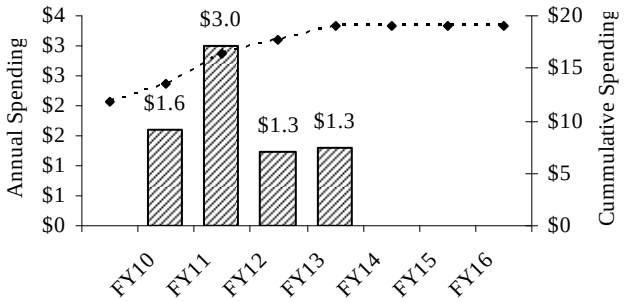
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$19,000	$11,858	$7,143	$1,600	$3,000	$10,793	$0	$0

Watershed Land



Project Status 5/10	66.7%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**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, Waban, 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, Waban, Sudbury, Chestnut Hill and Wachusett Open Channel Lower dams and associated gatehouses. Dam Safety Modifications Design CA/RI began in September 2009.
Quinapoxet Dam Preliminary Design/Permits and Design ESDC/RI and Construction	Provide permitting, preliminary design, final design, ESDC/RI and construction for the removal of the Quinapoxet 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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$8,739	$0	$8,739	$275	$504	$6,757	$1,982	$0

Project Status 5/10	3.1%	Status as % is approximation based on project budget and expenditures. Design phase for Dam Safety Modifications and Repairs began in September 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$7,509	$8,739	$1,230	Aug-13	Jun-16	34 mos.	$5,776	$6,757	$981

Explanation of Changes

- Project cost, schedule and spending changed due to the addition of Quinapoxet Dam Preliminary Design, Final Design ESDC/RI and Construction sub-phases. Also, due to inflation adjustment as a result of new ENR index.

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 will evaluate alternatives and develop conceptual designs and cost estimates to provide redundancy for the metropolitan tunnel system and the Cosgrove Tunnel. In addition, the Quabbin Tunnel will be inspected and recommendations for maintenance and/or repairs of the Quabbin Tunnel will be developed. Recommendations for inspections of other tunnels will also be developed.

The metropolitan tunnel system will be 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 has involved 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 is to develop and evaluate alternative surface pipe improvements, in addition to previously proposed tunnel loops, to achieve the required 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. 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 failures at the surface connections to the distribution system or major subsurface issues such as structural issues due to earthquake or faults. A rupture of piping at surface connection 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 repairs. Although the assumption is that tunnels have a useful life of 100 years, due to the need to keep these lines in service, these subsurface structures have not been inspected and their actual condition is unknown. 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 tanks also provide mitigation of the effects of piping rupture at these points.

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.

A 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 will form the basis for subsequent projects for MEPA environmental review,

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

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.

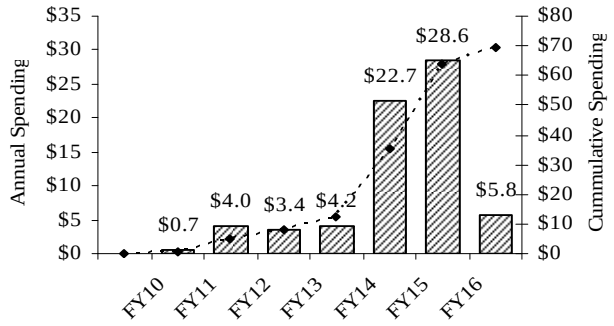
Scope

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 and Construction	Design and construction for providing redundancy for the Metropolitan area. The recommended plan includes work to provide redundancy for the metropolitan tunnel system at Shaft 5 and Shaft 7of the City Tunnel. The southern component consist 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$326,032	$256	$325,776	$663	$3,956	$12,477	$123,181	$190,375

Long Term Redundancy



Project Status 5/10	0.2%	Status as % is approximation based on project budget and expenditures. An engineering services contract for the Water Transmission Redundancy Plan was awarded in September 2008. Staff presented the findings of this study to the Board of Directors in January and June 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$203,419	$326,032	$122,613	Dec-23	Dec-21	(24) mos.	$10,419	$12,477	$2,057

Explanation of Changes

- Project cost, schedule, and spending changed due to redundancy initiatives being defined to now include Cosgrove Tunnel Redundancy Pump Station, Sudbury Aqueduct Pressurization/Connecting Pipes, and Tops of Shafts Rehabilitation contracts.

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

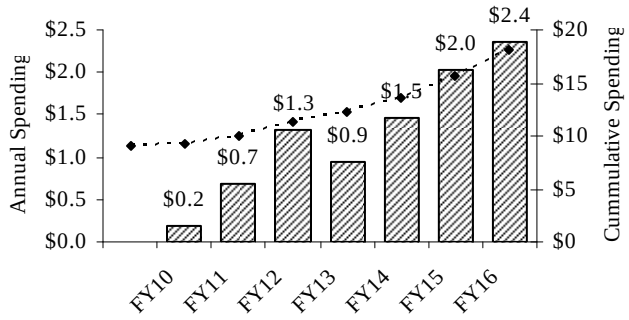
Sub-phase	Scope
Design/Phase 1	Design of valve replacements, setting priorities based on the level of urgency or risk associated with each valve and scheduling work on valves that would not otherwise be replaced during upcoming pipeline rehabilitation projects.
Construction - Phase 1	Purchase and installation 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
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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$19,132	$9,059	$10,073	$196	$676	$3,614	$6,939	$0

Valve Replacement



Project Status 5/10	48.8%	Status as % is approximation based on project budget and expenditures. Phases 1-6 are complete. Phase 7 scheduled to commence in February 2011. Phases 8 and 9 will commence in FY13 and FY15, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$18,930	$19,132	$202	Jun-16	Jun-16	None	$3,948	$3,614	($335)

Explanation of Changes

- Project cost increase due to inflation adjustments.
- Spending decrease due to revised expenditure forecast 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$1,405	$141	$1,264	$0	$0	$0	$0	$1,264

Project Status 5/10	10.0%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$1,684	$1,405	($279)	Jun-22	Jun-22	None	$0	$0	$0

Explanation of Changes

- Project cost decreased due to revised cost estimates for Test Installation 2-4 sub-phases.

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. The rehabilitation of WASMs 1 and 2 is complete.

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 in the split high/low mode, WASM 4 will be able to support WASM 3 through the planned connecting mains during planned shutdowns or emergencies. When one or more of the Metropolitan tunnels is shut down, WASM 4 will operate in tandem with WASM 3 as a high service line to supply the communities north of the city tunnel. The availability of this support has significantly reduced the cost of the New Connecting Mains-Shaft 7 to WASM 3 project.

Scope

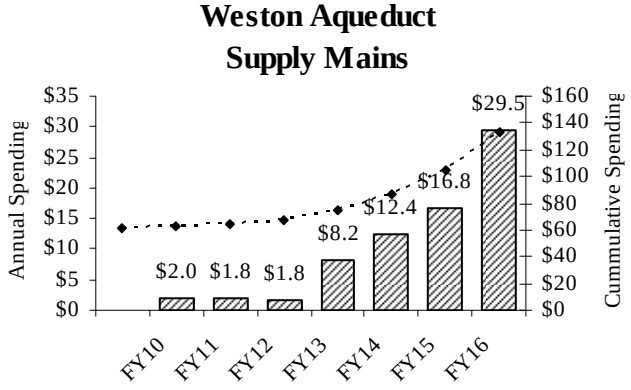
Sub-phase	Scope
Design/CA/RI – WASMs 1 & 2 (6142)	Design, construction administration, and resident inspection for the rehabilitation of WASM 1 and WASM 2 (construction contracts 6280 and 6281).
Design/CA/RI - WASM 4 (5147)	Design, construction administration, and resident inspection for the rehabilitation 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.
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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$260,084	$60,977	$199,107	$1,981	$1,821	$13,822	$120,835	$64,526



Project Status 5/10	24.2%	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 Construction began in August 2009. MEPA/Design CA/RI Section 36/Watertown Section/Waltham Connection is expected to commence in FY11.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$129,090	$260,084	$130,994	Mar-21	Sep-21	6 mos.	$6,475	$13,822	$7,347

Explanation of Changes

- Project cost, schedule, and spending increased due to addition of new Waltham Connection and rehabilitation of the Watertown Section for water redundancy initiatives. Budget increased for WASM contracts and include transfer of funds from New Connecting Mains –Shaft 7 to WASM 3 project.

CEB Impact

- None identified at this time.

S. 721 Southern Spine Distribution Mains

Project Purpose and Benefits

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

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

Project History and Background

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

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

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.

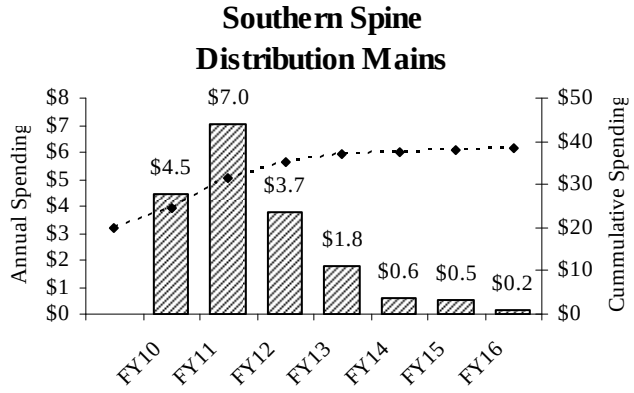
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$69,495	$20,045	$49,450	$4,465	$7,047	$19,466	$2,257	$30,161



Project Status 5/10	34.0%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$74,413	$69,495	($4,918)	May-19	May-22	36 mos.	$25,899	$19,466	($6,432)

Explanation of Changes

- Project cost decrease primarily due to award of Section 107 Phase 2 being less than engineer's estimate. This decrease partially offset by revised cost estimates for Section 22 North Construction and Section 20 & 58 contracts.
- Spending shift due to award of Section 107 Phase 2 above being less than engineer's estimate and revised schedule for Southern Spine Section 22 North Facility Plan/EIR as a result of project prioritization.

- Schedule shift for Section 20 & 58 to sequence with Section 22 North Facility Plan/EIR contract.

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.

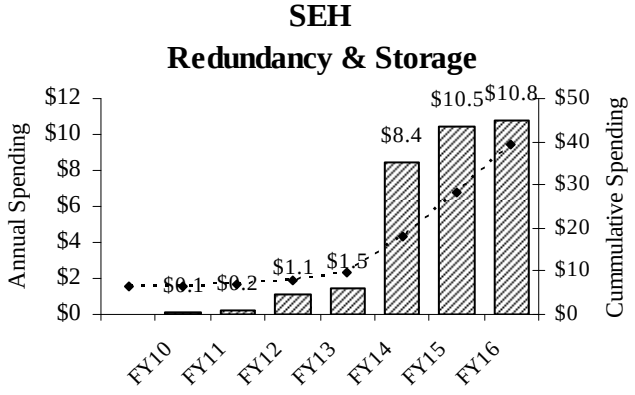
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$93,841	$6,587	$87,255	$106	$202	$7,840	$52,364	$31,970



Project Status 5/10	7.1%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$91,644	$93,841	$2,197	Jun-26	Jun-26	None	$8,585	$7,840	($745)

Explanation of Changes

- Project cost increase due to inflation adjustments on unawarded redundancy and storage sub-phases.
- Spending shift due to revised schedule for Construction Short-Term Improvements to correspond with completion of Concept Plan.

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. 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.
Final Design CA/RI (6995)	Design CA/RI services for final pipe connections work (Chapter 30 &149).
Chapter 30 Construction (6982)	Chapter 30 Construction final pipe connections.
Chapter 149 Construction (6302)	Chapter 149 Construction final pipe connections.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$30,481	$17,462	$13,019	$0	$0	$1,136	$11,884	$0

Project Status 5/10	57.3%	Status as % is approximation based on project budget and expenditures. Preliminary engineering for the final pipe connections reached substantial completion in April 2006. Final Design CA/RI is expected to begin in July 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY10**	**Chge.**	**FY10**	**FY11**	**Chge.**
$25,378	$30,481	$5,103	Jul-14	Jul-15	12 mos.	$4,271	$1,136	($3,135)

Explanation of Changes

- Project cost increase due the addition of an emergency generator for the Chestnut Hill Emergency Pump Station.
- Schedule and planned spending shifts due to pending results of Transmission Redundancy Study.

CEB Impact

- None identified at this time.

S. 704 Rehabilitation of Other Pump Stations

Project Purpose and Benefits

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

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

Project History and Background

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

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

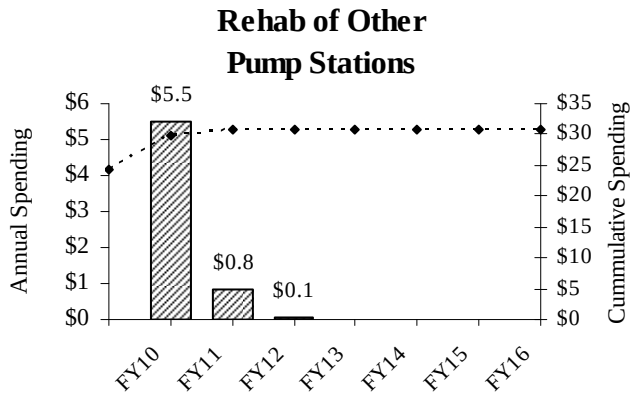
MWRA has divided construction into two contracts. The first contract (Construction - Interim Automation), based on a fast-track design and completed in February 2001, involved installation of SCADA systems at each station. Under the second construction contract, MWRA will complete rehabilitation of the five pump stations. The second construction contract was awarded in October 2006 and was substantially complete in June 2010.

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$30,717	$24,309	$6,407	$5,514	$822	$12,731	$0	$0



Project Status 5/10	97.3%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$30,855	$30,717	($138)	Jun-10	Jun-10	None	$12,870	$12,731	($139)

Explanation of Changes

- Project cost and spending decreased primarily due to estimates for change orders have been less than anticipated.

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.

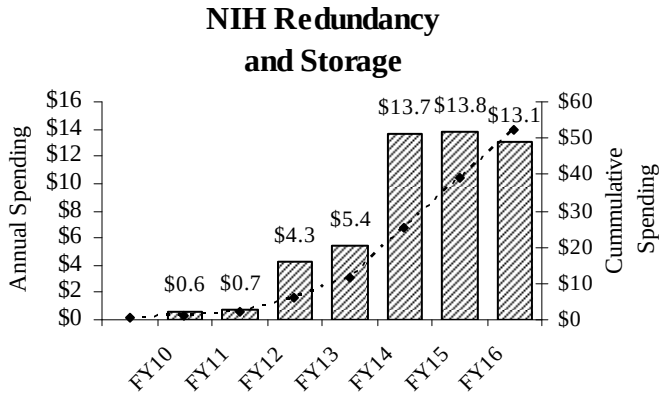
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$79,253	$727	$78,525	$638	$665	$11,081	$51,697	$15,841



Project Status 5/10	1.6%	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.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$88,988	$79,253	($9,735)	Dec-17	Jun-18	7 mos.	$29,670	$11,081	($18,589)

Explanation of Changes

- Project cost decreased due to Gill Pump Station Redundancy Design and Construction subphases transferred to Spot Pond Storage Facility Design Build contract and Design CA/RI NIH Short-Term Improvements award being less than engineer's estimate. This decrease was partially offset by revised cost estimates for Section 89/29 Rehab Construction, NIH Storage Design, and Section 89/29 Redundancy Design as well as inflation adjustments due to new ENR index.
- Spending and schedule shift primarily due to Gillis Pump Station Redundancy design and construction transfer and revised schedule for NIH Storage Construction contract due to coordination with communities on siting study and restructuring Section 89/29 Redundancy Design by deleting design of storage tank from contract.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$66,097	$60,995	$5,102	$1	$0	$2,768	$2,851	$0

Project Status 5/10	92.3%	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.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$62,463	$66,097	$3,634	Dec-18	Dec-18	None	$909	$2,768	1,859

Explanation of Changes

- Project cost and spending increased due new sub-phases added for Section 4 Webster Ave Design and Construction, and Section 50 Pipe Rehabilitation Design and Construction. This increase was partially offset for final cost reduction for CA/RI CP3 since work is completed.
- Planned spending increase primarily due to new sub-phases added for Section 4 Webster Ave Design and Construction and Section 50 Design noted above.

CEB Impact

- None identified at this time.

S. 723 Northern Low Service Rehabilitation - Section 8

Project Purpose and Benefits

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

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

Project History and Background

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

Before rehabilitating Section 8, the distribution system supplying East Boston must be strengthened. The existing Sections 37 and 46, located in Chelsea, are older 36-inch cast iron mains. These two pipe sections connect between Section 57, previously rehabilitated, and the two Chelsea River crossings to East Boston at Sections 8 and 38. It is anticipated that these two pipelines will need cleaning and cement mortar lining. Section 97A, a new 16-inch pipeline will provide redundancy to East Boston via Northern High System. The pipeline will connect to existing Meter 99 in East Boston and to the Boston low-pressure system through a new pressure-reducing valve.

Scope

Sub-phase	Scope
Survey, 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 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$19,600	$1,564	$18,036	$648	$73	$2,287	$17,256	$0

Project Status 5/10	11.5%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$19,199	$19,600	$401	Jul-16	Jul-17	12 mos.	$4,300	$2,287	($2,013)

Explanation of Changes

- Project cost increase due to revised cost estimate as a result of inflation adjustment for Section 8 Construction. Also, change orders for Section 97A.
- Schedule change due to rescheduling Section 8 Construction as a result of project priorities.
- Planned spending decrease is due to rescheduling of Sections 37 and 46 Chelsea/East Boston subphase 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 WASM 4 to WASM 3 and improve the capability to convey 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 and connecting these mains by constructing new pipelines, such that transmission loops will be formed between the City Tunnel, City Tunnel Extension and WASM 3. The rehabilitation of WASM 4 is also closely related to this project, because WASM 4 will be interconnected to the new connecting mains of the Shaft 7 to WASM 3 project. WASM 4, which can be operated on high or low service, runs parallel to the City Tunnel from Shaft 5 to Shaft 8, midway between the City Tunnel and WASM 3. Using WASM 4 as a supply means for the new connecting mains will result in cost savings by delaying or eliminating the need for a new pipeline south of WASM 4 to a Shaft 7 connection. This project has evolved from the Shaft 7 to WASM 3 Connecting Mains project to the WASM 3 and WASM 4 Connecting Mains project. The revised project route through Newton and Waltham is shorter and less expensive.

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.

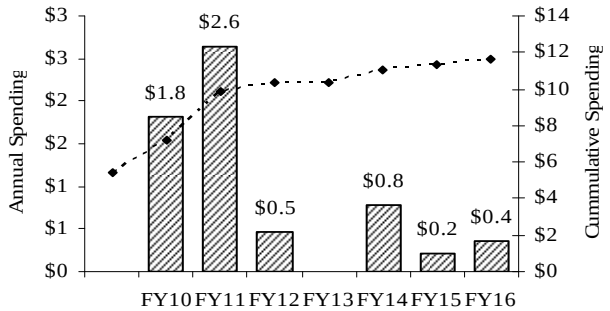
Scope

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$30,131	$5,388	$24,743	$1,812	$2,640	$4,987	$9,216	$10,609

New Connecting Mains



Project Status 5/10	22.9%	Status as % is approximation based on project budget and expenditures. Watertown MOU and Routing Study are complete and design work is in progress. 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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$61,956	$30,131	($31,825)	Nov-19	Nov-19	None	$17,728	$4,987	($12,740)

Explanation of Changes

- Project cost and spending decreased due to Revised N Segment (CP1A) being replaced by the new Waltham Connection in the Weston Aqueduct Supply Mains project. Also, actual award for Northeast Segment (CP5) was less than budget estimate.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$3,179	$124	$3,056	$0	$0	$0	$2,278	$778

Project Status 5/10	3.9%	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$3,110	$3,179	$69	Nov-18	Nov-18	None	$0	$0	$0

Explanation of Changes

- Project cost increase due to inflation adjustment.

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. Section 53A, an old 24-inch pipeline, is used to connect Section 53 to Shaft 9A of the City Tunnel. It is undersized for this purpose and is a severe restriction. A new 3,000-foot, 60-inch diameter pipeline is needed to reinforce Section 53A. An 850-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.
Construction 68 & 53A	Construction of 850 linear feet of new 48-inch pipe (Section 68) and 3,000 linear feet of new 60-inch pipe (Section 53A) in Malden.
Shaft 9A-D Extension Construction	Construction of approximately 2,000 linear feet of new pipeline in Malden connecting the Shaft 9A-D line to Section 99.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$33,514	$26,263	$7,251	$570	$0	$2,938	$5,721	$960

Project Status 5/10	80.0%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$32,018	$33,514	$1,496	Nov-19	Nov-19	None	$2,669	$2,938	$269

Explanation of Changes

- Project cost increase due to revised cost estimate for Section 68 & 53A to now include inflation. Also, additional change orders for Construction Section 53 including revised pipe connections.
- Spending increased due to the additional change orders noted above.

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 4,450 linear feet 24-inch water main, 2,840 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 4,450 linear feet of new 24-inch main, 2,840 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$7,635	$536	$7,099	$95	$3,800	$7,072	$50	$0

Project Status 5/10	7.6%	Status as % is approximation based on project budget and expenditures. Temporary Interconnect Construction Phase I commenced in June 2007 and reached substantial completion in December 2007. Design commenced in November 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$7,731	$7,635	($96)	Jun-12	Jul-12	1 mos.	$7,218	$7,072	($146)

Explanation of Changes

- Project cost and planned spending decreased primarily due to inflation adjustment.

CEB Impact

- None identified at this time.

S. 618 Northern High NW Trans 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$1,000	$0	$1,000	$0	$0	$0	$1,000	$0

Project Status 5/10	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$1,000	$1,000	$0	Sep-13	Jun-14	9 mos.	$750	$0	($750)

Explanation of Changes

- Project schedule shifted out 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.
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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$6,569	$3,632	$2,937	$1	$1	$31	$2,906	$0

Project Status 5/10	55.3%	Status as % is approximation based on project budget and expenditures. Construction of a portion of Section 45 was rehabilitated in September 2001. In-house design of Sections 34 and 45 followed by construction scheduled to start in FY14.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$6,504	$6,569	$65	Nov-15	Nov-15	None	$29	$31	$2

Explanation of Changes

- Project cost increase due to inflation adjustments.

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 FY08	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$8,359	$0	$8,359	$0	$0	$0	$597	$7,762

Project Status 5/10	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		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$7,959	$8,359	$400	Dec-20	Dec-20	None	$0	$0	$0

Explanation of Changes

- Project cost increase due to inflation adjustment as a result of new ENR index.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$16,992	$15,705	$1,287	$36	$394	$1,325	$0	$0

Project Status 5/10	92.4%	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 December 2011. Winsor Dam Hi Line Replacement is expected to begin in 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$15,992	$16,992	$1,000	Dec-11	Dec-11	None	$325	$1,325	$1,000

Explanation of Changes

- Project cost and spending increase due to new project added for Winsor Dam High Line Replacement.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$1,799	$1,036	$763	$0	$0	$228	$535	$0

Project Status 5/10	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$2,506	$1,799	($707)	Dec-12	Dec-14	24 mos.	$1,470	$228	($1,242)

Explanation of Changes

- Project cost decrease due to revised cost estimate.
- Schedule change due to competing project priorities.

CEB Impact

None identified at this time.

S. 765 Local Water Pipeline Assistance Program

Project Purpose and Benefit

☑ *Contributes to improved public health*
☑ *Provides environmental benefits.*

To provide loans to facilitate the rehabilitation or replacement of unlined water pipelines in MWRA communities.

Project History and Background

The Local Pipeline Assistance Program is a critical piece of MWRA's Integrated Water Supply Improvement Program. In November 1999, the Board of Directors approved an MWRA-administered program, supported for ten years through a Tax Exempt Commercial Paper (TECP) program, to make $25 million available annually in loans to MWRA communities for pipeline relining and replacement in proportion to each community's share of total unlined pipe miles. Communities are required to pay back principal for each loan during a ten-year time period beginning one year after the project funding is approved. To qualify for funding communities must demonstrate appropriate distribution system management practices. 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 Proposed 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$0	$100,338	($100,338)	$5,562	$14,461	$63,703	($22,146)	($132,633)
Project Status 5/10	39.7%	Through May 2010, $185.3 million in loans was distributed to member communities.					

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$0	$0	$0	Jun-23	Aug-30	86 mos.	$28,942	$63,703	$34,761

Explanation of Changes

- Schedule and spending shift is due to the addition of new phases for Local Water Systems and CVA Loans and Repayments.

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$4,813	$221	$4,592	$24	$506	$1,422	$3,023	$147

Project Status 5/10	5.1%	Status as % is approximation based on project budget and expenditures. Waltham Pipe/Bridge Replacement project was substantially complete in September 2004. Expect Valve Seat Replacement Design to commence in July 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$4,775	$4,813	$38	Jun-17	Jun-18	12 mos.	1,782	$1,422	($360)

Explanation of Changes

- Project cost increase due to inflation adjustments.
- Schedule changed due to shift in schedule for Meter Vault Manhole Retrofits as a result of project priorities.
- Planned spending shift due to delayed start of Design and Construction of the Walnut Hill Tank as a result of project priorities.

CEB Impact

None identified at this time.

S. 933 Capital Maintenance Planning/Development

Project Purpose

To optimize the efficiency and effectiveness of MWRA maintenance practices by developing and implementing a strategic maintenance plan for MWRA assets.

Project History and Background

MWRA is responsible for rehabilitating, repairing, and maintaining the regional water and sewerage system infrastructure. Since its assumption of the ownership and operations of the water and sewer systems in 1985, MWRA has undertaken an ambitious program of capital improvements to the systems, with estimated expenditures of more than $7 billion for fiscal years 1986 through 2013.

Given the significant value and critical nature of these assets, system maintenance is of paramount importance. This project helps MWRA optimize maintenance practices by evaluating alternative approaches to equipment, infrastructure and facility maintenance, recommending a maintenance strategy, implementing a pilot program to test the recommended strategy, and developing a plan to implement the recommended strategy throughout MWRA.

In the FY01-03 CIP the Capital Maintenance Planning/Development project was part of the first phase of the Wastewater Facilities Asset Management Program (FAMP). This initial phase of FAMP consisted of evaluating maintenance strategies for equipment and systems at Deer Island, and led to the adoption of Reliability Centered Maintenance (RCM) as the maintenance strategy for Deer Island and subsequently the rest of MWRA. As a result of the decision to implement RCM throughout MWRA, the Capital Maintenance Planning/Development project was created. The remaining FAMP components, which address equipment system monitoring, Maximo improvements, and improved business practices at Deer Island, have been renamed Deer Island Treatment Plant Asset Protection.

Scope

Sub-phase	Scope
Inventory & Evaluation Phases 1 & 2	Development of a comprehensive, strategic maintenance plan for MWRA. (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. Subphases consist of As-Needed Design phases 1-8.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$8,265	$4,414	$3,852	$1,338	$1,579	$4,546	$0	$0

Project Status 5/10	66.5%	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 and 5 are expected to be completed in August and September 2010, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$7,081	$8,265	$1,184	Sep-12	Feb-12	(7) mos.	$3,363	$4,546	$1,183

Explanation of Changes

- Project cost and planned spending increased due to amendments for As-Needed Design contracts 5 and 6 and revised cost estimates for contracts 7 and 8.
- Schedule accelerated by procuring contracts 7 and 8 early to maintain services.

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 - New subphase added to the FY11 CIP are noted in **Bold.**

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	Future 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$14,971	$7,273	$7,698	$802	$1,738	$6,827	$2,887	$0

Project Status 5/10	73.0%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$11,984	$14,971	$2,987	Jun-13	Jun-18	60 mos.	$6,239	$6,827	$587

Explanation of Changes

- Project cost, schedule change, and spending increase is due to restructuring vehicle purchases to include new estimates for vehicles expected to be purchased in the FY10-18 time-frame. New vehicles also include DI Front-End loader and High Lift Fork Loader (Lull). Increase in project cost and spending also includes revised cost estimate for Security Equipment and Installation.

CEB Impact

None 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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$ 1,200	$0	$1,200	$0	$400	$1,200	$0	$0

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

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$1,200	$1,200	$0	Jun-12	Jun-13	12 mos.	$1,200	$1,200	$0

Explanation of Changes

- Schedule 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 FY11.

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. There were no new projects/subphases added to the FY11 CIP.

Sub-phase	Scope
Phase I (FY95-97)	(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 (FY97-10)	(Complete): Server consolidation, network scalability program, database integration program, PBX replacement, records management inventory program, maintenance management and waterworks programming services are completed. (In Progress): TRAC I/S replacement and Storage Area Network (SAN) projects currently underway. The new TRAC I/S was in production by September 2009 and the CIP includes 3 years of maintenance through FY11. The first SAN with corresponding server replacements was purchased in FY07 and enhanced throughout FY09. MWRA's first SAN collapsed storage for up to 32 minicomputers and servers into one pool and was rolled out over a two-year period. The selection of servers is based on the amount of data, costs and its mission-critical designation.
Phase III (FY99-01)	(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 (FY01-10)	(Partially 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 ongoing. Data warehouse was completed in Q2 FY10. In FY06, a Harbor Outfall Monitoring Database project was identified and the system was completed in FY08. 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. (Open): 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. 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. LIMS replacement is underway. 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.

Sub-phase	Scope
Phase VI (FY04–09)	(Complete): Telecommunications: Replacement of the Deer Island PBX (completed in FY04). 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. (Open): 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 is currently being investigated which should allow the MWRA to save money by leveraging the existing infrastructure (i.e. environmental equipment, generator, security, UPS, etc). The new target schedule for completion is FY11. (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 will be purchased under the CEB (estimated cost of $150,000 over 2 years in FY09 and FY10). 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 will be resubmitted in the future.
NET2020 (FY10–FY12)	(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.

Sub-phase	Scope
SAN II (FY12) 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 FY12. 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	(Partially Complete): 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 FY11.
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.
DITP/OMS	(Partially Complete): 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	(Partially Complete): 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.
GIS Projects & Enhancements	(Open): Project will consist of Hardware, Installations, Software, Customizations and Technical Support of Geographical Information Systems. Project began in FY09 Q2.

Sub-phase	Scope
MIS Strategic Planning	(Open): Project will consist of consultant services, hardware, storage, technical support, strategic projects and disaster recovery.
MIS Licensing	(Partially Complete): Funding for Microsoft Licensing Suite of products – Office Professional 2003 was completed. Remainder of funds will be used for MS VISTA and Office Professional 2007 Test Licenses.
Lawson Conversion	(Partially 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	(Partially 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 for this purpose are ongoing and continuous.
Original SAN	(Partially 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	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 is expected to commence in FY12.
Lawson System Upgrade	Next phase of Lawson hardware, environment, and application replacement or upgrades. This project is expected to commence in FY14.
Laboratory Information Mgmt System (LIMS)	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)	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	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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$36,700	$23,420	$13,280	$777	$1,922	$8,750	$5,942	$0

Project Status 5/10	64.9%	Status as % is approximation based on project budget and expenditures. Phases V and VI are in process. The TRAC IS system and the LIMS replacement contracts were awarded in FY08.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$36,700	$36,700	$0	Sep-16	Sep-16	None	$9,008	$8,750	($258)

Explanation of Changes

- Project planned spending decreased slightly based on revised schedule duration for Corporate Server Infrastructure & Document Distribution.

CEB Impact

- The incremental software and/or hardware maintenance costs for the Phase II TRAC Replacement ($59,000 in FY12 and $150,000 in FY14); Phase V LIMS Replacement (GIS & OMS) ($187,000 in FY14); SAN II ($100,000 in FY15); NET2020 ($50,000 in FY14); and SAN III ($100,000 in FY19) and Telecommunications will have a $25,000 impact 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 work remaining to be completed. Chelsea Creek Headworks and Cottage Farm UST replacement construction was completed in December 2002. The Commercial Point CSO and Hingham Pump Station UST Upgrades construction contract began in February 2003 and was completed in March 2003.

Scope

Sub-phase	Scope
Technical Assistance – Environmental Remediation	Design, construction oversight, and waste site clean-up services for Prison Point, Cottage Farm, and Chelsea Creek tank replacements.
Prison Point Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Prison Point CSO facility. Operation of oil recovery system. Assessment, design and installation of system upgrades.
Cottage Farm Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Cottage Farm CSO facility.
Cosgrove Power Station – Design/CS and Construction	Design and construction of stormwater collection and surface water discharge system.
Oakdale Power Station – Design and Construction	Design and construction of non-contact cooling water disposal system. Design includes resolution of MCP issues associated with ground water conditions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$1,805	$1,464	$341	$42	$80	$268	$69	$0

Project Status 5/10	82.7%	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 is scheduled to be completed in FY11.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$1,805	$1,805	$0	Jan-13	Jan-13	None	$302	$268	($34)

Explanation of Changes

- Projected spending changed slightly based on revised expenditure forecast.

CEB Impact

None identified at this time.

S. 934 MWRA Facilities Management and Planning

Project Purpose

To improve MWRA operations by consolidating projects and providing a central point of review and decision making for space planning decisions.

Project History and Background

This project consolidates existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions 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 includes funds for demolition of the CSB (Construction Support Building) which was built as a temporary structure and has also deteriorated.

In addition, the design and construction of the Marlborough warehouse/records center will be funded through this project. The Marlborough project will consolidate the Southboro and JJCWTP warehouse and provide a permanent home for MWRA's records, currently housed in the CSB.

Work proposed for Chelsea includes development of a small annex near the Chelsea Facility that would house a washdown area to sanitize tools, equipment, and parts before working on them in the shop area at Chelsea and provide garage space for the weather-sensitive wastewater pipeline equipment and vehicles.

Of the $7.3 million project budget, $2.4 million is a transfer of existing phases from DI maintenance facilities. The remainder is for new work proposed to complete the work in Chelsea and Marlborough.

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 FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$7,308	$270	$7,038	$101	$800	$7,308	$0	$0

Project Status 5/10	6.2%	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		
FY10	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**	**FY10**	**FY11**	**Chge.**
$7,122	$7,308	$186	Jun-13	Jun-13	None	$7,122	$7,308	$186

Explanation of Changes

- Project cost and spending increase due to revised cost estimates for Deer Island CSB/Demolition and interim warehouse shelving and moving expenses.

CEB Impacts

None 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 now underway or planned for FY11 include: 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.

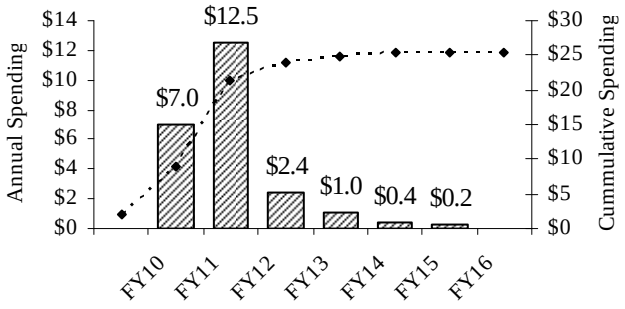
Scope

Sub-phase	Scope
DI Solar	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 Photovoltaic System Phase I	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").
Nut Island Wind	Design and construction of 1.5MW wind turbine system. Projected annual output estimated at 3,800,000 kwh.
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	Energy consultant for energy efficiency 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 478kw at Carroll WTP plant. Projected annual output estimated at over 646,000 kwh. Project funding includes $2.2 million from the ARRA program.
DeLauri Pump Station 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	Installation of up to 3 additional 600 kw wind turbines at Deer Island. Projected annual output estimated at 1,150,000 kwh per turbine.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY09	Remaining Balance	FY10	FY11	FY09-13	FY14-18	Beyond FY18
$25,452	$1,914	$23,538	$6,962	$12,503	$24,249	$611	$0

Alternative Energy Initiatives



Project Status 5/10	30.9%	Status as % is approximation based on project budget and expenditures. Planning for this project is in process.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY10	FY11	Chge.	FY10	FY11	Chge.	FY10	FY11	Chge.
$14,140	$25,452	$11,312	Jun-12	Dec-14	30 mos.	$13,547	$24,249	$10,702

Explanation of Changes

- Project cost and spending increase primarily due to new sub-phases added for John J. Carroll Water Treatment Plant Solar Construction, DeLauri Pump Station Wind, and DI Wind Phase 2. Also, grants and loans sub-phases were deleted from the budget.

CEB Impacts

- Deer Island Wind Phase II reflects impacts of ($270,000) in incremental avoided costs and +$75,000 in RPS revenue in FY13: NI Wind assume ($345,000) in incremental avoided costs and +$95,000 in RPS revenue in FY13: Loring Road Hydro assume ($120,000) in incremental avoided costs and additional revenue of $54,000 in FY12. Wachusett Hydro assume avoided cost of ($113,000) and additional revenue of $19,000 as of FY16: CWTP Solar impact of ($60,000) and $15,000 in RPS revenue in FY12: DeLauri Wind assume ($270,000) in avoided costs and $75,000 in RPS revenue in FY13.

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 FY11 Final 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), phase (for BHP only), and sub-phases (e.g., Facilities Plan/EIR). Sub-phases represent awarded and unawarded contracts.

Contract Number

The four-digit number represents 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 FY09

Payments through FY09 includes actual and accrued expenditures since the inception of the contract through the end of FY09.

Remaining Balance

Remaining Balance is calculated by subtracting Payments through FY09 from the Total Contract Amount. This amount is then spread in the columns to the right, from FY10 to Beyond FY18.

ATTACHMENT A
MWRA CAPITAL IMPROVEMENT PROGRAM SUMMARY BY CATEGORY

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

	Total Contract Amount	Project Payments Thr. FY09	Balance FY09	FY09 Actual	FY10 Projected	QI FY11	QII FY11	QIII FY11	QIV FY11	FY11	FY12	FY13	5-Year Total FY09-13
Wastewater System Improvements	2,574,720	1,341,379	1,233,340	123,710	151,355	33,400	26,287	41,149	29,950	130,786	138,516	100,205	644,573
Waterworks System Improvements	2,652,482	1,655,269	997,213	52,855	50,882	13,785	14,169	12,741	17,495	58,191	81,712	115,827	359,467
Business & Operations Support	105,552	48,606	56,947	5,674	10,022	6,781	7,101	2,838	2,302	19,023	9,748	8,645	53,112
Contingency	125,058		125,058			2,622	2,653	2,339	2,696	10,310	10,993	12,384	33,687
Total MWRA w/ Contingency	5,457,812	3,045,254	2,412,558	182,239	212,260	56,588	50,210	59,067	52,443	218,310	240,969	237,061	1,090,839

TEN-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM
EXPENDITURE FORECAST FY2011-2020
($000)

			FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	10-Year Total FY11-20
Wastewater System Improvements			130,786	138,516	100,205	164,061	131,689	112,206	67,283	41,470	26,794	22,904	935,914
Waterworks System Improvements			58,191	81,712	115,827	124,360	95,237	70,717	68,713	109,813	101,937	93,579	920,086
Business & Operations Support			19,023	9,748	8,645	2,533	3,209	2,392	925	450	0	0	46,925
Contingency			10,310	10,993	12,384	21,289	17,683	14,152	9,804	10,737	9,274	8,433	125,058
Total MWRA w/ Contingency			218,310	240,969	237,061	312,243	247,818	199,466	146,725	162,470	138,005	124,916	2,027,983

Total FY09-13 (see FY09-13 Table)			182,239	212,260	218,310	240,969	237,061	1,090,839					
Total FY11-20			218,310	240,969	237,061	312,243	247,818	199,466	146,725	162,470	138,005	124,916	2,027,983

Please note the the five-year total (FY09-13) of $1,090,839 includes $33,687 in contigency funds. The spending without contingency is $1,057,152

Massachusetts Water Resources Authority
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Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
Total MWRA				**5,332,754,114**	**3,045,254,412**	**2,287,499,702**	**212,259,715**	**208,000,035**	**229,976,734**	**224,677,210**	**1,057,152,496**	**995,058,248**	**417,527,996**
S.1 Wastewater System Improvements				**2,574,719,745**	**1,341,379,336**	**1,233,340,409**	**151,355,150**	**130,786,031**	**138,516,464**	**100,205,293**	**644,573,111**	**516,709,804**	**195,767,647**
S.10 Interception & Pumping				**799,084,851**	**494,968,269**	**304,116,582**	**3,198,029**	**13,273,626**	**23,694,950**	**20,305,635**	**67,273,730**	**229,583,327**	**14,061,000**
102 Quincy Pump Facilities	**completed project**			25,908,059	25,908,077	(18)							
104 Braintree-Weymouth Relief Facilities				233,573,072	215,535,248	18,037,824	431,091	5,884,500	11,222,233	400,000	18,441,548	100,000	
Geotechnical - Marine	5333	Nov-91	Apr-92	442,860	442,860	-							
Geotechnical - Land	5332	Nov-91	Mar-92	7,980	7,980	-							
Facilities Planning Phase 1	5311	Oct-81	Dec-90	331,140	331,140	-							
EIR Phase 1	5312	Nov-84	Oct-90	513,530	513,530	-							
Design 1/CS/RI	5313	Nov-94	Jun-06	18,882,312	18,882,312	-							
Land Acquisition	5314	Mar-97	Jun-10	14,390,359	3,672,866	10,717,493	35,087		10,682,405		10,730,562		
Tunnel Construction/Rescue	5315	Jun-99	Jul-03	83,550,809	83,550,809	-							
Intermediate Pump Station - Construction	5316	Dec-00	Apr-05	47,444,929	47,444,929	-							
North Weymouth Relief Interceptor	5303	Mar-01	Jun-02	4,704,618	4,704,618	-							
HDD Siphon - Construction	5373	Jul-03	May-07	16,357,407	16,357,407	-							
Braintree Weymouth Replacement Pump Station	5375	Jan-05	Apr-08	17,728,028	17,728,028	-					76,562		
Rehabilitation - Design	5308	Sep-88	Dec-89	23,710	23,710	-							
Rehabilitation - Construction	5309	Jan-92	Dec-96	255,490	255,490	-							
Final EIR/Facility Plan	5324	Apr-91	Aug-93	1,111,007	1,111,007	-							
Design 2/CS/RI	5331	Apr-95	Dec-11	15,265,432	14,262,186	1,003,246	369,889	364,000	269,357		1,356,427		
Rehabilitation Section 624	5310	Jul-10	Dec-10	5,007,500	-	5,007,500		5,007,500			5,007,500		
Technical Assistance	5951	Nov-84	Apr-07	144,264	144,264	-							
Sedimentation Testing	6016	Sep-94	Apr-96	95,880	95,880	-							
Legal	6072	Jul-95	Apr-08	766,592	757,007	9,585	9,585				22,038		
Hazardous Waste	6074	Jul-95	Apr-07	7,937	7,937	-					6,037		
Marine Pipeline - Design	6119	Feb-97	Aug-97	1,100,000	1,100,000	-							
Mill Cove Siphon - Construction	6368	Aug-97	Jun-98	2,748,908	2,748,908	-							
Community Technical Assistance	6631	Jul-99	Apr-07	1,111,451	1,111,451	-							
Geotechnical Consultant	6766	Sep-00	Mar-03	56,045	56,045	-							
IPS/RPS Communication System	6792	Dec-02	Apr-08	224,884	224,884	-					42,421		
Wetlands Replication	7290	Jul-10	Jun-11	700,000	-	700,000	16,530	513,000	170,470		700,000		
Mill Cove Sluice Gates - Construction	7327	Jan-12	Jun-13	600,000	-	600,000			100,000	400,000	500,000	100,000	
105 New Neponset Valley Relief	**completed project**			30,300,308	30,300,303	5							
106 Wellesley Extension Replacement	**completed project**			64,358,560	64,358,543	17							
107 Framingham Extension Relief	**completed project**			47,855,985	47,855,986	(1)							

Massachusetts Water Resources Authority
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Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
127 Cummingsville Replacement Sewer	**completed project**			8,998,777	8,998,767	10					43,382		
130 Siphon Structure Rehabilitation				2,612,635	939,770	1,672,865				84,000	84,000	1,588,864	
Planning	6017	Jan-96	Nov-98	937,670	937,670	-							
Land Acquisition	6165	Jun-06	Dec-10	2,100	2,100	-							
Design/CS/RI	6224	Jul-12	Sep-16	477,961	-	477,961				84,000	84,000	393,961	
Construction	6225	Oct-14	Sep-15	1,194,903	-	1,194,903						1,194,903	
131 Upper Neponset Valley Sewer System				54,425,981	53,722,207	703,774	217,730	486,044			1,276,324		
Design/CS/RI	6031	May-00	Apr-09	4,647,513	4,584,683	62,830	62,830				154,436		
Legal	6075	Jun-00	Apr-08	101,259	11,741	89,518	43,515	46,003			100,000		
Replacement Sewer Sections 685-686	6191	Mar-05	Mar-08	37,004,923	37,004,923	-					509,867		
Land Acquisition	6450	Jun-00	Apr-08	2,002,280	1,502,325	499,955	100,000	399,955			500,000		
Replacement Sewer Section 687	6629	Oct-06	Nov-07	7,663,585	7,663,585	-					(181,000)		
Boston Paving	6830	Apr-05	Apr-08	659,809	609,723	50,086	10,000	40,086			93,366		
Resident Engineering/Inspection	7072	Apr-05	Feb-09	2,346,611	2,345,226	1,385	1,385				99,655		
132 Corrosion & Odor Control				14,646,681	3,002,810	11,643,871			65,000	260,000	325,000	11,318,871	
Planning/Study	6137	Jan-97	Dec-98	587,422	587,422	-							
Land Acquisition	6549	Aug-02	Jun-05	3,341	3,341	-							
Legal	6551	Dec-00	Jul-08	1,925	1,925	-							
Design/CS/RI	6553	Aug-02	Jun-05	1,787,912	1,787,912	-							
Interim Corrosion Control	6743	Jul-00	Dec-01	622,209	622,209	-							
FES Tunnel Rehab	6918	Dec-15	Jun-17	6,800,000	-	6,800,000						6,800,000	
FES/FERS Biofilters - Design	6919	Jan-12	Oct-15	997,686	-	997,686			65,000	260,000	325,000	672,686	
FES Tunnel Rehab - Design	7196	Jul-15	Jun-17	1,700,000	-	1,700,000						1,700,000	
FES/FERS Biofilters - Construction	7215	Oct-13	Oct-14	2,146,185	-	2,146,185						2,146,185	
136 West Roxbury Tunnel				88,783,581	8,918,302	79,865,279	608,265	1,068,137	1,007,212	4,853,212	7,575,326	72,328,453	
Inspection	6230	Jul-98	Sep-99	344,202	344,202	-							
Tunnel Easements and Permits	6566	Mar-10	Dec-15	50,000	-	50,000	9,126	7,212	7,212	7,212	30,762	19,238	
Legal	6567	Apr-00	Mar-10	2,133	1,838	295	295				295		
Land Acquisition	6568	Apr-00	Mar-10	440,154	440,154	-							
Construction	6569	Jun-01	Jun-02	6,673,671	6,673,671	-							
Design/CS/RI	6570	Apr-00	Jun-03	1,412,185	1,412,185	-							
Technical Assistance	6709	Nov-99	Mar-10	7,752	7,752	-							
Tunnel Design	6897	Feb-09	Dec-16	4,853,484	38,500	4,814,984	598,844	1,060,925	1,000,000	721,000	3,419,269	1,434,215	
Tunnel Construction	6898	Sep-12	Dec-15	75,000,000	-	75,000,000				4,125,000	4,125,000	70,875,000	
137 Wastewater Central Monitoring				19,939,482	19,188,111	751,371	612,442	138,929			5,991,746		
Planning	6232	Jan-98	Jul-99	563,425	563,425	-							
Design and Integration Services	6532	Jun-02	Jul-10	6,501,542	5,850,899	650,643	511,714	138,929			1,508,524		
CP1 - Construction	6533	Mar-06	Jan-08	7,662,173	7,662,173	-					7,780		
CP2 - Construction	6534	Feb-08	Jul-09	5,139,449	5,040,591	98,858	98,858				4,460,407		
Technical Assistance	6535	Sep-02	Jul-10	7,425	5,555	1,870	1,870				4,235		

Massachusetts Water Resources Authority
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Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
Equipment Pre-purchase	6861	Apr-05	Dec-09	65,468	65,468	-					10,800		
139 South System Relief				4,939,889	3,439,889	1,500,000						938,000	562,000
Archdale - CS/RI	6419	Nov-98	Aug-99	6,024	6,024	-							
Archdale - Construction	6420	May-99	Aug-99	210,748	210,748	-							
Section 70 & 71 High Level Sewer - Evaluation	6519	Sep-98	Oct-99	215,140	215,140	-							
Outfall 023 - Design	6595	Jun-99	Sep-99	509	509	-							
Outfall 023 - Cleaning	6596	Apr-00	Nov-00	1,097,526	1,097,526	-							
Land Acquisition/Easements	6605	Apr-99	Apr-05	5,053	5,053	-							
Section 70 & 71 High Level Sewer - Construction	6611	Jun-99	Oct-99	417,021	417,021	-							
Milton Financial Assistance	6616	Oct-99	Jun-00	1,487,868	1,487,868	-							
Outfall 023 Structural Improvements	6801	Jan-17	Dec-18	1,500,000	-	1,500,000						938,000	562,000
141 Wastewater Process Optimization				10,310,468	930,308	9,380,160		1,100,000	1,934,000	69,000	3,103,000	6,277,160	
Planning	6733	Aug-01	Aug-04	930,308	930,308	-							
Hydraulic Flood Engineering Analysis - North System	6930	Jan-11	Jun-12	2,500,000	-	2,500,000		850,000	1,650,000		2,500,000		
Somerville Sewer - Design	6931	Oct-11	Aug-14	200,000	-	200,000			34,000	69,000	103,000	97,000	
Somerville Sewer - Construction	6932	Mar-14	Aug-14	1,030,160	-	1,030,160						1,030,160	
Siphon- Planning	6933	Nov-14	Jun-15	150,000	-	150,000						150,000	
Manhole Structure Flood Protection - Design	6934	Jan-11	Jan-12	500,000	-	500,000		250,000	250,000		500,000		
Manhole Structure Flood Protection - Construction	6935	Jul-13	Jun-15	5,000,000	-	5,000,000						5,000,000	
142 Wastewater Meter System - Equip Replacement				26,578,429	5,142,724	21,435,705	135,705		60,000	540,000	789,664	7,201,000	13,499,000
Planning/Study	6739	Jan-12	May-12	100,000	-	100,000			60,000	40,000	100,000		
Equipment Purchase/Installation	6793	Nov-03	Jun-08	5,278,429	5,142,724	135,705	135,705				189,664		
Design	6928	Jul-13	Jan-16	200,000	-	200,000						200,000	
Construction	6929	Jan-15	Jan-16	1,000,000	-	1,000,000						1,000,000	
WW Metering Asset Protection/Equipment Purchase	7191	Jul-12	Jul-25	20,000,000	-	20,000,000				500,000	500,000	6,001,000	13,499,000
143 Regional I/I Management Planning	**completed project**			168,987	168,987	-							
145 I&P Facility Asset Protection				159,933,957	6,558,237	153,375,720	1,192,796	4,596,016	9,406,505	14,099,423	29,643,740	124,080,979	
Prison Point HVAC Upgrades	6795	Aug-10	Nov-11	3,174,000	-	3,174,000		1,587,000	1,587,000		3,174,000		
Remote Headworks Heating System Upgrades	6796	May-05	May-06	1,175,181	1,175,181	-							
Alewife Brook Pump Station Rehab - Construction	6797	Oct-11	Mar-13	3,333,017	-	3,333,017			1,111,000	2,222,017	3,333,017		
Rehabilitation of Section 93A - Lexington	6798	Jul-03	Apr-04	1,565,742	1,565,742	-							
Headworks Upgrades - CM Services	6802	Jul-11	Jan-17	6,500,000	-	6,500,000			801,000	1,068,000	1,869,000	4,631,000	
Technical Assistance	6829	Jul-02	Nov-08	40,300	37,078	3,222	3,222				15,082		
Sections 80 & 83	6842	Apr-07	Sep-07	364,590	364,590	-							
Section 160	6843	Jun-07	Dec-08	1,581,369	1,581,369	-					(271,680)		
Survey	6857	Nov-04	May-05	10,708	10,708	-							
Permits	6858	May-03	Nov-08	8,057	8,057	-					1,010		
Remote Headworks Concept Plan	6886	May-08	Sep-09	738,728	568,160	170,568	170,568				686,728		
Interceptor Renewal #2	6936	Jul-14	Jul-15	5,806,500	-	5,806,500						5,806,500	
Alewife Brook Pump Station Rehabilitation - Design/CA	6937	Apr-10	Mar-14	1,047,372	-	1,047,372	91,046	322,016	298,172	313,993	1,025,227	22,145	

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Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
Prison Point HVAC Upgrades - Design	6938	Jan-08	Nov-12	397,249	131,764	265,485	107,405	60,000	61,000	37,080	349,135		
93A Force Main Replacement	6987	May-06	Jan-07	461,962	461,962	-							
Mill Brook Valley Sewer Sections 79 & 92	7004	Jun-04	Mar-05	542,292	542,292	-							
North Dorchester Outfall Cleaning Study - Design	7032	Sep-10	Jun-11	350,000	-	350,000		350,000			350,000		
Hingham Pump Station Isolation Gate - Construction	7033	Sep-10	Feb-11	350,000	-	350,000		350,000			350,000		
Caruso Pump Station Replacement Generator	7037	Jun-14	Dec-14	250,000	-	250,000						250,000	
Prison Pt & Cottage Farm Washdown Sys Pipe - Design	7039	Jul-11	Mar-13	150,000	-	150,000			64,000	86,000	150,000		
Prison Pt & Cottage Farm Washdown Sys Pipe - Constr	7040	Mar-12	Sep-12	500,000	-	500,000			71,000	429,000	500,000		
Land/Easements	7073	Jul-03	Jun-10	150,000	103,336	46,664	46,664				46,664		
Nut Island Headworks Fire Alarm/Wiring Replacement	7144	Jun-09	Nov-09	285,391	8,000	277,391	277,391				285,391		
Headworks Upgrades - Construction	7161	Sep-12	Dec-16	81,300,000	-	81,300,000				1,944,000	1,944,000	79,356,000	
Pump Station/CSO Condition Assessment	7162	Jul-11	Jun-14	3,000,000	-	3,000,000			750,000	1,000,000	1,750,000	1,250,000	
Interceptor AP - Interceptor Renewal # 1 - Design	7163	May-10	Jul-14	200,000	-	200,000		44,000	48,000	48,000	140,000	60,000	
Interceptor AP - Interceptor Renewal #1 - Construction	7164	Oct-12	Mar-14	1,600,000	-	1,600,000				533,000	533,000	1,067,000	
Headworks Upgrades - Design/CA	7206	Jul-10	Apr-17	8,000,000	-	8,000,000		879,000	1,171,000	1,171,000	3,221,000	4,779,000	
Malden & Melrose Hydraulic & Structural Study	7216	Jan-11	Dec-11	300,000	-	300,000		75,000	225,000		300,000		
Malden & Melrose Hydraulic & Structural - Const	7217	Jan-12	Dec-14	1,000,000	-	1,000,000			83,333	333,333	416,666	583,334	
Nut Island Fire Pump Building Study	7218	Nov-10	Dec-11	300,000	-	300,000		107,000	193,000		300,000		
Nut Island Mechanical & Electrical Replacements	7219	Jun-11	Jun-14	6,000,000	-	6,000,000			1,620,000	1,946,000	3,566,000	2,434,000	
Squantum Force Main Engineering Analysis	7231	Jan-11	Dec-11	250,000	-	250,000		125,000	125,000		250,000		
Headworks Effluent Shaft Study	7237	Jul-13	Jun-14	500,000	-	500,000						500,000	
Melrose Sewer	7248	Feb-10	Apr-11	601,500	-	601,500	496,500	105,000			601,500		
Interceptor Renewal # 3 - Camb/Some Sections 26 & 27	7279	Jul-14	Jul-15	5,000,000	-	5,000,000						5,000,000	
Interceptor Renewal # 4 - Everett Sections 23/24/156	7280	Jul-16	Jul-17	3,000,000	-	3,000,000						3,000,000	
Cottage Farm Fuel System Upgrade	7281	Mar-11	Sep-11	300,000	-	300,000		120,000	180,000		300,000		
NIH Elec & Grit Screenings Conveyance - Design	7312	Oct-10	Mar-14	1,200,000	-	1,200,000		172,000	343,000	343,000	858,000	342,000	
NIH Elec & Grit Screenings Conveyance - Construction	7313	Jan-12	Mar-13	3,000,000	-	3,000,000			600,000	2,400,000	3,000,000		
Interceptor Renewal # 5 - Milton	7328	Jul-13	Jul-16	4,000,000	-	4,000,000						4,000,000	
Interceptor Renewal # 6 - Chelsea	7329	Jul-13	Jul-16	11,000,000	-	11,000,000						11,000,000	
New Neponset VFD Replacement	7330	Jan-12	Jan-13	300,000	-	300,000			75,000	225,000	300,000		
Somerville Marginal Gate Replacement	7344	Jul-10	Nov-10	300,000	-	300,000		300,000			300,000		
146 DI Cross Harbor Tunnel Inspection				5,000,000	-	5,000,000						5,000,000	
Tunnel Shaft Repairs - Plan/Design/Construction	7199	Jul-14	Jun-17	5,000,000	-	5,000,000						5,000,000	
147 Randolph Trunk Sewer Relief				750,000	-	750,000						750,000	
Study	7220	Jul-13	Jun-15	750,000	-	750,000						750,000	

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S.25 Treatment				**555,739,555**	**66,536,590**	**489,202,965**	**54,443,436**	**49,249,535**	**62,907,881**	**46,184,518**	**227,527,900**	**171,589,054**	**104,828,542**
200 DI Plant Optimization	**completed project**			33,455,815	33,455,815	-					296,298		
206 DI Treatment Plant Asset Protection				512,501,219	31,566,048	480,935,171	54,256,330	48,273,916	60,516,697	45,176,041	222,428,336	167,883,646	104,828,542
DITP Roof Replacements	6196	Jun-10	Jun-11	3,000,000	-	3,000,000		3,000,000			3,000,000		
DISC Application	6241	Jun-96	Jun-12	250,000	125,077	124,923			124,923		124,923		
Pump Packing Replacement	6422	Sep-03	Jun-08	732,447	732,447	-							
Demineralizer Construction	6423	Jul-00	Dec-00	50,527	50,527	-							
Equipment Replacement Projection	6478	Jul-14	Jun-18	25,000,000	-	25,000,000						25,000,000	
Ancillary Modifications - Construction 4	6538	Jun-15	Dec-16	6,266,438	-	6,266,438						6,266,438	
Equipment Condition Monitoring	6594	May-04	Jan-05	1,776,946	1,776,946	-							
Expansion Joint Repair - Design	6668	Apr-99	Oct-04	149,421	149,421	-							
Expansion Joint Repair - Construction 1	6669	Aug-02	Nov-03	304,726	304,726	-							
Expansion Joint Repair - Construction 2	6704	Oct-10	Oct-11	1,000,000	-	1,000,000		555,556	444,444		1,000,000		
Expansion Joint Repair - Construction 3	6705	May-12	Nov-12	182,203	-	182,203				182,203	182,203		
As-needed Design Phase 6-1	6721	May-09	May-12	1,850,000	-	1,850,000	550,000	550,000	750,000		1,850,000		
As-needed Design Phase 6-2	6722	May-09	May-12	1,850,000	24,600	1,825,400	451,878	623,522	750,000		1,850,000		
Eastern Seawall - Design 1	6723	Jan-12	Nov-14	468,563	-	468,563			78,094	156,188	234,282	234,281	
Eastern Seawall - Construction 1	6724	May-13	Nov-14	2,008,125	-	2,008,125						2,008,126	
Digester Gas Flare #4 - Design	6728	Dec-11	Sep-14	422,160	-	422,160			87,950	123,130	211,080	211,080	
Digester Gas Flare #4 - Construction	6729	Apr-13	Sep-14	659,625	-	659,625						659,625	
Roof Replacement - Phase I	S464	Mar-09	Mar-10	2,749,943	320,620	2,429,323	2,429,323				2,749,943		
Drive Chain Replacement	6742	Oct-01	Jul-03	264,000	264,000	-							
Bus Duct Replacement (2+22)	6763	Jan-01	Oct-01	195,500	195,500	-							
Hypochlorite Tanks 1 & 3 Reline	6764	May-07	Nov-07	1,691,095	1,691,095	-					220		
Combustion Turbine Generator Modifications	6765	Mar-01	May-02	482,339	482,339	-							
Electrical Equipment Upgrades - Construction 2	6767	Apr-05	Feb-07	1,913,183	1,913,183	-							
Document Format Conversion	6791	May-07	May-12	145,275	60,502	84,773	1,553	5,000	78,220		110,877		
Outfall Modification - Inspection	6811	Dec-01	Jul-02	173,500	173,500	-							
Secondary Clarifier Access	6812	Sep-01	Jul-02	274,874	274,874	-							
Transformer Replacement	6813	Jul-08	Jun-13	2,537,993	784,818	1,753,175	191,990	520,000	520,000	521,185	2,500,000		
Hypochlorite Tanks 2 & 4 Reline	6849	Apr-08	Oct-08	2,241,692	2,241,692	-					1,787,192		
Chemical Pipe Replacement - Design	6851	Sep-11	Jan-14	492,370	-	492,370			164,123	143,608	307,731	184,639	
Chemical Pipe Replacement - Construction	6852	Jan-13	Jan-14	1,641,231	-	1,641,231				410,308	410,308	1,230,923	
Sodium Hypochlorite Pipe Replacement - Design	6853	Sep-11	Feb-16	1,204,088	-	1,204,088			324,177	311,313	635,490	568,598	
Sodium Hypochlorite Pipe Replacement - Construction	6854	Feb-13	Feb-16	4,736,582	-	4,736,582				263,143	263,143	4,473,439	
Electrical Equipment Upgrades - Construction 3	6855	Feb-08	Feb-11	15,039,562	8,183,404	6,856,158	3,453,035	3,403,123			14,396,562		
Winthrop Terminal Facility VFD Replacement - Constr	6875	Jan-12	Jan-14	2,908,046	-	2,908,046			242,337	1,454,023	1,696,360	1,211,686	
Heat Loop Pipe Replacement - Construction 1	6876	Mar-05	Dec-05	615,000	615,000	-							
Miscellaneous VFD Replacements	6877	May-05	May-11	2,625,000	932,451	1,692,549		1,692,549			1,722,389		
LOCAT Scrubber Replacement - Design	6880	Nov-12	May-15	900,000	-	900,000				180,000	180,000	720,000	
Grit Air Handler Replacement	6881	Jul-08	May-10	2,100,305	449,502	1,650,803	1,650,803				2,100,305		
CEMS Equipment Replacement	6882	Nov-05	Mar-06	101,872	101,872	-							

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Heat Loop Pipe Replacement - Construction 2	6883	Dec-06	Feb-08	1,488,356	1,488,356	-							
PICS Replacement - Construction	6884	Nov-10	Jul-11	1,929,412	-	1,929,412		1,929,412			1,929,412		
Primary & Secondary Clarifier Rehabilitation Construction	6899	Feb-09	Feb-12	59,541,416	1,913,024	57,628,392	30,348,866	16,367,716	10,911,810		59,541,416		
Electrical Equipment Upgrades - Construction 4	6901	Mar-11	Mar-13	6,051,000	-	6,051,000		252,125	3,025,500	2,773,375	6,051,000		
N Main Pump Station VFD Replacement - Design/ESDC	6902	Dec-07	Feb-14	1,723,031	385,060	1,337,971	467,302	194,454	225,405	225,406	1,278,870	225,405	
N Main Pump Station VFD Replacement - Construction	6903	Nov-10	Feb-14	46,000,000	-	46,000,000		4,450,000	13,800,000	12,800,000	31,050,000	14,950,000	
Fire Alarm System Replacement - Design	6904	Jun-11	Oct-14	1,800,000	-	1,800,000			825,000	300,000	1,125,000	675,000	
Gravity Thickener Rehabilitation - Design	6963	Aug-11	Jan-15	977,500	-	977,500			338,365	211,479	549,844	427,656	
Primary & Secondary Clarifier Rehab - Design	6965	Mar-09	Feb-13	2,049,379	60,320	1,989,059	574,855	808,116	606,088		2,049,379		
Gravity Thickener Improvement - Construction	6966	Jan-13	Jan-15	6,594,568	-	6,594,568	369,598	1,005,607	1,400,000	1,294,090	4,069,295	2,525,273	
STG System Modifications - Design	6967	Jun-09	Jan-11	549,319	-	549,319	223,840	325,479			549,319		
Electrical Equipment Upgrades 3 - REI	6968	Feb-08	Feb-11	1,206,631	293,088	913,543	403,185	510,358			1,137,472		
Fuel Transfer Pipe Replacement - Design	6969	Nov-10	Feb-14	1,150,000	-	1,150,000		313,636	309,280	287,500	910,416	239,584	
Fuel Transfer Pipe Replacement - Construction	6970	Feb-12	Feb-14	3,429,990	-	3,429,990			285,833	1,714,995	2,000,828	1,429,162	
N Main Pump Station Motor Control Center - Design	6971	Mar-11	Dec-12	953,410	-	953,410		90,801	544,806	317,803	953,410		
N Main Pump Station Motor Control Center - Constr	6972	Apr-11	Nov-12	7,085,725	-	7,085,725			4,475,195	2,610,530	7,085,725		
STG System Modifications - Construction	6973	May-10	Jan-11	2,560,175	-	2,560,175	1,045,175	1,515,000			2,560,175		
Digester Chiller Replacement	7005	Sep-05	May-06	635,244	635,244	-							
Dystor Tank Membrane Replacement	7006	Sep-04	Oct-05	640,195	640,195	-							
Fire Alarm System Replacement - Construction	7051	Oct-12	Oct-14	4,450,000	-	4,450,000				1,112,500	1,112,500	3,337,500	
Digester Mod Pipe Replacement - Design	7052	May-11	Nov-15	1,725,000	-	1,725,000			862,500	119,792	982,292	742,708	
Thickened Primary Sludge Pump Replace - Design	7053	Sep-11	Apr-14	575,000	-	575,000			287,500	123,214	410,714	164,286	
Thickened Primary Sludge Pump Replace - Construction	7054	Jul-12	Apr-14	2,438,730	27,297	2,411,433				1,033,471	1,033,471	1,377,962	
Digester Modifications 1 & 2 Pipe Replacement	7055	Nov-10	Nov-15	11,462,466	-	11,462,466		1,346,347	3,231,233	2,579,330	7,156,910	4,305,556	
LOCAT Scrubber Replacement - Construction	7056	May-14	May-15	4,741,380	-	4,741,380						4,741,380	
Centrifuge Back-drive Replacements	7057	Mar-11	Mar-13	2,643,091	25,954	2,617,137		109,047	1,308,569	1,199,521	2,620,852		
DITP Switchgear Replacement - Design	7058	Jan-11	Feb-15	1,107,761	-	1,107,761		105,501	316,503	178,033	600,037	507,723	
DITP Switchgear Replacement - Construction	7059	Nov-10	Dec-11	3,983,821	-	3,983,821		1,532,239	2,451,582		3,983,821		
Power Consultant Recommendations - Design	7060	Jan-06	Jul-09	2,115,000	2,000,181	114,819	114,819				289,196		
Power System Improvements - Construction	7061	Jan-09	Feb-13	9,924,000	110,000	9,814,000	1,575,415	2,240,000	4,000,000	1,998,585	9,924,000		
N Main Pump Station VFD Replacement - REI	7062	Nov-10	Mar-14	2,000,000	-	2,000,000		243,902	585,366	585,366	1,414,634	585,366	
Heat Loop Pipe Replacement - Construction 3	7063	Jun-09	Dec-10	11,473,249	85,608	11,387,641	9,528,836	1,858,805			11,473,249		
Ancillary Modifications - Final Design 4	7088	Oct-11	Dec-16	1,590,720	-	1,590,720			210,000	150,000	360,000	1,230,720	
Sodium Hypochlorite Tank Liner Removal	7089	May-06	Sep-06	196,400	196,400	-							
As-needed Design Phase 5-1	7090	Aug-07	Aug-09	955,174	806,876	148,298	148,298				267,876		
As-needed Design Phase 5-2	7091	Jul-07	Jul-09	1,055,822	1,050,350	5,472	5,472				428,663		
Therm Power Plt Fuel & Steam Modifications - REI	7094	Dec-10	Feb-13	1,150,000	-	1,150,000		221,154	530,769	398,077	1,150,000		
HVAC Equipment Replacement - Design/ESDC	7111	Jan-11	May-15	3,500,000	-	3,500,000		388,889	1,166,667	565,657	2,121,213	1,378,789	
HVAC Equipment Replacement - Construction	7110	Sep-12	Apr-15	12,500,000	-	12,500,000				734,375	734,375	11,765,625	
DI As-needed Tech Design	7121	May-12	Dec-25	26,450,000	-	26,450,000				1,500,000	1,500,000	9,000,000	15,950,000
DI Digester Sludge Pump Replacement - Construction	7123	Oct-09	Oct-12	4,300,000	-	4,300,000	722,087	673,913	1,452,000	1,452,000	4,300,000		
DI Electrical Equipment Upgrades - Phase 5	7124	Jan-13	Jan-18	20,661,875	-	20,661,875				750,000	750,000	15,000,000	4,911,875
Future South System PS VFD Replacements - Design	7126	Jul-15	Nov-18	4,800,000	-	4,800,000						3,700,000	1,100,000
Future South System PS VFD Replacements - Constr	7127	Nov-16	Nov-18	19,200,000	-	19,200,000						9,600,000	9,600,000

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Future N Main PS VFD Replacements - Design	7128	Jun-21	Sep-24	4,420,000	-	4,420,000							4,420,000
Future N Main PS VFD Replacements - Construction	7129	Sep-22	Sep-24	17,680,000	-	17,680,000							17,680,000
Future Miscellaneous VFD Replacements - Design	7130	Jul-25	Jun-30	1,333,000	-	1,333,000			500,000	500,000	1,000,000	333,000	
Future Miscellaneous VFD Replacements - Construction	7131	Nov-11	Nov-16	5,334,000	-	5,334,000				1,066,800	1,066,800	4,267,200	
DI Switchgear Replacement - Design	7132	Jul-15	Apr-20	4,500,000	-	4,500,000						3,000,000	1,500,000
DI Switchgear Replacement - Construction	7133	Apr-17	Apr-20	16,000,000	-	16,000,000						5,333,333	10,666,667
DI PICS Replacement - Construction	7134	Jul-23	Jul-24	5,400,000	-	5,400,000							5,400,000
DI Dystor Membrane Replacements	7135	Jul-14	Oct-14	3,000,000	-	3,000,000						1,000,000	2,000,000
DI CTG Rebuilds	7136	Jun-13	Jun-16	6,000,000	-	6,000,000						4,000,000	2,000,000
DI Centrifuge Replacements - Design	7137	Jul-13	Oct-15	4,160,000	-	4,160,000						1,040,000	3,120,000
DI Centrifuge Replacements - Construction	7138	Oct-14	Oct-15	16,640,000	-	16,640,000						4,160,000	12,480,000
DI Cryogenics Plant-Equip Replace - Design	7139	Jul-13	May-16	1,600,000	-	1,600,000						1,600,000	
DI Cryogenics Plant-Equip Replace - Construction	7140	Dec-10	May-16	6,400,000	-	6,400,000		458,333	641,667		1,100,000	5,300,000	
Future Sodium Hypochlorite Tank Rehabilitation	7142	Jul-17	Jul-19	10,000,000	-	10,000,000						2,500,000	7,500,000
Barge Berth and Facility Replacement	7168	Sep-10	Jun-30	2,264,750	-	2,264,750		500,000	294,125	882,375	1,676,500	588,250	
South System PS Lube System Replacement	7169	Dec-10	Dec-12	2,900,000	-	2,900,000		483,333	1,450,000	966,667	2,900,000		
East/West Odor Control Air Handler Replacement	7170	Jun-25	Jun-30	2,000,000	-	2,000,000							2,000,000
DI PICS Distributed Processing Units Replacement	7172	Jul-16	Jul-18	8,000,000	-	8,000,000						3,500,000	4,500,000
Butterfly Valve Replacement NMPS & WTF	7275	Jun-11	Dec-13	2,500,000	-	2,500,000			916,667	1,000,000	1,916,667	583,333	
210 Clinton Wastewater Treatment Plant				3,115,343	493,343	2,622,000	44,300	262,050	2,034,400	281,250	2,770,560		
Clinton Soda Ash Replacement	7075	Nov-07	Aug-08	262,903	262,903	-					148,560		
Clinton Permanent Standby Generator	7095	Feb-07	Nov-07	230,440	230,440	-							
Clinton Plant-wide Concrete Repair	7276	Feb-11	Feb-13	750,000	-	750,000		93,750	375,000	281,250	750,000		
Clinton Digester Cleaning & Rehabilitation	7277	May-10	May-12	1,500,000	-	1,500,000	44,300	44,300	1,411,400		1,500,000		
Clinton Aeration Efficiency Improvement	7278	Jan-11	Jan-12	372,000	-	372,000		124,000	248,000		372,000		
211 Laboratory Services				6,667,178	1,021,384	5,645,794	142,806	713,569	356,784	727,227	2,032,706	3,705,408	
Metals Lab Fume Hood Replacement - Construction	6197	Oct-10	Jul-11	875,000	-	875,000	-	583,333	291,667		875,000		
Metals Lab Fume Hood Replacement	6848	Jan-09	Jul-11	390,706	52,547	338,159	142,806	130,235	65,118		390,706		
Metals Lab Modification - Construction	6850	May-07	Sep-08	968,837	968,837	-					39,773		
Central Lab Renovations - Design	6878	Oct-12	Dec-14	791,550	-	791,550				277,043	277,043	514,508	
Central Lab Renovations - Construction	6879	Dec-13	Dec-14	1,583,100	-	1,583,100						1,583,100	
Central Lab Fume Hood - Replacement	7171	Sep-12	Apr-15	2,057,985	-	2,057,985				450,184	450,184	1,607,800	
S.12 Residuals				**211,740,619**	**63,810,848**	**147,929,771**	**366,048**	**693,723**	**1,362,667**	**2,174,000**	**4,596,438**	**60,541,670**	**82,791,663**
261 Residuals	**completed project**			63,810,848	63,810,848	-							
271 Residuals Asset Protection				147,929,771	-	147,929,771	366,048	693,723	1,362,667	2,174,000	4,596,438	60,541,670	82,791,663
Residual Facilities Plan/EIR	7143	Sep-11	Jun-12	870,000	-	870,000			696,000	174,000	870,000		
Residuals Facility Upgrades - Design	7145	Jan-12	Dec-19	4,000,000	-	4,000,000			666,667	2,000,000	2,666,667	1,333,333	
Residuals Facility Upgrades - Construction	7146	Jul-14	Jul-19	10,000,000	-	10,000,000						7,666,667	2,333,333
Condition Assessment/Technology & Regulatory Review	7147	May-09	Mar-11	1,059,771	-	1,059,771	366,048	693,723			1,059,771		
Six Rotary Dryer Replacements - Construction	7149	Jul-13	Jul-16	57,000,000	-	57,000,000						20,000,000	37,000,000

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Six Air Scrubber Replacements - Construction	7151	Jul-15	Jul-17	8,000,000	-	8,000,000						3,000,000	5,000,000
Plant MCC Replacements - Construction	7153	Jul-16	Jul-18	4,500,000	-	4,500,000						1,375,000	3,125,000
Rehab Rail System - Construction	7176	Jul-16	Jul-18	3,000,000	-	3,000,000						916,670	2,083,330
Replace 9 Pellet Storage Silos - Construction	7178	Jul-15	Jul-17	6,000,000	-	6,000,000						2,000,000	4,000,000
Sludge Conveyor Replacement - Construction	7180	Jul-14	Jul-15	3,000,000	-	3,000,000						1,000,000	2,000,000
Sludge Storage Tank Rehabilitation	7182	Jul-15	Jul-16	3,000,000	-	3,000,000						1,000,000	2,000,000
Upgrade Pumping Systems - Construction	7184	Jul-14	Jul-16	6,000,000	-	6,000,000						2,000,000	4,000,000
Replace 12 Centrifuges - Construction	7186	Jul-14	Jul-16	34,000,000	-	34,000,000						18,000,000	16,000,000
Utility Upgrades - Construction	7188	Jul-16	Jul-18	6,000,000	-	6,000,000						1,833,333	4,166,667
Odor Control System Upgrade Construction	7190	Jul-17	Jul-18	1,500,000	-	1,500,000						416,667	1,083,333
S.13 CSO				**885,279,883**	**621,633,703**	**263,646,180**	**88,857,753**	**68,821,170**	**49,882,508**	**29,606,686**	**336,585,506**	**26,054,246**	**423,811**
S.3520 MWRA Managed				**437,560,884**	**335,866,582**	**101,694,302**	**67,256,228**	**25,803,314**	**2,856,508**	**2,733,816**	**165,066,278**	**3,044,437**	
339 North Dorchester Bay				223,298,571	177,531,110	45,767,461	20,941,897	21,025,444	1,456,303	2,343,816	84,256,477		
Tunnel - Design ESDC	6220	Sep-04	Apr-11	24,618,221	22,608,079	2,010,142	271,080	1,739,062			2,993,256		
Tunnel Construction (Ch30)	6244	Aug-06	Nov-09	147,151,203	143,481,688	3,669,515	3,669,515				38,292,961		
Dewater Pump Station & Sewers	6245	Apr-09	Apr-11	26,036,994	300,000	25,736,994	12,543,275	12,843,719	350,000		26,036,994		
Tunnel & Facilities Construction Management Services	6993	Oct-05	Apr-12	11,244,082	4,580,665	6,663,417	1,452,133	2,058,813	858,655	2,293,816	8,080,966		
Pleasure Bay Construction	7012	Sep-05	May-06	3,194,885	3,194,885	-							
Facilities - Design ESDC	7013	Nov-06	May-12	4,853,237	3,064,073	1,789,164	911,516	680,000	147,648	50,000	2,854,938		
Tunnel Rescue/Emergency Response	7103	Mar-07	Dec-09	822,449	301,721	520,728	520,728				619,862		
Ventilation Building - Construction	7259	Dec-09	May-11	5,177,500	-	5,177,500	1,573,650	3,503,850	100,000		5,177,500		
Communication Systems	7345	Jul-10	May-11	200,000	-	200,000		200,000			200,000		
347 East Boston Branch Sewer Relief				88,036,614	36,946,655	51,089,959	45,836,126	4,081,592	1,172,241		77,331,236		
Design	6256	Mar-00	Sep-06	3,463,306	3,463,306	-					582		
East Boston Branch Relief Sewer	6257	Jul-08	Jul-10	63,239,174	24,443,248	38,795,926	36,320,620	2,475,306			63,239,174		
East Boston Branch Sewer Rehabilitation	6840	Apr-03	May-04	5,222,005	5,222,005	-							
Sections 38 & 207 Replacement	6841	Apr-09	Jul-10	8,553,981	322,092	8,231,889	7,637,603	594,286			8,553,981		
Design 2 CS	7087	Jun-06	Jul-11	3,168,766	2,516,130	652,636	355,132	232,000	65,505		1,148,117		
Resident Inspection Services	7097	Jul-08	Jul-10	4,389,382	979,875	3,409,507	1,522,771	780,000	1,106,736		4,389,382		
348 BOS019 Storage Conduit	**completed project**			14,287,581	14,287,582	(1)					(44,066)		
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	22,385,201	(1)							
354 Hydraulic Relief Projects	**completed project**			2,294,549	2,294,549	-							
355 MWR003 Gate & Siphon				3,489,437	-	3,489,437			55,000	390,000	445,000	3,044,437	
Design	6952	Apr-12	Jan-16	1,083,479	-	1,083,479			55,000	390,000	445,000	638,479	
Construction	6953	Nov-13	Jan-15	2,405,958	-	2,405,958						2,405,958	

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357 Charles River CSO Controls				4,406,207	3,058,760	1,347,447	478,205	696,278	172,964		3,304,823		
Cottage Farm/Brookline Conn Inflow Controls - Des	7009	Sep-06	Jun-10	1,259,704	1,098,102	161,602	145,287	16,315			375,878		
Interceptor Optimization - Engineering & Design	7010	Jan-08	Jan-11	1,165,741	572,752	592,989	120,025	300,000	172,964		948,183		
Cottage Farm/Brookline Conn Inflow Controls - Constr	7080	Jun-08	Oct-11	1,980,762	1,387,906	592,856	212,893	379,963			1,980,762		
S.3521 Community Managed				**396,827,032**	**238,587,908**	**158,239,124**	**20,100,525**	**41,669,856**	**46,776,000**	**26,872,870**	**166,329,433**	**22,819,873**	
340 Dorch Bay Sewer Separation (Fox Point)				54,171,205	53,762,619	408,586		408,586			408,586		
Design	6155	Jun-96	Aug-09	11,416,679	11,153,942	262,737		262,737			262,737		
Construction	6247	Apr-99	Nov-06	42,754,526	42,608,677	145,849		145,849			145,849		
341 Dorch Bay Sewer Separation (Commercial Point)				64,551,351	58,046,590	6,504,761	1,014,146	733,000	2,505,000	2,252,615	9,660,761		
Design	6154	Jun-96	Aug-09	17,327,961	14,430,490	2,897,471	477,039	671,000	1,000,000	749,431	3,644,470		
Construction	6248	Apr-99	Jun-13	47,223,390	43,616,099	3,607,291	537,107	62,000	1,505,000	1,503,184	6,016,291		
342 Neponset River Sewer Separation	**completed project**			2,444,394	2,444,393	1							
343 Constitution Beach Sewer Separation	**completed project**			3,768,888	3,768,891	(3)							
344 Stony Brook Sewer Separation				44,332,716	44,486,255	(153,539)	(287,695)	134,155			(719,285)		
Design/CS/RI	6395	Jul-98	Sep-08	10,137,304	9,961,392	175,912	175,912				345,167		
Construction	6251	Jul-00	Sep-06	34,195,412	34,524,864	(329,452)	(463,607)	134,155			(1,064,452)		
346 Cambridge Sewer Separation				63,984,646	21,382,100	42,602,546	3,481,677	10,363,000	10,813,000	8,772,000	36,360,647	9,172,869	
Design/CS/RI	6161	Jan-97	Jun-16	21,878,400	9,511,297	12,367,103	1,681,631	2,983,000	2,819,000	1,923,000	10,234,758	2,960,472	
Construction	6255	Jul-98	Dec-15	42,106,246	11,870,804	30,235,442	1,800,046	7,380,000	7,994,000	6,849,000	26,125,889	6,212,396	
351 BWSC Floatables Controls	**completed project**			932,979	932,979	-							
352 Cambridge Floatables Controls				1,086,925	1,035,641	51,284	51,285				164,725		
Design	6162	Jan-97	Nov-10	428,286	377,003	51,283	51,285				51,285		
Construction	6267	Oct-02	Dec-08	658,639	658,638	1					113,440		
356 Fort Point Channel Sewer Separation				12,061,620	9,408,369	2,653,251	862,034	1,791,217			3,770,462		
Design	6991	May-04	Jun-11	1,908,401	1,766,934	141,467	219,842	(78,374)			547,468		
Construction	6992	Mar-05	Dec-10	10,153,218	7,641,435	2,511,783	642,192	1,869,591			3,222,994		
358 Morrissey Boulevard Drain				36,223,538	32,593,148	3,630,390	2,991,932	478,000	70,000	70,000	21,526,909	20,457	
Construction	6696	Dec-06	Jun-09	31,595,439	29,430,134	2,165,305	2,165,305				19,901,752		
Design	7015	Jun-05	Dec-09	4,628,099	3,163,015	1,465,084	826,627	478,000	70,000	70,000	1,625,157	20,457	

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359 Reserved Channel Sewer Separation				73,683,509	4,271,920	69,411,589	5,381,041	16,627,000	20,512,000	13,265,000	57,339,967	13,626,547	
Construction	6994	May-09	Dec-15	59,981,276	60,000	59,921,276	3,869,018	14,472,000	18,344,000	11,459,000	48,204,018	11,777,258	
Design	7014	Jul-06	Jun-16	13,702,233	4,211,920	9,490,313	1,512,023	2,155,000	2,168,000	1,806,000	9,135,949	1,849,290	
360 Brookline Sewer Separation				29,599,146	3,082,392	26,516,754	1,017,499	10,110,000	12,876,000	2,513,255	28,327,546		
DesignCS/RI	7076	Nov-06	Jan-13	3,358,954	2,092,392	1,266,562	442,825	476,000	242,000	105,737	2,087,354		
Construction	7077	Nov-08	Jul-12	26,240,192	990,000	25,250,192	574,674	9,634,000	12,634,000	2,407,518	26,240,192		
361 Bulfinch Triangle Sewer Separation				9,986,115	3,372,611	6,613,504	5,588,606	1,024,898			9,489,115		
Design/CS/RI	7078	Aug-06	Jun-11	1,365,361	644,611	720,750	363,294	357,456			868,361		
Construction	7079	Sep-08	Jul-10	8,620,754	2,728,000	5,892,754	5,225,312	667,442			8,620,754		
324 CSO Support				**50,891,967**	**47,179,213**	**3,712,754**	**1,501,000**	**1,348,000**	**250,000**		**5,189,795**	**189,936**	**423,811**
Technical Assistance	5790	Feb-94	Dec-95	228,320	228,320	-							
Planning/EIR	5791	Mar-88	Sep-90	10,768,610	10,768,610	-							
Master Planning	5716	Mar-92	Sep-04	21,762,805	21,762,805	-					(114,342)		
Technical Assistance -Geotech	5970	Jun-90	Jun-92	61,110	61,110	-							
Modeling	5795	May-92	Mar-95	299,840	299,840	-							
SOP Program	5767	Jan-94	May-01	1,956,556	1,956,550	6							
Watershed Planning	6036	Dec-94	Apr-01	877,134	877,134	-							
Technical Review	6150	Jul-96	Dec-20	793,592	528,932	264,660						40,000	224,660
Land/Easement	6169	Jul-96	Jun-14	13,668,000	10,669,064	2,998,936	1,501,000	1,148,000	250,000		5,104,137	99,936	
System Assessment	6372	May-97	Dec-20	476,000	26,849	449,151		200,000			200,000	50,000	199,151

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S.14 Other Wastewater				**122,874,837**	**94,429,926**	**28,444,911**	**4,489,884**	**(1,252,023)**	**668,458**	**1,934,454**	**8,589,537**	**28,941,507**	**(6,337,369)**
128 I/I Local Financial Assistance				122,593,961	94,149,050	28,444,911	4,489,884	(1,252,023)	668,458	1,934,454	8,589,537	28,941,507	(6,337,369)
Grants - Phase II	6084	May-93	May-06	15,937,500	15,928,524	8,976	5,808,695				5,808,695		
Loans - Phase II	6085	May-93	May-06	47,664,000	47,664,000	-							
Repayment - Phase II	6170	May-94	May-11	(47,664,000)	(46,978,902)	(685,098)	(400,098)	(285,000)			(1,121,836)		
Public Participation	6609	Feb-99	Jun-02	6,461	6,461	-					-		
Grants - Phase IV	6736	Nov-99	May-10	34,650,000	33,539,062	1,110,938	1,110,938				1,294,358		
Loans - Phase IV	6737	Nov-99	May-10	42,350,000	40,992,185	1,357,815	1,357,815				1,581,995		
Repayment - Phase IV	6738	Nov-00	May-15	(42,350,000)	(32,680,867)	(9,669,133)	(3,922,565)	(2,893,861)	(1,708,123)	(556,622)	(13,715,912)	(587,962)	
Grants - Phase V	6925	Aug-04	May-12	18,000,000	15,017,914	2,982,086	1,095,546	900,000	986,540		6,216,126		
Loans - Phase V	6926	Aug-04	May-12	22,000,000	18,355,222	3,644,778	1,339,001	1,100,000	1,205,777		7,597,488		
Repayments - Phase V	6927	Aug-05	May-17	(22,000,000)	(6,286,156)	(15,713,844)	(3,626,162)	(3,524,362)	(3,161,936)	(2,530,415)	(15,805,825)	(2,870,969)	
Grants - Phase VI	7107	Nov-06	Jun-15	18,000,000	4,316,003	13,683,997	2,707,936	1,125,000	1,350,000	1,800,000	8,700,479	6,701,061	
Loans - Phase VI	7108	Nov-06	Jun-15	22,000,000	5,275,114	16,724,886	3,309,700	1,375,000	1,650,000	2,200,000	10,633,919	8,190,186	
Repayments - Phase VI	7109	Nov-07	Jun-20	(22,000,000)	(999,510)	(21,000,490)	(1,099,903)	(1,761,843)	(2,036,843)	(2,031,552)	(7,558,060)	(11,528,195)	(2,542,154)
Grants - Phase VII	7293	Aug-09	Jun-18	18,000,000	-	18,000,000	1,173,915	1,350,000	1,350,000	1,800,000	5,673,915	12,326,085	
Loans - Phase VII	7294	Aug-09	Jun-18	22,000,000	-	22,000,000	1,434,785	1,650,000	1,650,000	2,200,000	6,934,785	15,065,215	
Repayments - Phase VII	7295	Aug-10	Jun-23	(22,000,000)	-	(22,000,000)		(286,957)	(616,957)	(946,957)	(1,850,871)	(8,823,914)	(11,325,215)
Grants - Phase VIII	7296	Aug-13	Jun-21	18,000,000	-	18,000,000						5,850,000	12,150,000
Loans - Phase VIII	7297	Aug-13	Jun-21	22,000,000	-	22,000,000						7,150,000	14,850,000
Repayments - Phase VIII	7298	Aug-14	Jun-26	(22,000,000)	-	(22,000,000)						(2,530,000)	(19,470,000)
138 Sewerage System Mapping Upgrade	**completed project**			280,876	280,876	-							

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S.2 Waterworks System Improvements				**2,652,482,109**	**1,655,269,481**	**997,212,628**	**50,882,442**	**58,190,738**	**81,712,055**	**115,827,333**	**359,468,921**	**468,839,867**	**221,760,349**
S.16 Drinking Water Quality Improvements				**656,825,941**	**526,438,395**	**130,387,546**	**14,410,467**	**4,925,170**	**31,128,707**	**37,914,186**	**106,226,974**	**42,009,010**	
542 John J Carroll Water Treatment Plant				429,435,609	374,036,695	55,398,914	3,329,849	3,243,117	12,898,000	18,361,321	39,116,713	17,566,617	
Study 1	5023	Jan-88	Feb-89	444,190	444,190	-							
Study 2	5024	Jul-90	Mar-94	2,368,323	2,368,323	-							
EIR/Conceptual Design	5042	Nov-93	Jul-95	5,807,703	5,807,703	-							
Technical Assistance	5997	Jan-88	Jun-00	72,108	72,108	-							
Wachusett WTP - Design/CS/RI	5017	Oct-96	Sep-06	46,605,542	46,605,542	-							
Permit Fees	5157	Jul-93	Mar-14	79,000	50,425	28,575	1,820	10,755	8,000	8,000	30,680		
Cryptosporidium Inactivation Study	6118	Feb-97	May-00	150,000	150,000	-							
Management Support - Design	6134	Apr-97	Apr-00	1,729,937	1,729,937	-							
AWWARF Study	6182	Dec-96	Sep-03	650,342	650,342	-							
Emergency Discharge Reservoir Water Mgmt Study	6206	Nov-98	Sep-02	1,453,825	1,453,825	-							
Wachusett and Cosgrove Intakes - CP1	6207	Jun-00	Jun-03	15,489,314	15,489,314	-					98,218		
Construction Management/RI	6208	Aug-98	Sep-06	31,437,824	31,437,824	-							
Cosgrove Disinfection - Phase II	6365	Apr-98	May-99	2,169,292	2,169,292	-							
Cosgrove Disinfection - Phase I	6397	Jul-97	Oct-97	150,380	150,380	-							
Distribution Water Consultant	6401	Jul-97	Jun-98	3,200	3,200	-							
Immediate Disinfection - MECO	6406	Jul-97	Jul-97	10,300	10,300	-							
Cosgrove Disinfection Facility - Underwater Imp	6479	Jan-98	Jun-98	217,400	217,400	-							
Community Chlorine Analyzers	6485	Apr-98	Jun-98	48,863	48,863	-							
Wachusett Aqueduct Interim Rehabilitation - CP2	5522	Dec-00	Oct-02	23,400,005	23,400,005	-							
Site work & Storage Tanks - CP3	6488	Mar-99	Nov-02	67,367,673	67,367,673	-							
Treatment Facilities - CP4	6489	Dec-00	Jul-05	145,871,496	145,871,496	-							
Late Sitework - CP6	6491	Jul-04	Jan-06	4,087,831	4,127,831	(40,000)	(40,000)				(40,000)		
OCIP	6494	Mar-99	Dec-07	5,107,090	5,107,089	1							
Professional Services	6495	Sep-98	Oct-05	2,752,328	2,752,328	-							
Marlboro MOA	6497	Sep-98	Jun-05	5,859,141	5,859,141	-							
WHWTP- MECO	6520	Sep-98	Mar-05	128,328	128,328	-							
Site Security Services	6613	May-99	Mar-05	1,263,635	1,263,635	-							
Existing Facilities Modifications - CP7	6650	Jul-11	Jan-13	5,000,000	-	5,000,000			2,500,000	2,500,000	5,000,000		
CSX Crossing	6670	Aug-01	Dec-01	64,700	64,700	-							
Wachusett Algae - Design/CS/RI	6671	Sep-12	Dec-16	450,000	-	450,000				128,000	128,000	322,000	
Public Health Research	6691	Jul-00	Jun-07	1,702,560	1,702,560	-							
Security Equipment	6756	Jun-00	Jun-00	570,721	570,721	-							
Cosgrove Screens - CP8	6773	Aug-03	Aug-04	3,238,306	3,238,306	-							
AWWARF - Evaluation Ozone & UV	6815	Jul-01	Jan-04	301,750	301,750	-							
Fitout/Construction	6827	Oct-03	Jan-13	1,500,000	547,679	952,321	20,000	52,000	643,000	237,321	757,391		
Wachusett Algae - Construction	6889	Feb-14	Dec-15	1,800,000	-	1,800,000						1,800,000	
Ultraviolet Disinfection - Design/ESDC/RI	6923	Jul-08	Apr-15	4,393,797	273,250	4,120,547	594,923	748,000	748,000	877,000	3,241,173	1,152,617	
Ultraviolet Disinfection - Construction	6924	Oct-11	Mar-14	34,000,000	-	34,000,000			6,800,000	13,600,000	20,400,000	13,600,000	
As-needed Technical Assistance #1	6939	Jan-06	Jun-08	491,274	491,274	-					330		

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Existing Facility Modifications (CP7) - Design	6951	Jul-05	Jan-14	1,622,611	209,484	1,413,127	997,127	100,000	209,000	100,000	1,501,833	7,000	
As-needed Technical Assistance	6989	Jan-06	Jun-08	702,025	702,024	1					21,023		
Ancillary Modifications - Construction 1	7084	Jul-06	Jun-08	160,475	160,475	-							
Ancillary Modifications - Construction 2	7085	Jan-09	Jun-13	6,460,320	719,413	5,740,907	1,320,907	1,600,000	1,450,000	685,000	5,775,320	685,000	
Ancillary Modifications - Design 3	7192	Mar-08	Sep-10	563,000	29,438	533,562	206,439	327,123			560,500		
Ancillary Modifications - Design 4	7208	Mar-08	Sep-10	563,000	289,128	273,872	228,633	45,239			516,245		
Technical Assistance #5	7315	Aug-10	Aug-12	563,000	-	563,000		180,000	270,000	113,000	563,000		
Technical Assistance #6	7316	Aug-10	Aug-12	563,000	-	563,000		180,000	270,000	113,000	563,000		
543 Quabbin Water Treatment Plant				17,488,035	10,175,395	7,312,640	248,260	501,890	3,855,000	2,638,410	7,275,433	69,080	
Quabbin WTP - Design/CA/RI	6043	May-95	Aug-01	3,793,701	3,793,701	-					(29,021)		
Permit Fees	6210	Jan-98	Jan-12	10,000	7,110	2,890	1,000	1,890			2,890		
Utilities	6211	Aug-98	Jan-12	13,400	13,400	-							
Construction	6212	Nov-98	Sep-00	5,070,892	5,070,892	-							
Ware Fire Department - MOA	6706	Oct-99	Jul-00	25,000	25,000	-							
Water Quality Analysis Equipment	6711	Jan-01	Jun-06	48,620	48,620	-							
Quabbin UVWTP - Design/CA/RI	6775	Dec-08	Sep-13	1,790,740	74,400	1,716,340	247,260	500,000	500,000	400,000	1,721,660	69,080	
Quabbin UVWTP - Construction	6776	Jul-11	Sep-12	5,593,410	-	5,593,410			3,355,000	2,238,410	5,593,410		
Quabbin UVWTP - Study/Pilot	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				40,680,976	35,288,199	5,392,777	4,886,084	112,163	39,707	321,455	21,758,754	33,368	
Technical Support & Permit Compliance	6215	Apr-02	Dec-15	104,000	23,613	80,387	5,597	13,808	13,807	13,807	47,370	33,368	
Design/Build	6216	Jan-07	Apr-10	37,686,275	32,952,501	4,733,774	4,733,774				20,989,922		
Roadway Resurfacing - Design	7213	Jul-11	Jan-13	54,680	-	54,680			25,900	28,780	54,680		
Roadway Resurfacing - Construction	7214	Apr-12	Jan-13	278,868	-	278,868				278,868	278,868		
EIR/Preliminary Design/OR	6139	May-97	Jun-10	2,557,153	2,312,085	245,068	146,713	98,355			387,914		
550 Spot Pond Storage Facility				62,547,175	263,960	62,283,215	5,946,274	1,068,000	14,336,000	16,593,000	37,974,404	24,339,945	
Environmental Review	6455	Apr-02	Feb-03	232,830	232,830	-							
Design/Build	6457	Jul-11	Jul-14	52,492,249	-	52,492,249			13,268,000	16,025,000	29,293,000	23,199,249	
Easement/Land Acquisition	6868	Oct-08	Dec-09	5,930,000	31,130	5,898,870	5,898,874				5,930,004		
Owners' Representative	7233	Mar-10	Jul-15	2,892,096	-	2,892,096	47,400	568,000	568,000	568,000	1,751,400	1,140,696	
New Stoneham Meter Connection/Detention Basin	7314	Nov-10	Aug-11	1,000,000	-	1,000,000		500,000	500,000		1,000,000		

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S.17 Transmission				**1,117,059,396**	**679,220,742**	**437,838,654**	**14,822,683**	**20,158,782**	**20,737,385**	**34,175,878**	**96,231,010**	**157,569,221**	**190,374,694**
597 Winsor Dam Hydroelectric/Pipeline Replace				14,866,477	612,098	14,254,379	340,952	424,000	1,245,000	4,874,000	7,457,768	7,370,427	
Preliminary Permit, Study & Licensing	6276	Nov-97	Jun-99	38,282	38,282	-							
Quabbin Release Pipeline - Design/ESDC/RI	7017	Apr-11	Jan-15	656,520	-	656,520			171,000	171,000	342,000	314,520	
Quabbin Aqueduct & WPS Upgrades - Design/CA/RI	7114	Dec-09	Jun-15	2,320,000	-	2,320,000	130,073	424,000	424,000	424,000	1,402,073	917,927	
Winsor Power Station Rehabilitation & Improve	7115	Feb-12	Jun-14	4,498,620	-	4,498,620			310,000	1,861,000	2,171,000	2,327,620	
Shafts 1,2,9 & 12 Rehabilitation & Improvement	7198	Feb-12	Jun-14	4,927,060	-	4,927,060			340,000	2,039,000	2,379,000	2,548,060	
Winsor Power Street - Chapman Valve Repair	7212	Feb-09	Nov-09	416,425	279,200	137,225	137,225				416,425		
Purchase of Sleeve Valves	7234	Jul-08	May-09	368,270	294,616	73,654	73,654				368,270		
Quabbin Release Pipeline - Construction	7235	Jan-13	Jan-14	1,641,300	-	1,641,300				379,000	379,000	1,262,300	
601 Sluice Gate Rehabilitation	**completed project**			9,158,418	9,158,411	7							
604 MetroWest Tunnel				704,026,816	634,287,680	69,739,136	9,278,510	11,900,000	10,210,000	18,038,818	49,914,182	20,311,807	
Study	5043	Jun-84	Oct-89	414,770	414,770	-							
Design/EIR - Tunnel/ESDC	5044	Apr-92	Mar-07	37,938,693	37,938,693	-					51,985		
Sudbury Pipe Bridge - Construction	5048	Nov-91	Jun-92	295,910	295,910	-							
West Tunnel Segment - CP1	6054	Apr-97	Apr-03	147,787,139	147,787,135	4							
Construction Management/Resident Inspect	5284	May-95	Apr-04	39,427,799	39,427,799	-							
Technical Assistance	5976	Jun-84	Jun-98	131,401	131,400	1							
Land Acquisition	5139	Oct-95	Jul-13	6,258,741	6,258,741	-							
Hultman Study	5141	Apr-95	Mar-05	1,863,997	1,863,998	(1)							
DEP Permit Fees	6037	Oct-94	Jun-11	50,802	50,682	120	120				240		
Middle -Tunnel Segment - CP2	6055	Jun-96	Apr-03	245,809,358	245,809,358	-							
MHD Salt Sheds - CP5	6056	Sep-96	Jun-97	1,313,900	1,313,900	-							
Shaft 5A - CP3	6059	Aug-97	Aug-98	5,871,954	5,871,954	-							
Local Water Supply Contingency - Design/CA/RI	6063	May-96	Oct-99	858,703	858,703	-							
Community Technical Assistance	6067	Jun-95	Apr-99	297,408	297,408	-							
Professional Services	6117	Nov-95	Dec-03	730,860	730,860	-							
OCIP	6122	Jun-96	May-06	26,021,792	26,021,794	(2)					(1,034)		
Hultman Leak Repair	6128	Aug-96	May-97	307,281	307,280	1							
Framingham MOU	6129	May-96	Dec-03	2,444,171	2,444,171	-							
Local Water Supply Contingency - Construction	6130	Jun-97	Dec-03	4,307,753	4,300,119	7,634	7,634				19,332		
Local Water Supply Contingency - Legal/Easement	6131	Apr-97	Jun-02	9,110	9,110	-							
Hultman Repair Band	6140	Aug-96	Dec-96	28,400	28,400	-							
Loring Road Storage Tanks - CP8	6203	Sep-97	Nov-00	41,367,921	41,367,921	-							
Testing & Disinfection - CP7	6204	Jan-03	Oct-03	3,612,435	3,612,435	-							
Upper Hultman Rehabilitation - CP6B	6205	May-12	May-14	8,429,992	-	8,429,992				3,566,000	3,566,000	4,863,992	
Southboro MOA	6366	May-97	Jun-03	254,883	254,883	-							
Weston MOA	6367	Apr-96	Oct-04	1,005,524	1,005,524	-							
East Tunnel Segment - CP3A	6374	Nov-98	Sep-02	55,975,616	55,975,616	-							
Hultman Investigation and Repair	6430	Jun-99	Nov-00	1,604,381	1,604,381	-							
Hultman Repair Bands 98-99	6492	Apr-99	Jun-99	116,457	116,457	-							
Wayland MOA	6762	Jun-00	Dec-02	35,040	35,040	-							

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Equipment Pre-purchase	6777	Jun-05	Mar-06	198,000	198,000	-							
Hultman Rehabilitation - CP9	6856	Nov-05	Dec-06	3,256,702	3,256,702	-							
Interim Disinfection	6872	Jan-03	Oct-05	1,244,539	1,244,540	(1)							
Hultman Interconnect - Final Design/CA /Inspection	6911	Sep-05	May-14	6,073,215	3,396,424	2,676,791	585,016	600,000	400,000	450,000	2,401,879	641,775	
Valve Chamber Modifications	6950	Jan-12	Jun-13	5,107,650	-	5,107,650			850,000	3,408,000	4,258,000	849,650	
Lower Hultman Rehabilitation - CP6A	6975	Sep-09	Sep-14	47,842,388	-	47,842,388	8,341,166	10,720,000	8,470,000	8,500,000	36,031,166	11,811,222	
Hultman Interconnect - RI/Services	7082	Jan-10	Sep-14	2,499,909	-	2,499,909	304,742	540,000	450,000	560,000	1,854,742	645,167	
Easements - CP6	7105	Jan-08	Apr-14	175,000	350	174,650	39,832	40,000	40,000	54,818	174,650		
Demolition - CP6A	7106	Sep-08	Jan-09	57,222	57,222	-					57,222		
Valve Chamber Storage Tank Access Improvement	7283	Jul-12	Jul-14	3,000,000	-	3,000,000				1,500,000	1,500,000	1,500,000	
615 Chicopee Valley Aqueduct Redundancy	**completed project**			8,605,255	8,605,255	-					33,651		
616 Quabbin Transmission System				11,419,864	4,423,427	6,996,437	121,035	250,000	1,547,000	1,149,560	3,067,595	3,928,845	
Facilities Inspection	6828	Oct-05	Oct-07	1,007,459	1,007,462	(3)							
Equipment Pre-purchase	7007	Feb-05	Jun-08	534,366	534,366	-							
Oakdale Phase 1A Electrical - Design	7229	Oct-09	Jan-14	799,880	-	799,880	121,035	250,000	250,000	150,000	771,035	28,845	
Oakdale Phase 1A Electrical - Construction	7230	Nov-11	Jan-13	2,296,560	-	2,296,560			1,297,000	999,560	2,296,560		
Ware River Intake Valve Replacement	7282	Jul-14	Jul-17	1,200,000	-	1,200,000						1,200,000	
CVA Intake Motorized Screen Replacement	7332	Jul-17	Jun-18	500,000	-	500,000						500,000	
Wachusett Lower Gatehouse Roof Repairs	7333	Jul-13	Dec-17	2,200,000	-	2,200,000						2,200,000	
Oakdale Valves Phase 1 - Construction	6690	Oct-05	Jun-06	1,811,309	1,811,309	-							
Oakdale Valves Phase 1 - Study/Design	6831	Apr-04	Jun-07	1,070,290	1,070,290	-							
617 Sudbury /Weston Aqueduct Repairs				3,267,357	634,948	2,632,409	17,409	91,750	275,250	1,452,000	1,836,409	796,000	
Sudbury Aqueduct Inspection	6838	Aug-05	Oct-06	369,520	369,520	-							
Technical Assistance	6839	Sep-09	Dec-11	17,409	-	17,409	17,409				17,409		
Weston Aqueduct Inspection	6947	Apr-13	Dec-13	150,000	-	150,000						150,000	
Sudbury Short-term Repairs	7016	Jan-11	Dec-11	367,000	-	367,000		91,750	275,250		367,000		
Sudbury Short-term Repairs-Phase 2	7317	Jul-12	Jul-13	2,098,000	-	2,098,000				1,452,000	1,452,000	646,000	
Sudbury Aqueduct - Hazardous Materials	6617	Apr-99	May-05	265,428	265,428	-							
620 Wachusett Res Spill Impr/Winsor Dam Repairs				11,944,237	9,385,034	2,559,203	2,526,072	33,125			3,894,269		
Equipment Pre-purchase	7018	Jul-06	Aug-09	546,319	605,644	(59,325)	(59,325)				7,367		
Design	7019	Jan-06	May-10	2,455,816	2,273,861	181,955	181,955				672,454		
Construction	7020	May-07	Nov-08	4,959,598	4,959,595	3					992,003		
Technical Assistance	7207	Mar-07	Jul-08	137,739	116,423	21,316	21,316				22,196		
Cosgrove and Shaft A PCB Removal	7209	Oct-07	Oct-08	874,892	874,890	2					(210,001)		
Wachusett Dam PCB Removal	7210	Nov-07	Nov-08	344,621	344,620	1					(215,001)		
PCB Material Remediation - Phase 2	7221	Feb-09	Jul-10	2,625,252	210,000	2,415,252	2,382,127	33,125			2,625,252		
621 Watershed Land				19,000,000	11,857,500	7,142,500	1,600,000	3,000,000	1,250,000	1,292,500	10,793,000		
Land Acquisition	7069	Apr-06	Jun-12	19,000,000	11,857,500	7,142,500	1,600,000	3,000,000	1,250,000	1,292,500	10,793,000		

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623 Dam Projects				8,738,966	-	8,738,966	275,280	504,000	2,810,135	3,168,000	6,757,415	1,981,551	
Dam Safety Modifications & Repairs - CP2	7194	Jul-11	Jun-13	5,672,590	-	5,672,590			2,126,500	2,836,000	4,962,500	710,090	
Dam Safety Modifications & Repair - Design & CA/RI	7211	Sep-09	Jun-14	1,534,741	-	1,534,741	275,280	304,000	302,000	302,000	1,183,280	351,461	
Quinapoxet Permits & Preliminary Design	7346	Jan-11	Dec-11	100,000	-	100,000		50,000	50,000		100,000		
Quinapoxet Dam Removal - Design/ESDC/RI	7347	Apr-13	Apr-18	200,000	-	200,000				30,000	30,000	170,000	
Quinapoxet Dam Removal - Construction	7348	Jul-14	Jun-16	750,000	-	750,000						750,000	
Dam Safety Modifications & Repairs - CP1	7349	Nov-10	Feb-12	481,635	-	481,635		150,000	331,635		481,635		
625 Long Term Redundancy				326,032,006	256,389	325,775,617	663,425	3,955,907	3,400,000	4,201,000	12,476,721	123,180,591	190,374,694
Water Transmission Redundancy Plan	6273	Oct-08	Mar-11	1,918,971	256,389	1,662,582	663,425	999,157			1,918,971		
Cosgrove Tunnel Redundancy PS - Design/ESDC/RI	7156	Apr-11	Jun-16	8,012,000	-	8,012,000		250,000	1,750,000	2,000,000	4,000,000	4,012,000	
Cosgrove Tunnel Redundancy PS - Construction	7157	Jul-13	Jun-15	40,060,000	-	40,060,000						40,060,000	
Sudbury Aqueduct - Design/CA/RI	7159	Jan-14	Dec-22	44,005,910	-	44,005,910						23,375,000	20,630,910
Sudbury Aqueduct - Construction	7160	Jan-17	Dec-21	220,029,550	-	220,029,550						55,000,000	165,029,550
Remote Vehicle Inspection of Quabbin Aqueduct	7291	Sep-10	Mar-11	2,706,750	-	2,706,750		2,706,750			2,706,750		
Sudbury Aqueduct - Preliminary Design/EIR	7352	Jul-11	Jun-13	4,400,591	-	4,400,591			1,650,000	2,201,000	3,851,000	549,591	
Tops of Shafts Rehabilitation - Design/CA/RI	7356	Jul-17	Jun-22	979,866	-	979,866						184,000	795,866
Tops of Shafts Rehabilitation - Construction	7357	Jul-19	Dec-21	3,918,369	-	3,918,369							3,918,369
S.18 Distribution And Pumping				**847,504,291**	**324,822,018**	**522,682,273**	**16,026,886**	**17,746,174**	**16,194,532**	**20,993,073**	**90,332,543**	**287,850,178**	**163,871,598**
618 Northern High NW Trans Sections 70 & 71				1,000,000	-	1,000,000						1,000,000	
Planning	6895	Jul-13	Jun-14	1,000,000	-	1,000,000						1,000,000	
677 Valve Replacement				19,132,369	9,059,409	10,072,960	195,934	676,268	1,312,169	949,165	3,613,617	6,939,425	
Construction 1	5126	Nov-95	Nov-96	717,800	717,800	-							
Technical Assistance	5124	Oct-95	May-10	113,338	113,338	-					1,595		
Equipment Purchase	6088	Oct-95	Jun-18	4,037,670	1,026,735	3,010,935	191,704	358,268	358,269	358,269	1,506,231	1,744,425	
Construction 2	6105	Nov-97	Jul-99	1,356,516	1,356,516	-							
Construction 3	6278	Feb-00	Aug-01	1,337,571	1,337,571	-							
Construction 4	6345	May-02	Oct-03	1,539,911	1,539,911	-							
Construction 5	6346	Mar-04	Jul-05	1,389,006	1,389,006	-							
Construction 6	6435	May-07	Dec-08	1,571,992	1,571,992	-					238,765		
Construction 7	6436	Feb-11	Sep-12	1,589,796	-	1,589,796		318,000	953,900	317,896	1,589,796		
Permits	6859	Jan-02	May-10	5,000	770	4,230	4,230				4,230		
Easements	6860	Jan-02	May-10	5,770	5,770	-							
Construction 8	7195	Jan-13	Jun-15	2,734,000	-	2,734,000				273,000	273,000	2,461,000	
Construction 9	7236	Dec-14	Jun-16	2,734,000	-	2,734,000						2,734,000	
678 Boston Low Service - Pipe & Valve Rehab	**completed project**			23,690,867	23,690,863	4							
683 Heath Hill Road Pipe Replacement	**completed project**			19,364,776	19,364,786	(10)					(3,067)		
689 James L Gillis Pump Station	**completed project**			33,419,006	33,419,007								

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692 NHS - Section 27 Improvements				3,179,276	123,646	3,055,630						2,277,506	778,124
Section 27 - Construction	6333	Mar-17	Nov-18	3,054,705	26,581	3,028,124						2,250,000	778,124
Easements	6589	Apr-15	Mar-17	22,800	-	22,800						22,800	
Technical Assistance	6712	Oct-99	Mar-17	64,500	59,794	4,706						4,706	
Surveying	6809	Jun-01	Mar-17	37,271	37,271	-							
693 NHS - Revere & Malden Pipeline Improvement				33,513,514	26,262,901	7,250,613	569,839				2,938,022	5,720,789	960,000
Revere/Malden - Design/CS/RI	5185	May-88	Sep-94	1,785,748	1,785,747	1							
Revere Beach - Construction	5186	Aug-92	Oct-94	6,314,186	6,314,186	-							
Malden Section 53 - Construction	5176	Apr-92	Sep-94	10,026,429	10,026,430	(1)							
Revere Section 53 - Construction	5177	Sep-08	Aug-09	2,938,027	2,368,183	569,844	569,839				2,938,022		
Control Valves - Construction	5191	Jun-88	Aug-89	948,785	948,780	5							
DI Pipeline Cleaning & Lining - Construction	5179	Jun-90	Sep-90	157,930	157,930	-							
Winthrop Cleaning & Lining - Construction	5178	Jun-90	Aug-90	575,014	575,040	(26)							
Sections 68/53A - Construction	6335	Jun-16	Nov-17	5,445,789	-	5,445,789						5,445,789	
Technical Assistance	5986	Jul-06	Mar-18	246,445	246,445	-							
Linden Square - Construction	5238	Apr-91	Nov-91	1,849,430	1,849,430	-							
Linden Square - Construction Administration	5239	Apr-91	Nov-91	125,380	125,380	-							
Road Restoration - Des/CA/RI	6033	Nov-94	Dec-95	77,251	77,250	1							
Road Restoration - Construction	6034	Jul-95	Jun-96	1,713,790	1,713,790	-							
Malden Section 53 - Landscaping	6113	Apr-96	Jun-96	20,000	20,000	-							
Sidewalk Restoration	6183	Sep-96	Oct-96	54,100	54,100	-							
Revere Section 53 - Easements	6334	Sep-02	Jul-09	210	210	-							
Shaft 9A-D Extension - Construction	6958	Mar-18	Nov-19	1,200,000	-	1,200,000						250,000	950,000
Survey	6978	Jul-06	Mar-18	30,000	-	30,000						20,000	10,000
Permits	7049	Apr-05	Mar-18	5,000	-	5,000						5,000	
702 New Connecting Mains - Shaft 7 to WASM 3				30,131,162	5,388,384	24,742,778	1,812,057	2,639,678	466,041		4,987,434	9,216,081	10,608,920
Routing Study	5163	Aug-94	Nov-96	397,087	397,087	-							
Watertown MOU	6199	Jun-94	Sep-97	167,000	167,000	-							
CP1 - Design/CA/RI	6383	Sep-98	Jul-16	3,537,000	3,536,563	437	437				46,581		
CP2/4 - Meter 120 Design/CA/RI	6384	Aug-02	Oct-08	1,278,328	1,249,206	29,122	29,122				31,326		
CP3 - Final Design/CA/RI	6385	Oct-14	Aug-20	1,423,100	-	1,423,100						850,000	573,100
CP1 A&B - Easements	6387	Oct-11	Mar-13	800,000	16,919	783,081						783,081	
CP3 - Easements	6388	Jan-16	Dec-16	40,000	-	40,000						40,000	
CP5 - Easements	6390	Dec-06	Jan-11	29,000	21,609	7,391	3,000	4,391			28,701		
CP3 - South Segment	6392	Oct-16	Aug-19	6,418,584	-	6,418,584						3,800,000	2,618,584
CP5 - Northeast Segment	6394	Aug-09	Nov-11	4,880,826	-	4,880,826	1,779,498	2,635,287	466,041		4,880,826		
CP2 Section 59/60 Cleaning and Lining - Construction	6548	Jan-18	Nov-19	3,727,237	-	3,727,237						500,000	3,227,236
CP2 - Easements	6547	May-17	Nov-17	33,000	-	33,000						33,000	
Replacement of Section 25 - Design CA/RI	6955	Apr-16	Aug-20	400,000	-	400,000						300,000	100,000
Replacement of Section 25 - Construction	6956	Apr-18	Aug-19	2,100,000	-	2,100,000						260,000	1,840,000
Sections 59/60 - Design CA/RI	7086	Jan-16	Nov-20	500,000	-	500,000						400,000	100,000
Section 75 Extension	7284	Oct-15	Oct-19	4,400,000	-	4,400,000						2,250,000	2,150,000

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Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
704 Rehabilitation of Other Pumping Stations				30,716,694	24,309,426	6,407,268	5,514,384	822,207	70,677		12,731,112		
Preliminary Design	5153	Aug-94	Mar-96	351,000	351,000	-							
Design/CS/RI	6110	May-97	Nov-04	2,545,826	2,545,826	-							
Construction II&C	6304	Jan-00	Feb-01	639,272	639,272	-							
Rehabilitation of 5 Pump Stations	6375	Oct-06	Jun-10	22,288,314	17,045,995	5,242,319	4,702,824	539,495			10,577,539		
Public Participation	6556	Jul-99	Jan-10	5,000	-	5,000	5,000				5,000		
Legal	6557	Jul-99	Jan-10	6,097	5,500	597	597				3,292		
Proprietary Equipment Purchases	6676	Jun-99	Jan-10	285,000	157,638	127,362	127,362				127,362		
Design 2/CS/RI	6980	Dec-04	Jun-11	4,596,185	3,564,195	1,031,990	678,601	282,712	70,677		2,017,919		
706 NHS - Connecting Mains from Section 91	**completed project**			2,360,194	2,360,194	-							
708 Northern Extra High Service - New Pipelines				6,569,125	3,632,119	2,937,006	1,000	1,000	8,000	21,000	31,000	2,906,007	
Design/CA/RI	5242	Sep-94	Jun-01	587,802	587,802	-							
Appraisal/Easement	6339	Sep-94	Jun-01	389	389	-							
Construction	6340	Aug-99	Sep-01	3,031,571	3,031,572	(1)							
Regulatory Compliance	6099	Nov-95	Oct-00	250	250	-							
Sections 34/45 - Construction	6522	May-14	Nov-15	2,875,893	-	2,875,893						2,875,893	
Public Participation	6554	Jul-99	Nov-15	5,000	-	5,000				5,000	5,000		
Legal	6555	Jul-99	Nov-15	5,000	-	5,000				5,000	5,000		
Technical Assistance	6707	Nov-10	Nov-15	54,000	7,886	46,114			7,000	10,000	17,000	29,114	
PLC Equipment Purchases	6749	Dec-99	Dec-00	4,219	4,220	(1)							
Permits	7050	Nov-10	Nov-15	5,000	-	5,000	1,000	1,000	1,000	1,000	4,000	1,000	
712 Cathodic Protection of Distribution Mains				1,404,518	140,913	1,263,605							1,263,606
Planning Phase I	6058	Apr-95	Dec-97	107,680	107,680	-							
Test Station Installation 2	6438	Jun-19	Jun-20	421,202	-	421,202							421,202
Test Station Installation 3	6439	Jun-20	Jun-21	421,202	-	421,202							421,202
Test Station Installation 4	6440	Jun-21	Jun-22	421,202	-	421,202							421,202
Technical Assistance	6751	Jan-00	May-09	33,233	33,233	-							
713 Spot Pond Supply Mains Rehabilitation				66,097,017	60,995,278	5,101,739	1,052		250,000	2,000,000	2,767,832	2,850,687	
Section 4 Webster Ave Bridge - Design	7334	Jul-11	Jun-14	500,000	-	500,000			250,000	250,000	500,000		
Section 4 Webster Ave Bridge - Construction	7335	Jul-12	Jun-13	1,500,000	-	1,500,000				1,500,000	1,500,000		
Section 50 Pipe Rehabilitation - Design/ESDC/RI	7336	Jul-12	Jun-15	500,000	-	500,000				250,000	250,000	250,000	
Section 50 Pipe Rehabilitation - Construction	7337	Jul-13	Jun-14	1,500,000	-	1,500,000						1,500,000	
Preliminary Design/CA/RI	6223	Sep-98	Oct-08	10,868,582	10,868,582	-					76,155		
CP1 - Easements & Paving	6316	May-00	Mar-02	143,347	143,347	-							
North (Medford/Melrose)	6317	May-00	Jan-02	6,597,330	6,597,330	-							
CP2 - Easements	6379	May-02	Jun-06	49,601	49,601	-							
CP3 - Easements	6380	Apr-04	Nov-07	79,783	79,782	1							
Middle (Medford/Somerville)	6381	Jun-02	Jul-06	22,176,813	22,176,813	-							
South (Cambridge/Boston)	6382	Oct-04	Apr-08	17,590,133	17,590,133	-					326,397		
Early Valve Replacement	6475	Sep-98	Jan-00	2,387,073	2,387,073	-							
CP4 - Easements	6476	Sep-06	May-09	1,451	1,451	-							

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Early Valve Equipment Purchase	6483	May-98	Nov-01	161,390	161,390	-							
Construction 4 - Bridge Trusses	6697	Apr-17	Dec-18	1,100,687	-	1,100,687						1,100,687	
CP3 - CA/RI	7003	Sep-04	Apr-09	940,829	939,777	1,052	1,052				115,280		
714 Southern Extra High Sections 41 & 42	**completed project**			3,657,243	3,657,243	-							
719 Chestnut Hill Connecting Mains				30,481,420	17,461,614	13,019,806			487,000	649,000	1,136,000	11,883,806	
Pump Station Potable Connection - Design/CA/RI	6141	Mar-00	Dec-04	1,359,533	1,359,533	-							
Preliminary Engineering	6301	Jan-05	Apr-06	432,139	432,139	-							
Chapter 149 - Construction	6302	Jul-13	Jul-15	7,860,774	-	7,860,774						7,860,774	
Easements	6303	Apr-03	Dec-07	80,575	80,575	-							
Emergency Pump Relocation - Construction	6501	Feb-99	Mar-01	6,502,187	6,502,187	-							
Emergency Pump Relocation - Design/CA/RI	6503	May-98	May-01	1,120,816	1,120,816	-							
Boston Paving	6558	Jul-99	Dec-07	132,896	132,896	-							
Legal	6560	Jul-99	Jun-08	1,137	1,137	-							
BECO Emergency Pump - Construction	6623	Sep-99	Jun-00	430,641	430,641	-							
Pump Station Potable Connection - Construction	6651	Apr-02	Dec-03	7,132,109	7,132,109	-							
Equipment Pre-purchase	6814	Apr-01	Oct-01	154,337	154,337	-							
Demolition of Garages	6820	Feb-02	May-02	71,600	71,600	-							
Utilities	6869	Jun-02	Aug-02	43,644	43,644	-							
Chapter 30 - Construction	6982	Jul-13	Jul-15	2,560,140	-	2,560,140						2,560,140	
Final Design CA/RI	6995	Jul-11	Jul-16	2,598,893	-	2,598,893			487,000	649,000	1,136,000	1,462,893	
720 Warren Cottage Line Rehab	**completed project**			1,204,821	1,204,821	-							
721 Southern Spine Distribution Mains				69,494,690	20,045,165	49,449,525	4,464,869	7,047,000	3,744,000	1,775,178	19,466,278	2,257,383	30,161,096
Sections 21/43/22 - Design	6290	Sep-00	May-13	7,776,068	5,353,671	2,422,397	389,820	840,000	720,000	300,000	2,500,435	172,577	
Sections 21/43/22 - Easements	6291	Mar-02	Feb-10	134,000	75,441	58,559	58,559				59,384		
Section 22 South - Construction	6292	Jul-03	Jun-05	4,993,131	4,993,131	-							
Sections 20/58 - Design	6296	Jun-18	Nov-23	2,497,408	-	2,497,408							2,497,408
Sections 20/58 - Easements	6297	Sep-16	Sep-20	35,070	-	35,070						14,000	21,070
Sections 20/58 - Construction	6298	Sep-20	May-22	11,752,915	-	11,752,915							11,752,915
Adams Street Bridge	6396	Jul-98	Dec-99	153,783	153,783	-							
Southern Extra High - Public Participation	6601	Oct-98	May-99	15,000	15,000	-							
Southern Extra High Extension - Study	6602	Sep-98	May-99	242,372	242,372	-							
Boston Paving	6787	Jul-03	May-17	200,000	3,194	196,806	6,000	24,000	25,000	25,000	80,000	116,806	
Section 22 North - Construction	6844	Jan-19	Jan-21	14,343,703	-	14,343,703							14,343,703
Section 107 Phase 1 - Construction	6845	Jul-07	Jan-09	6,221,536	6,185,803	35,733	35,733				2,219,524		
Legal	6846	May-04	Jun-10	5,000	1,066	3,934	3,934				3,934		
Technical Assistance	6847	Feb-04	Oct-05	28,102	28,102	-							
Contract 1A - Construction	6885	Nov-03	Jun-05	2,858,603	2,858,603	-							
Section 107 Phase 2 - Construction	7099	Jan-10	May-12	14,603,000	-	14,603,000	3,970,822	6,183,000	2,999,000	1,450,178	14,603,000		
Milton Pressure Regulation Valve	7104	Jun-06	Nov-06	135,000	135,000	-							
Section 22 North - Design/ESDC	7120	Jul-16	Jan-21	2,500,000	-	2,500,000						954,000	1,546,000
Section 22 North - Facility Plan/EIR	7155	Jul-13	Jun-15	1,000,000	-	1,000,000						1,000,000	

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722 NIH Redundancy & Storage				79,252,598	727,139	78,525,459	637,566	664,546	4,266,000	5,419,248	11,080,526	51,696,772	15,841,326
Concept Plan	6954	Feb-06	Aug-10	968,977	727,139	241,838	74,292	167,546			335,004		
Easements	6306	Jul-11	Jun-12	300,000	-	300,000						300,000	
Section 89/29 Redundancy - Design	6906	Jan-11	Apr-17	7,547,220	-	7,547,220		297,000	1,191,000	1,191,000	2,679,000	4,868,220	
Purchase Mobile Pump Unit	7026	Jul-09	Jan-10	291,315	-	291,315	291,315				291,315		
NIH Short Term Improvements - Design CA/RI	7045	Sep-09	Sep-13	825,171	-	825,171	271,959	200,000	200,000	100,000	771,959	53,212	
Permits	7047	Jan-10	Dec-18	5,000	-	5,000			2,000	2,000	4,000	1,000	
Technical Assistance	7048	Jan-10	Dec-18	18,000	-	18,000			4,000	4,000	8,000	10,000	
Sections 89/29 Redundancy Phase 1 - Construction	7066	Jan-13	Jan-16	18,594,600	-	18,594,600				1,008,000	1,008,000	17,586,600	
Sections 89/29 Redundancy Phase 2 - Construction	7067	Apr-13	Apr-16	18,922,740	-	18,922,740						18,922,740	
NIH Storage - Construction	7068	Jan-18	Jan-20	15,094,440	-	15,094,440						1,811,000	13,283,440
Sections 89/29 Rehabilitation - Design	7116	Jul-14	Jun-18	1,273,539	-	1,273,539						1,195,000	78,539
Sections 89/29 Rehabilitation - Construction	7117	Jul-16	Jun-18	6,365,707	-	6,365,707						5,570,000	795,707
Gillis Pump Station Improvements	7260	Sep-11	Sep-12	3,437,164	-	3,437,164			1,851,000	1,586,164	3,437,164		
Reading/Stoneham Interconnections	7261	Oct-11	Dec-12	2,546,084	-	2,546,084			1,018,000	1,528,084	2,546,084		
NIH Storage - Design	7311	Jan-16	Dec-20	3,062,640	-	3,062,640						1,379,000	1,683,640
723 Northern Low Service Rehab Section 8				19,600,260	1,563,863	18,036,397	648,029	72,722	25,000	35,000	2,286,631	17,255,645	
Survey	6321	Jul-11	Jun-14	80,000	-	80,000			25,000	35,000	60,000	20,000	
Section 8 - Construction	6322	Jul-15	Jul-17	11,689,338	-	11,689,338						11,689,337	
Sections 37/46 Rehab - Chelsea/East Boston Constr	6962	Jul-13	Jun-14	3,200,000	-	3,200,000						3,200,000	
Permits	6977	Jul-05	Jul-18	299,000	284,892	14,108					271,154	14,108	
Technical Assistance	6979	Jul-05	Jul-17	44,245	44,245	-							
Section 97A - Construction	7021	Oct-08	Oct-09	1,955,477	1,234,726	720,751	648,029	72,722			1,955,477		
Section 8 - Design CA/RI	7092	Jul-13	Jul-18	2,332,200	-	2,332,200						2,332,200	
725 Hydraulic Model Update	**completed project**			598,358	598,358	-							
727 Southern Extra High Redundancy & Storage				93,841,194	6,586,658	87,254,536	106,227	202,000	1,132,799	1,479,833	7,840,248	52,363,688	31,969,986
Concept Plan/Prelim Des/Environmental Rev	6452	Feb-07	Feb-11	840,072	515,872	324,200	39,401	200,000	84,799		428,097		
Redundancy/Storage Phase 1 - Final Design/CA/RI	6453	Jul-11	Jun-17	5,285,448	-	5,285,448			990,000	1,321,000	2,311,000	2,974,448	
Redundancy/Storage Phase 1 - Construction	6454	Jul-13	Jun-16	26,427,240	-	26,427,240						26,427,240	
Redundancy/Storage Phase 2 - Final Des/CA/RI	6444	Jul-14	Jun-19	4,053,724	-	4,053,724						3,790,000	263,724
University Avenue Water Main	6445	Mar-08	Nov-08	6,137,448	6,070,619	66,829	66,826				4,882,318		
Sections 77/88 Rehabilitation - Design	7112	Jul-22	Jun-27	1,161,000	-	1,161,000							1,161,000
Sections 77/88 Rehabilitation - Construction	7113	Jul-24	Jun-26	4,644,000	-	4,644,000							4,644,000
Short Term Improvements - Design/CA/RI	7223	Jul-11	Jun-15	200,000	-	200,000			56,000	58,000	114,000	86,000	
Short Term Improvements - Construction	7224	Jul-13	Jun-14	750,000	-	750,000						750,000	
Easements	7226	Aug-08	Jul-24	300,000	-	300,000				100,000	100,000	100,000	100,000
Permits	7227	Aug-08	Jul-24	5,000	167	4,833		2,000	2,000	833	4,833		
Redundancy/Storage Phase 2 - Construction	7245	Jul-16	Jun-18	20,268,618	-	20,268,618						17,734,000	2,534,618
Phase 4 2nd Tank - Construction	7262	Jul-21	Jun-23	8,658,245	-	8,658,245							8,658,245
Phase 4 2nd Tank - Design	7263	Jul-19	Jun-24	1,731,649	-	1,731,649							1,731,649
Phase 3 Pump Station - Construction	7264	Jul-19	Jun-21	10,703,000	-	10,703,000							10,703,000
Phase 3 Pump Station - Design	7265	Jul-17	Jun-22	2,675,750	-	2,675,750						502,000	2,173,750

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730 Weston Aqueduct Supply Mains (WASM)				260,084,254	60,976,988	199,107,266	1,981,218	1,820,753	1,782,846	8,161,000	13,821,946	120,835,108	64,526,340
Newton Water Mains - Construction	5034	Apr-95	Oct-96	668,790	668,790	-							
Technical Assistance	5975	Mar-95	Oct-18	186,424	186,424	-							
WASM 4 - Design/CA/RI	5147	Mar-95	Sep-07	6,013,476	5,879,477	133,999	133,999				133,999		
WASM 1&2 - Design/CA/RI	6142	Jun-97	Jul-06	5,074,652	5,074,652	-							
Appraisal/Easement	6174	Mar-95	Oct-18	753,000	293,352	459,648	20,000	40,000			60,954	360,000	39,648
WASM 1,2&4 - Auburndale	6175	Jun-97	Nov-98	4,001,461	4,001,461	-							
Meter 103 - Construction	6176	Oct-96	Jul-98	61,027	61,027	-							
WASM 1&2 - Newton	6280	Mar-00	Jun-02	9,218,520	9,218,520	-							
WASM 1&2 - Boston	6281	Feb-03	Jun-05	7,038,896	7,038,896	-							
WASM 2&4 - Newton	6312	Apr-98	Mar-01	8,281,877	8,281,877	-							
WASM 4 - Western Avenue Sewer - Allston	6313	Feb-02	Dec-04	17,330,800	17,330,800	-							
WASM 3 - MEPA/Design/CA/RI	6539	Jan-12	Sep-22	28,967,386	-	28,967,386			742,000	2,970,000	3,712,000	14,850,000	10,405,386
Section 36 - Watertown/Waltham Conn - Des /CA/RI	6540	Oct-10	Dec-15	3,881,343	-	3,881,343		456,000	913,000	913,000	2,282,000	1,599,343	
WASM 3-CP2 -Waltham	6543	Jan-15	Mar-17	57,506,130	-	57,506,130						57,506,130	
WASM 3 - CP3 - Belmont	6544	Apr-17	Jun-19	71,065,439	-	71,065,439						31,584,000	39,481,439
WASM 3 - CP4 - Arlington	6545	Jul-19	Sep-21	14,599,867	-	14,599,867							14,599,867
Section 28, Arlington - CP1	6546	Aug-09	Feb-11	2,226,151	-	2,226,151	1,396,397	829,753			2,226,150		
Survey	6870	Dec-01	Oct-18	210,000	88,681	121,319	10,000	40,000	61,319	10,000	121,319		
Arlington Pipe Work	6996	Jan-10	Mar-10	430,000	-	430,000	215,000	215,000			430,000		
WASM 3 - Section PCCP Replacement - Construction	7000	Oct-04	Sep-05	2,113,693	2,113,693	-							
WASM 3 - Section PCCP Replacement - Design	7001	May-04	Aug-06	266,008	266,008	-							
Section 28 - Design/CA/RI	7083	Oct-06	Apr-11	985,681	473,332	512,349	205,822	240,000	66,527		587,524		
Section 36 - Watertown/Waltham Conn - Constr	7222	Oct-12	Dec-14	19,203,635	-	19,203,635				4,268,000	4,268,000	14,935,635	
731 Lynnfield Pipeline				7,634,742	536,102	7,098,640	94,711	3,800,000	2,650,000	503,649	7,071,741	50,281	
Construction (Phase 2)	6584	Jul-10	Jul-12	6,403,649	-	6,403,649		3,500,000	2,500,000	403,649	6,403,649		
Easement/Legal/License/Permits	6619	Jul-07	Jul-11	200,000	-	200,000	25,000	175,000			200,000		
Design CA/RI	6905	Nov-07	Jul-13	759,093	264,101	494,992	69,711	125,000	150,000	100,000	468,929	50,281	
Temporary Interconnect Phase 1 - Construction	7096	Jun-07	Dec-07	272,000	272,001	(1)					(837)		
732 Walnut St & Fisher Hill Pipeline Rehab	**completed project**			2,716,993	2,717,141	(148)					563,223		
735 Section 80 Rehabilitation				8,359,200	-	8,359,200						597,000	7,762,200
Section 80 - Construction	6891	Jan-19	Dec-20	6,687,360	-	6,687,360							6,687,360
Section 80 - Design/CS/RI	6892	Jan-17	Dec-21	1,671,840	-	1,671,840						597,000	1,074,840

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S.19 Other Waterworks				**31,092,481**	**124,788,326**	**(93,695,845)**	**5,622,406**	**15,360,612**	**13,651,431**	**22,744,196**	**66,678,394**	**(18,588,542)**	**(132,485,943)**
753 Central Monitoring System				16,992,422	15,704,996	1,287,426	36,000	394,000	857,427		1,325,478		
Study	5025	Mar-84	Sep-86	189,590	189,590	-							
Design	5026	Oct-87	Jan-92	2,651,250	2,651,250	-							
Equipment Pre-purchase	5027	Oct-87	Dec-93	2,161,920	2,161,920	-							
SCADA Implementation	5028	Aug-96	Dec-11	2,101,110	1,813,683	287,427	36,000	144,000	107,427		325,478		
Communications Structures	5160	Nov-92	May-93	161,290	161,290	-							
Construction & Start-up Services	5173	Jul-92	Aug-98	352,040	352,040	-							
Construction 1	5171	Nov-97	Nov-98	208,950	208,950	-							
Operations Center - Construction	5849	Sep-92	Jun-94	1,498,980	1,498,980	-							
Technical Assistance	5987	Jul-92	Dec-97	385,601	385,601	-							
Microwave Equipment	6125	Mar-96	Dec-01	781,987	781,987	-							
Microwave Communication System-wide Backbone	6653	Sep-01	Jun-02	1,694,018	1,694,018	-							
Monitoring & Control - Study & Design	6654	Dec-99	Sep-04	1,807,784	1,807,784	-							
Microwave Communications for Waterworks Facilities	6816	Sep-02	Jul-04	1,957,398	1,957,399	(1)							
Ludlow Communications	6825	Sep-01	Oct-01	40,504	40,504	-							
Winsor Dam High-Line Replacement	7338	Jan-11	Dec-11	1,000,000	-	1,000,000		250,000	750,000		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	5162	Feb-95	Dec-98	936,368	936,368	-							
Data Purchase	6152	Nov-95	Aug-96	100,000	100,000	-							
Records Development	6525	Jul-12	Dec-14	762,551	-	762,551				228,000	228,000	534,551	
764 Local Water Infrastructure Rehab	**completed project**			7,487,758	7,487,762	(4)							
765 Local Water Pipeline Assistance Program				-	100,337,830	(100,337,830)	5,562,226	14,460,612	12,658,004	21,760,196	63,702,736	(22,146,093)	(132,632,776)
Community Loans	6608	Aug-00	Jun-13	256,796,500	163,393,873	93,402,627	21,856,615	22,000,000	22,000,000	27,546,012	116,717,248		
Community Repayment	6759	Aug-01	Jun-23	(256,796,500)	(63,056,042)	(193,740,458)	(16,294,389)	(18,539,388)	(19,241,996)	(19,585,816)	(87,714,512)	(84,246,093)	(35,832,776)
Local Water System Loans	7339	Aug-10	Aug-19	200,000,000	-	200,000,000		10,000,000	10,000,000	15,000,000	35,000,000	100,000,000	65,000,000
Local Water System Repayment	7340	Aug-11	Aug-29	(200,000,000)	-	(200,000,000)			(1,000,000)	(2,000,000)	(3,000,000)	(40,400,000)	(156,600,000)
CVA Loans	7350	Nov-10	Nov-19	10,000,000	-	10,000,000		1,000,000	1,000,000	1,000,000	3,000,000	5,000,000	2,000,000
CVA Repayments	7351	Nov-11	Nov-29	(10,000,000)	-	(10,000,000)			(100,000)	(200,000)	(300,000)	(2,500,000)	(7,200,000)
766 Waterworks Facility Asset Protection				4,813,382	221,370	4,592,012	24,180	506,000	136,000	756,000	1,422,180	3,023,000	146,833
Meter Vault Manhole Retrofits	6689	Sep-15	Jun-18	1,680,833	-	1,680,833						1,534,000	146,833
Walnut Hill Tank - Design	6832	Jul-11	Jul-16	300,000	-	300,000			60,000	60,000	120,000	180,000	
Walnut Hill Tank - Construction	6833	Jan-14	Jul-15	1,000,000	-	1,000,000						1,000,000	
Waltham Bridge Pipe Replacement	6910	Mar-04	Sep-04	237,550	221,370	16,180	16,180				16,180		
Permits and Legal Fees	6920	Mar-04	Mar-12	15,000	-	15,000	8,000	6,000	1,000		15,000		
Cosgrove Turbine Isolation - Design	7023	Jul-12	Dec-14	480,000	-	480,000				171,000	171,000	309,000	
Cosgrove Valve Seat Replacement - Construction	7064	Jul-12	Dec-12	500,000	-	500,000				500,000	500,000		
Cosgrove Valve Seat Replacement - Design	7065	Jul-11	Dec-12	100,000	-	100,000			75,000	25,000	100,000		
Cosgrove Intake Building - Transformer Replacement	7228	Sep-10	Jun-11	500,000	-	500,000		500,000			500,000		

Massachusetts Water Resources Authority
FY11 Final Capital Expenditure Forecast

Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
S.3 Business & Operations Support				**105,552,261**	**48,605,591**	**56,946,670**	**10,022,122**	**19,023,265**	**9,748,215**	**8,644,583**	**53,112,061**	**9,508,579**	
881 Equipment Purchase				14,971,074	7,273,351	7,697,723	802,245	1,738,207	1,145,000	1,125,000	6,826,696	2,887,270	
TV Inspection Truck	6732	Jul-00	Mar-01	-	174,977	(174,977)	(174,977)				(174,977)		
Security Equipment & Installation	6760	Jan-01	Jun-13	6,212,000	4,740,730	1,471,270	499,000	400,000	175,000	175,000	2,942,810	222,270	
ICP-MS Lab Testing Equip	6808	Oct-08	Dec-08	117,432	117,432	-							
Back Hoe	6866	Apr-03	Jun-04	-	129,921	(129,921)	(129,921)				(129,921)		
Vactor Truck	6867	Apr-03	Jun-03	-	219,890	(219,890)	(219,890)				(219,890)		
Water Service Truck	6907	Apr-04	Jun-04	-	114,357	(114,357)	(114,357)				(114,357)		
Bucket Machine	6944	Oct-04	Dec-04	-	136,936	(136,936)	(136,936)				(136,936)		
Excavator	6945	Apr-07	Jun-07	-	232,699	(232,699)	(232,699)				(232,699)		
Grove Crane	6946	May-05	Aug-05	-	310,800	(310,800)	(310,800)				(310,800)		
Land Fill Loader	6981	May-05	Aug-05	-	112,682	(112,682)	(112,682)				(112,682)		
Power Sweeper/Catch Basin	6986	Apr-04	Jun-04	-	154,958	(154,958)	(154,958)				(154,958)		
Back Hoe (WRA385)	6990	Jan-08	Mar-08	-	96,900	(96,900)	(96,900)				(96,900)		
Front-End Loader	7028	Jul-05	Mar-06	-	110,258	(110,258)	(110,258)				(110,258)		
Dump Truck (WRA-558)	7029	Apr-09	Jun-09	-	104,348	(104,348)	(104,348)						
Dump Truck (WRA 522)	7030	Jan-09	Mar-09	-	100,286	(100,286)	(100,286)						
Crane (WRA-185)	7074	Apr-06	Jun-06	-	298,378	(298,378)	(298,378)				(298,378)		
High Lift Fork Loader	7239	Oct-10	Dec-10	125,000	-	125,000		125,000			125,000		
Ford Ramp Truck	7246	Apr-10	Jun-10	121,572	-	121,572	121,572				121,572		
Street Sweeper	7247	Jul-09	Sep-09	181,673	-	181,673	181,673				181,673		
International Tractor/Trailer	7301	Jan-09	Mar-09	-	117,800	(117,800)	(117,800)						
Prior Vehicle Purchases	7306	Jul-00	Jun-10	2,415,190	-	2,415,190	2,415,190				2,415,190		
FY09-13 Vehicle Purchases	7307	Jul-09	Jun-13	1,923,207	-	1,923,207		1,003,207	470,000	450,000	1,923,207		
FY14-18 Vehicle Purchases	7308	Jul-13	Jun-18	2,665,000	-	2,665,000						2,665,000	
FY09-13 Major Lab Instrumentation	7309	Nov-11	Nov-12	1,000,000	-	1,000,000			500,000	500,000	1,000,000		
Front-end Loader	7325	Oct-10	Dec-10	210,000	-	210,000		210,000			210,000		
925 Technical Assistance				1,200,000	-	1,200,000		400,000	400,000	400,000	1,200,000		
Land Appraisal	LAND			150,000	-	150,000		50,000	50,000	50,000	150,000		
Surveying	SURV			150,000	-	150,000		50,000	50,000	50,000	150,000		
Hazardous Material	HAZM			900,000	-	900,000		300,000	300,000	300,000	900,000		

Massachusetts Water Resources Authority
FY11 Final Capital Expenditure Forecast

Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
930 MWRA Facility - Chelsea	**completed project**			9,851,105	9,851,105	-					(35,800)		
931 Business Systems Plan				36,700,321	23,419,981	13,280,340	776,713	1,922,491	3,291,136	1,348,000	8,750,241	5,942,000	
Network - Phase I	6015	Jul-94	Dec-96	141,610	141,610	-							
Phase I (FY95-97)	6014	Jul-94	Mar-03	1,146,321	1,146,321	-							
Hardware - Phase I	6013	Jul-94	Dec-96	440,770	440,770	-							
Phase II FY97-99	6177	Jul-96	Jun-10	4,174,368	4,038,320	136,048	117,000	19,048			923,507		
Phase III (FY99-01)	6362	Dec-97	Jun-04	10,748,465	10,748,465	-							
Phase IV / Year 2000 Improvements	6508	Jul-98	Jan-00	3,037,973	3,037,973	-							
Phase V	6509	Jul-01	Jun-12	1,941,518	1,567,447	374,071	343,132	30,939			977,724		
Phase VI	6865	Jan-03	Jun-12	2,608,400	2,057,855	550,545	55,000	276,000	219,545		330,114		
Computer Center - OCC Infrastructure	7200	Jul-14	Jun-16	1,500,000	-	1,500,000						1,500,000	
Net 2020	7201	Jul-10	Jun-13	1,500,000	-	1,500,000		563,000	750,000	187,000	1,500,000		
SAN II	7203	Jul-11	Jun-12	600,000	-	600,000			450,000	150,000	600,000		
SAN III	7204	Jul-14	Jun-15	600,000	-	600,000						600,000	
Telecommunications	7205	Jul-13	Jun-15	750,000	-	750,000						750,000	
Laboratory Instrument Data Management	7238	Mar-11	Mar-12	250,000	-	250,000		50,000	200,000		250,000		
Corporate Server Infrastructure & Document Dist	7240	Jun-10	Jun-14	1,000,000	-	1,000,000		27,000	324,000	324,000	675,000	325,000	
DITP/OMS	7249	Jun-08	Jun-12	142,279	-	142,279		142,000	279		142,279		
GIS/TV Inspection	7250	Apr-09	Jun-10	45,370	-	45,370	45,370				45,370		
GIS Upgrades & Enhancements	7251	Apr-09	Jun-12	300,000	-	300,000	13,000	152,000	135,000		300,000		
MIS Strategic Plan	7253	Jan-11	Jun-12	500,000	-	500,000		250,000	250,000		500,000		
MIS Licensing	7254	Jul-08	Mar-10	24,211	-	24,211	24,211				24,211		
Lawson Conversion	7255	Jun-08	Jun-11	429,532	241,220	188,312	42,000	113,000	33,312		429,532		
Cyber Security	7256	Apr-09	Jun-13	330,000	-	330,000	63,000	84,000	83,000	83,000	313,000	17,000	
Original SAN	7257	Jul-09	Jun-11	289,504	-	289,504	74,000	215,504			289,504		
Cyber Security	7285	Sep-11	Sep-12	1,200,000	-	1,200,000			646,000	554,000	1,200,000		
Lawson System Upgrade	7286	Sep-13	Sep-15	1,550,000	-	1,550,000						1,550,000	
Laboratory Information Mgmt Sys (LIMS)	7287	Sep-14	Sep-16	600,000	-	600,000						600,000	
Pre-Treatment Information Mgmt Sys (PIMS)	7288	Sep-14	Sep-16	600,000	-	600,000						600,000	
Document Control Sys Software App Replace	7289	Jul-11	Jul-12	250,000	-	250,000			200,000	50,000	250,000		
932 Environmental Remediation				1,804,912	1,463,733	341,179	42,495	80,000	75,000	75,000	268,028	68,684	
Tech Assistance / Environmental Remediation	6745	Feb-99	Jun-07	544,979	544,979	-							
Prison Point Tank Removal - Construction	6746	Feb-99	Jan-13	776,909	435,730	341,179	42,495	80,000	75,000	75,000	268,028	68,684	
Cottage Farm Tank Replace - Construction	6747	Jun-02	Dec-02	427,749	427,749	-							
Oakdale Power Station	6805	Sep-03	Dec-04	47,066	47,066	-							
Cosgrove Power Station	6806			8,209	8,209	-							
933 Capital Maintenance Planning & Develop				8,265,393	4,413,566	3,851,827	1,337,788	1,579,215	934,824		4,546,013		
Inventory & Evaluation - 1&2	6421	Apr-00	Jul-05	2,579,434	2,579,434	-							
As-needed Design Contract 1	6976	Mar-05	Sep-07	314,424	314,424	-							
As-needed Design Contract 2	6988	Mar-05	Sep-07	317,539	317,539	-							
As-needed Design Contract 5	7070	Sep-08	Sep-10	736,449	145,086	591,363	266,893	324,470			736,449		
As-needed Design Contract 3	7101	Aug-07	Feb-10	669,736	483,486	186,250	186,251				350,131		

Massachusetts Water Resources Authority
FY11 Final Capital Expenditure Forecast

Program / Project	Contract No.	NTP	SC	Contract Value	Payments through FY09	Remaining Balance	FY10	FY11	FY12	FY13	FY09-13	FY14-18	Beyond FY18
As-needed Design Contract 4	7102	Aug-07	Aug-09	434,373	342,216	92,157	92,157				245,996		
As-needed Design Contract 6	7242	Aug-08	Aug-10	813,437	231,381	582,056	507,075	74,981			813,437		
As-needed Design Contract 7	7243	Jan-10	Jan-12	1,200,000	-	1,200,000	185,412	579,764	434,824		1,200,000		
As-needed Design Contract 8	7244	Feb-10	Feb-12	1,200,000	-	1,200,000	100,000	600,000	500,000		1,200,000		
934 MWRA Facilities Management & Planning				7,307,536	269,835	7,037,701	100,700	800,001	1,465,417	4,671,583	7,307,536		
Design & Engineering Services	6983	Oct-10	Dec-12	800,000	-	800,000		300,000	400,000	100,000	800,000		
Facilities Construction	6984	May-09	Jun-13	6,507,536	269,835	6,237,701	100,700	500,001	1,065,417	4,571,583	6,507,536		
935 Alternative Energy Initiatives				25,451,920	1,914,020	23,537,900	6,962,181	12,503,351	2,436,838	1,025,000	24,249,347	610,625	
Deer Island Solar	6974	Sep-07	May-08	903,606	903,604	2	110				311,671		
DI Solar - Grant	6974A	Nov-07	Dec-08	-	(560,000)	560,000	560,000						
DI Wind	6974C	Nov-08	Apr-10	3,998,500	1,229,000	2,769,500	2,769,500				3,998,500		
DI Wind - Grant	6974D	Nov-08	Dec-10	-	-	-							
NI Wind	7270	Jun-10	Nov-11	4,004,800	-	4,004,800	750,000	3,254,800			4,004,800		
NI Wind - Grant	7271	Nov-10	Nov-11	-	-	-							
Loring Road Hydro- Design	6974E	Mar-08	Sep-09	2,345	-	2,345	2,344				2,344		
Loring Road Hydro Design -Grant	7273	Jan-09	Feb-11	-	-	-							
Loring Road Hydro Construction - Grant	7273A	Jan-09	Feb-11	-	-	-							
Technical Assistance - Solar	7274	May-09	May-12	385,000	32,162	352,838	146,000	175,000	31,838		385,000		
Energy Advisory Consultant Services	6974B	Jun-08	Jun-09	58,780	28,970	29,810	29,805				58,775		
Wind Power Feasibility Study	OP67	Mar-07	Jun-10	658,350	280,284	378,066	378,066				658,350		
DI Photovoltaic System Phase 1 - Construction	7292	Sep-09	Mar-10	1,119,000	-	1,119,000	1,119,000				1,119,000		
Technical Assistance - Energy Efficiency	7274A	May-09	May-12	500,000	-	500,000	50,000	200,000	250,000		500,000		
Technical Assistance - Solar II	7274B	May-09	May-12	380,000	-	380,000	49,998	175,000	155,000		379,998		
Technical Assistance - Emerging Technology	7274C	May-09	May-12	200,000	-	200,000	50,000	100,000	50,000		200,000		
Technical Assistance - Wind	7274D	May-09	May-12	750,000	-	750,000	199,999	350,000	200,000		749,999		
Wachusett Hydro - Grant	7299	Jan-10	Jun-12	-	-	-							
Wachusett Hydro - Design & Construction	7300	Jul-12	Dec-14	1,260,625	-	1,260,625				650,000	650,000	610,625	
DeLauri Pump Station Wind - Construction	7302	Feb-10	Aug-11	4,686,500	-	4,686,500	151,130	4,535,370			4,686,500		
DeLauri Pump Station Wind - Grant	7303	Feb-10	Mar-11	-	-	-							
JJ Carroll WTP Solar - Construction	7304	Jan-10	Jul-11	2,187,414	-	2,187,414	166,233	2,021,181			2,187,414		
JJ Carroll WTP Solar - Grant	7305			-	-	-							
Loring Road Hydro - Construction	6974F	Jan-10	Jan-11	1,857,000	-	1,857,000	539,996	1,317,000			1,856,996		
JJ Carroll WTP Solar - Stimulus	7318	Feb-10	Mar-11	-	-	-							
DeLauri Pump Station Wind - Construction	7319	Feb-10	Mar-11	-	-	-							
DI Photovoltaic System Phase 1 - Stimulus	7320	Sep-09	Mar-10	-	-	-							
DI Wind Phase II - Construction	7321	Nov-10	May-12	2,500,000	-	2,500,000		375,000	1,750,000	375,000	2,500,000		
DI Wind Phase II - Stimulus	7322	Nov-10	May-12	-	-	-							
Norumbega Solar - Construction	7323			-	-	-							
Norumbega Solar - Stimulus	7324			-	-	-							
Loring Road Hydro Construction - Stimulus	7341	Jan-10	Apr-11	-	-	-							

MASSACHUSETTS WATER RESOURCES AUTHORITY
CONTINGENCY FUND FORECAST FY2011 - 2020
($000)

	Total Contingency Budget FY11-20	Q1 FY2011	Q2 FY2011	Q3 FY2011	Q4 FY2011	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
Wastewater System Improvements															
FY2011	6,174	1,571	1,384	1,356	1,862	6,174									
FY2012	5,597						5,597								
FY2013	5,327							5,327							
FY2014	12,219								12,219						
FY2015	10,527									10,527					
FY2016	8,767										8,767				
FY2017	4,573											4,573			
FY2018	2,665												2,665		
FY2019	1,668													1,668	
FY2020	1,397														1,397
Total Wastewater System Improvements	**$58,915**	**$1,571**	**$1,384**	**$1,356**	**$1,862**	**$6,174**	**$5,597**	**$5,327**	**$12,219**	**$10,527**	**$8,767**	**$4,573**	**$2,665**	**$1,668**	**$1,397**
Waterworks System Improvements															
FY2011	2,833	776	616	543	898	2,833									
FY2012	4,741						4,741								
FY2013	6,480							6,480							
FY2014	8,893								8,893						
FY2015	6,931									6,931					
FY2016	5,218										5,218				
FY2017	5,166											5,166			
FY2018	8,040												8,040		
FY2019	7,606													7,606	
FY2020	7,036														7,036
Total Waterworks System Improvements	**$62,942**	**$776**	**$616**	**$543**	**$898**	**$2,833**	**$4,741**	**$6,480**	**$8,893**	**$6,931**	**$5,218**	**$5,166**	**$8,040**	**$7,606**	**$7,036**
Business & Operations Support	**$3,201**	**$270**	**$413**	**$397**	**$223**	**$1,304**	**$654**	**$577**	**$177**	**$225**	**$167**	**$65**	**$32**	**$0**	**$0**
Total MWRA	**$125,058**	**$2,617**	**$2,413**	**$2,296**	**$2,983**	**$10,310**	**$10,993**	**$12,384**	**$21,289**	**$17,683**	**$14,152**	**$9,804**	**$10,737**	**$9,274**	**$8,433**

APPENDIX 3

New Capital Projects Added During the FY11 CIP

Appendix 3
New Capital Projects Added to the FY11 CIP

Program	Project	Subphase	Total Contract Amount	FY09-13	Beyond CAP	Total Expenditures
Interception & Pumping	Braintree - Weymouth Relief Facilities	Mill Cove Siphon Sluice Gates	$600,000	$500,000	$100,000	$600,000
	I&P FAMP	Interceptor AP - Interceptor Renewal # 5 Milton Sections 607/609/610	$4,000,000	$0	$4,000,000	$4,000,000
		Interceptor AP - Interceptor Renewal # 6 Chelsea Sections 12/14/15/62	$11,000,000		$11,000,000	$11,000,000
		New Neponset VFD Replacement	$300,000	$300,000	$0	$300,000
		Squantum Force Main Engineering Analysis	$250,000	$250,000	$0	$250,000
		Cottage Farm Fuel System Upgrade	$300,000	$300,000	$0	$300,000
		Somerville/Marginal Gate Replacement	$300,000	$300,000	$0	$300,000
		North Dorchester Outfall Cleaning Study/Design	$350,000	$350,000	$0	$350,000
	Wastewater Process Optimization	Manhole Structure Flood Protection Design	$500,000	$500,000	$0	$500,000
		Manhole Structure Flood Protection Construction	$5,000,000	$0	$5,000,000	$5,000,000
		Hydraulic Flood Engeering Analysis - North System	$2,500,000	$2,500,000	$0	$2,500,000
Drinking Water Quality Improvements	John J. Carroll Water Treatment Plant	Technical Assistance No. 5	$563,000	$563,000	$0	$563,000
		Technical Assistance No. 6	$563,000	$563,000	$0	$563,000
Transmission	Quabbin Transmission System	CVA Intake Motorized Screen Replacement	$500,000		$500,000	$500,000
		Wachusett Lower Gatehouse Roof, Masonry Restoration & Weatherproofing	$2,200,000		$2,200,000	$2,200,000
	Dam Projects	Quinapoxet Permits & Preliminary Design	$100,000	$100,000	$0	$100,000
		Quinapoxet Design/ESDC/RI	$200,000	$30,000	$170,000	$200,000
		Quinapoxet Dam Removal Construction	$750,000	$0	$750,000	$750,000
Distribution And Pumping	Spot Pond Supply Mains - Rehab	Section 4 Webster Ave Bridge - Design	$500,000	$500,000	$0	$500,000
		Section 4 Webster Ave Bridge - Construction	$1,500,000	$1,500,000	$0	$1,500,000
		Section 50 Pipe Rehab - Design/ESDC/RI	$500,000	$250,000	$250,000	$500,000
		Section 50 Pipe Rehab - Construction	$1,500,000	$0	$1,500,000	$1,500,000

Appendix 3
New Capital Projects Added to the FY11 CIP

Program	Project	Subphase	Total Contract Amount	FY09-13	Beyond CAP	Total Expenditures
Other Waterworks	Central Monitoring System	Winsor Dam Hi Line Replacement	$1,000,000	$1,000,000	$0	$1,000,000
	Local Water Pipeline Assistance Program	Loans	$200,000	$35,000,000	$230,000,000	$200,000,000
		Repayments	(200,000)	($3,000,000)	-$353,600,000	($200,000,000)
		CVA Loans	$10,000,000	$3,000,000	$9,000,000	$10,000,000
		CVA Loan Repayments	($10,000,000)	($300,000)	-$16,900,000	($10,000,000)
Business & Operations Support	Equipment Purchase	Front-End Loader	$210,000	$210,000	$0	$210,000
		High Lift Fork Loader	$125,000	$125,000	$0	$125,000
	Alternative Energy Initiatives	Delauri Pump Station Wind	$4,687,000	$4,687,000	$0	$4,687,000
		JJ Carroll WTP Solar	$2,187,000	$2,187,000	$0	$2,187,000
		Deer Island Wind Phase II	$2,500,000	$2,500,000	$0	$2,500,000
SUMMARY						
Total Wastewater Projects			**$25,100,000**	**$5,000,000**	**$20,100,000**	**$25,100,000**
Total Water Projects			**$9,876,000**	**$39,206,000**	**($29,330,000)**	**$9,876,000**
Total Business & Operations Support Projects			**$9,709,000**	**$9,709,000**	**$0**	**$9,709,000**
Total Projects			**$44,685,000**	**$53,915,000**	**($9,230,000)**	**$44,685,000**

APPENDIX 4

Overview of the FY11 Final CIP and Changes from the FY10 Final CIP

APPENDIX 4
Overview of the FY11 Final CIP and Changes from the FY10 Final CIP
($000)

	FY11 Final CIP				FY10 Final CIP				Change from FY10 Final CIP			
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 FY18**
Total MWRA	**5,332,754**	**1,057,147**	**995,060**	**417,529**	**4,981,040**	**1,089,734**	**688,698**	**339,603**	**351,714**	**-32,587**	**306,362**	**77,926**
S.1 Wastewater	**2,574,720**	**644,573**	**516,710**	**195,768**	**2,461,518**	**674,045**	**349,436**	**220,376**	**113,202**	**-29,471**	**167,274**	**-24,608**
S.10 Interception & Pumping	**799,085**	**67,274**	**229,583**	**14,061**	**712,499**	**79,706**	**114,667**	**29,959**	**86,587**	**-12,432**	**114,916**	**-15,898**
S.102 Quincy Pump Facilities	25,908	0	0	0	25,908	0	0	0	0	0	0	0
S.104 Braintree-Weymouth Relief Facilities	233,573	18,442	100	0	238,263	12,929	10,303	0	-4,690	5,513	-10,203	0
S.105 New Neponset Valley Relief Sewer	30,300	0	0	0	30,300	0	0	0	0	0	0	0
S.131 Upper Neponset Valley Sewer System	54,426	1,277	0	0	54,657	1,507	0	0	-231	-230	0	0
S.140 Neponset Valley Relief Sewer	0	0	0	0	0	0	0	0	0	0	0	0
S.106 Wellesley Ext Replacement Sewer	64,359	0	0	0	64,359	0	0	0	0	0	0	0
S.107 Framingham Extension Relief Sewer	47,856	0	0	0	47,856	0	0	0	0	0	0	0
S.127 Cummingsville Replacement Sewer	8,999	43	0	0	9,125	170	0	0	-126	-127	0	0
S.130 Siphon Structure Rehabilitation	2,613	84	1,589	0	2,679	120	1,619	0	-66	-36	-30	0
S.134 Ashland Extension Sewer	0	0	0	0	0	0	0	0	0	0	0	0
S.135 System Master Plan Interceptors	0	0	0	0	0	0	0	0	0	0	0	0
S.132 Corrosion & Odor Control	14,647	325	11,319	0	14,776	3,132	8,642	0	-129	-2,807	2,677	0
S.136 West Roxbury Tunnel	88,784	7,575	72,328	0	77,733	16,917	51,936	0	11,051	-9,343	20,392	0
S.137 Wastewater Central Monitoring	19,939	5,991	0	0	19,977	6,029	0	0	-38	-38	0	0
S.139 South System Relief Project	4,940	0	938	562	4,945	5	938	562	-5	-5	0	0
S.141 Wastewater Process Optimization	10,310	3,103	6,277	0	2,365	102	1,333	0	7,945	3,001	4,944	0
S.142 Wastewater Meter Sys-Equip Replace	26,578	790	7,201	13,499	26,578	790	7,201	13,499	0	0	0	0
S.143 Regional I/I Management Planning	169	0	0	0	169	0	0	0	0	0	0	0
S.145 I&P Facility Asset Protection	159,934	29,644	124,081	0	87,058	37,349	27,601	15,898	72,876	-7,705	96,480	-15,898
S.146 D.I. Cross Harbor Tunnel Inspection	5,000	0	5,000	0	5,000	0	5,000	0	0	0	0	0
S.147 Randolph Trunk Sewer Relief	750	0	750	0	750	656	94	0	0	-656	656	0
S.25 Treatment	**555,740**	**227,528**	**171,589**	**104,828**	**536,461**	**258,455**	**109,089**	**117,125**	**19,279**	**-30,927**	**62,500**	**-12,297**
S.200 DI Plant Optimization	33,456	296	0	0	33,456	296	0	0	0	0	0	0
S.206 DI Treatment Plant Asset Protection	512,501	222,428	167,883	104,828	490,400	250,852	106,960	115,229	22,101	-28,424	60,923	-10,401
S.210 Clinton Wastewater Treatment Plant	3,115	2,770	0	0	3,115	2,771	0	0	0	-1	0	0
S.211 Laboratory Services	6,667	2,033	3,705	0	9,490	4,536	2,129	1,896	-2,823	-2,503	1,576	-1,896
S.12 Residuals	**211,741**	**4,596**	**60,542**	**82,791**	**211,681**	**5,869**	**61,208**	**80,792**	**60**	**-1,273**	**-667**	**1,999**
S.261 Residuals	63,811	0	0	0	63,811	0	0	0	0	0	0	0
S.271 Residuals Asset Protection	147,930	4,597	60,541	82,791	147,870	5,869	61,207	80,792	60	-1,272	-666	1,999

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	FY11 Final CIP				FY10 Final CIP				Change from FY10 Final CIP			
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 FY18**
S.13 CSO	**885,280**	**336,586**	**26,054**	**424**	**878,003**	**323,971**	**31,504**	**314**	**7,277**	**12,615**	**-5,450**	**110**
S.339 North Dorchester Bay	223,299	84,256	0	0	223,441	84,400	0	0	-142	-144	0	0
S.354 Hydraulic Relief Projects	2,295	0	0	0	2,295	0	0	0	0	0	0	0
S.347 East Boston Branch Sewer Relief	88,037	77,331	0	0	85,446	74,740	0	0	2,591	2,591	0	0
S.348 BOS019 Storage Conduit	14,288	-44	0	0	14,288	-44	0	0	0	0	0	0
S.349 Chelsea Trunk Sewer	29,779	0	0	0	29,779	0	0	0	0	0	0	0
S.350 Union Park Detention Treatment Fac	49,583	-227	0	0	49,583	-227	0	0	0	0	0	0
S.353 Upgrade Existing CSO Facilities	22,385	0	0	0	22,385	0	0	0	0	0	0	0
S.355 MWR003 Gate & Siphon	3,489	445	3,044	0	2,839	1,352	1,487	0	650	-907	1,557	0
S.357 Charles River CSO Controls	4,406	3,304	0	0	5,651	4,550	0	0	-1,245	-1,246	0	0
S.340 S. Dorch Bay Sew Separ (Fox Pt.)	54,171	409	0	0	54,016	253	0	0	155	156	0	0
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)	64,551	9,661	0	0	64,319	9,429	0	0	232	232	0	0
S.344 Stony Brook Sewer Separation	44,333	-720	0	0	44,209	-843	0	0	124	123	0	0
S.342 Neponset River Sewer Separation	2,444	0	0	0	2,444	0	0	0	0	0	0	0
S.343 Constitution Beach Sewer Separation	3,769	0	0	0	3,769	0	0	0	0	0	0	0
S.346 Cambridge Sewer Separation	63,985	36,361	9,173	0	57,979	36,609	2,919	0	6,006	-248	6,254	0
S.351 BWSC Floatables Controls	933	0	0	0	933	0	0	0	0	0	0	0
S.352 Cambridge Floatables Controls	1,087	164	0	0	3,886	2,963	0	0	-2,799	-2,799	0	0
S.356 Fort Point Channel Sewer Separation	12,062	3,770	0	0	11,867	3,576	0	0	195	194	0	0
S.358 Morrissey Boulevard Drain	36,224	21,527	20	0	36,435	21,759	0	0	-211	-232	20	0
S.359 Reserved Channel Sewer Separation	73,684	57,340	13,627	0	78,574	48,999	26,858	0	-4,890	8,341	-13,231	0
S.360 Brookline Sewer Separation	29,599	28,327	0	0	24,010	22,738	0	0	5,589	5,589	0	0
S.361 Bulfinch Triangle Sewer Separation	9,986	9,490	0	0	9,648	9,151	0	0	338	339	0	0
S.324 CSO Support	50,892	5,190	190	424	50,208	4,566	240	314	684	624	-50	110
S.14 Other	**122,875**	**8,590**	**28,942**	**-6,337**	**122,875**	**6,043**	**32,967**	**-7,814**	**0**	**2,547**	**-4,025**	**1,477**
S.128 I/I Local Financial Assistance	122,594	8,589	28,941	-6,337	122,594	6,043	32,967	-7,814	0	2,546	-4,026	1,477
S.138 Sewerage System Mapping Upgrade	281	0	0	0	281	0	0	0	0	0	0	0
S.2 Waterworks System Improvements	**2,652,482**	**359,467**	**468,840**	**221,760**	**2,429,609**	**374,914**	**333,056**	**119,227**	**222,873**	**-15,447**	**135,784**	**102,533**
S.16 Drinking Water Quality Improvements	**656,826**	**106,227**	**42,009**	**0**	**644,977**	**101,365**	**35,024**	**0**	**11,849**	**4,862**	**6,985**	**0**
S.542 John J. Carroll Water Treatment Plant	429,436	39,116	17,567	0	428,119	38,982	16,385	0	1,317	134	1,182	0
S.543 Quabbin Water Treatment Plant	17,488	7,275	69	0	17,329	7,148	37	0	159	127	32	0
S.544 Norumbega Covered Storage	106,674	102	0	0	106,674	102	0	0	0	0	0	0
S.545 Blue Hills Covered Storage	40,681	21,758	34	0	40,746	21,827	30	0	-65	-69	4	0
S.550 Spot Pond Storage Facility	62,547	37,974	24,340	0	52,109	33,305	18,572	0	10,438	4,669	5,768	0
S.17 Transmission	**1,117,059**	**96,231**	**157,569**	**190,375**	**1,003,936**	**115,151**	**149,900**	**66,000**	**113,123**	**-18,920**	**7,669**	**124,375**
S.604 MetroWest Tunnel	704,027	49,915	20,312	0	713,836	64,900	15,136	0	-9,809	-14,985	5,176	0
S.601 Sluice Gate Rehabilitation	9,158	0	0	0	9,158	0	0	0	0	0	0	0
S.615 Chicopee Valley Aqued. Redundancy	8,605	34	0	0	8,619	47	0	0	-14	-13	0	0
S.597 Winsor Dam Hydroelectric/Pipeline Replace	14,866	7,458	7,370	0	15,504	10,660	4,805	0	-638	-3,202	2,565	0
S.616 Quabbin Transmission System	11,420	3,068	3,929	0	8,762	3,112	1,226	0	2,658	-44	2,703	0
S.617 Sudbury / Weston Aqueduct Repairs	3,267	1,836	796	0	3,179	2,544	0	0	88	-708	796	0
S.620 Wachusetts Res Spill Impr/Winsor Dam Repairs	11,944	3,894	0	0	14,950	6,900	0	0	-3,006	-3,006	0	0
S.621 Watershed Land	19,000	10,794	0	0	19,000	10,793	0	0	0	1	0	0
S.622 Cosgrove/Wachusett Redundancy	0	0	0	0	0	0	0	0	0	0	0	0
S.623 Dam Projects	8,739	6,757	1,982	0	7,509	5,776	1,733	0	1,230	981	249	0
S.625 Long Term Redundancy	326,032	12,476	123,181	190,375	203,419	10,419	127,000	66,000	122,613	2,057	-3,819	124,375

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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 FY18**
S.18 Distribution And Pumping	**847,504**	**90,331**	**287,850**	**163,871**	**749,934**	**125,879**	**229,570**	**89,037**	**97,570**	**-35,549**	**58,280**	**74,834**
S.677 Valve Replacement	19,132	3,613	6,938	0	18,930	3,948	6,402	0	202	-335	536	0
S.712 Cathodic Protection Of Distr.Mains	1,405	0	0	1,263	1,684	0	0	1,543	-279	0	0	-280
S.678 Boston Low Serv.-Pipe & Valve Rehab	23,691	0	0	0	23,691	0	0	0	0	0	0	0
S.730 Weston Aqueduct Supply Mains (WASMs)	260,084	13,822	120,835	64,526	129,090	6,475	31,815	29,898	130,994	7,347	89,020	34,628
S.720 Warren Cottage Line Rehab	1,205	0	0	0	1,205	0	0	0	0	0	0	0
S.732 Walnut St. & Fisher Hill Pipeline Rehab.	2,717	563	0	0	2,717	563	0	0	0	0	0	0
S.683 Heath Hill Road Pipe Replacement	19,365	-3	0	0	19,365	-3	0	0	0	0	0	0
S.721 Southern Spine Distribution Mains	69,495	19,466	2,258	30,161	74,413	25,898	22,063	8,841	-4,918	-6,432	-19,805	21,320
S.714 South. Extra High Sects 41,42 & 74	3,657	0	0	0	3,657	0	0	0	0	0	0	0
S.727 SEH Redundancy & Storage	93,841	7,840	52,363	31,970	91,644	8,585	51,861	29,531	2,197	-745	502	2,439
S.719 Chestnut Hill Connecting Mains	30,481	1,136	11,884	0	25,378	4,271	3,646	0	5,103	-3,135	8,238	0
S.704 Rehab of Other Pumping Stations	30,717	12,731	0	0	30,855	12,870	0	0	-138	-139	0	0
S.722 NIH Redundancy & Storage	79,253	11,081	51,697	15,841	88,988	29,670	58,683	0	-9,735	-18,589	-6,986	15,841
S.689 James L. Gillis Pump Station Rehab.	33,419	0	0	0	33,419	0	0	0	0	0	0	0
S.713 Spot Pond Supply Mains - Rehab	66,097	2,768	2,851	0	62,463	909	1,000	76	3,634	1,859	1,851	-76
S.723 Nor Low Service Rehab Secs. 8	19,600	2,287	17,255	0	19,199	4,300	14,841	0	401	-2,013	2,414	0
S.702 New Connecting Mains - Shaft 7 to ...	30,131	4,988	9,216	10,609	61,956	17,728	29,398	9,512	-31,825	-12,740	-20,182	1,097
S.706 NHS - Con. Mains from Sec. 91	2,360	0	0	0	2,360	0	0	0	0	0	0	0
S.692 NHS - Section 27 Improvements	3,179	0	2,278	778	3,110	0	1,768	1,219	69	0	510	-441
S.693 NHS - Revere & Malden Pipeline Impr	33,514	2,938	5,721	960	32,018	2,669	4,455	1,000	1,496	269	1,266	-40
S.724 Nor High Service - Pipeline Rehab	0	-2	0	0	0	-2	0	0	0	0	0	0
S.733 NHS Pipeline Rehab 13-18 & 48	0	0	0	0	0	0	0	0	0	0	0	0
S.731 Lynnfield Pipeline	7,635	7,072	50	0	7,731	7,218	0	0	-96	-146	50	0
S.708 Nor Extra High Serv - New Pipelines	6,569	31	2,906	0	6,504	29	2,845	0	65	2	61	0
S.725 Hydraulic Model Update	598	0	0	0	598	0	0	0	0	0	0	0
S.734 SEH Pipelines-Sections 30,40,44,39	0	0	0	0	0	0	0	0	0	0	0	0
S.735 Section 80 Rehabilitation	8,359	0	597	7,762	7,959	0	542	7,417	400	0	55	345
S.618 Northern High NW Trans Sect 70-71	1,000	0	1,000	0	1,000	750	250	0	0	-750	750	0
S.19 Other	**31,092**	**66,678**	**-18,589**	**-132,486**	**30,761**	**32,519**	**-81,439**	**-35,808**	**330**	**34,159**	**62,850**	**-96,678**
S.753 Central Monitoring System	16,992	1,325	0	0	15,992	325	0	0	1,000	1,000	0	0
S.763 Distribution Systems Facs. Mapping	1,799	228	535	0	2,506	1,470	0	0	-707	-1,242	535	0
S.764 Local Water Infrastr Rehab Ast Progr	7,488	0	0	0	7,488	0	0	0	0	0	0	0
S.765 Local Water Pipeline Imp. Loan Program	0	63,703	-22,146	-132,633	0	28,942	-84,210	-35,808	0	34,761	62,064	-96,825
S.766 Waterworks Facility Asset Protection	4,813	1,422	3,023	147	4,775	1,782	2,771	0	38	-360	252	147
S.3 Business & Operations Support	**105,552**	**53,112**	**9,509**	**0**	**89,913**	**40,775**	**6,207**	**0**	**15,639**	**12,337**	**3,302**	**0**
S.23 Other	**105,552**	**53,112**	**9,509**	**0**	**89,913**	**40,775**	**6,206**	**0**	**15,639**	**12,337**	**3,303**	**0**
S.933 Capital Maintenance Planning/Development	8,265	4,546	0	0	7,081	3,363	0	0	1,184	1,183	0	0
S.881 Equipment Purchase	14,971	6,826	2,887	0	11,984	6,239	487	0	2,987	587	2,400	0
S.930 MWRA Facility - Chelsea	9,851	-36	0	0	9,881	-6	0	0	-30	-30	0	0
S.925 Technical Assistance	1,200	1,200	0	0	1,200	1,200	0	0	0	0	0	0
S.931 Business Systems Plan	36,700	8,750	5,942	0	36,700	9,008	5,684	0	0	-258	258	0
S.932 Environmental Remediation	1,805	268	69	0	1,805	302	35	0	0	-34	34	0
S.934 MWRA Facilities Management & Planning	7,308	7,308	0	0	7,122	7,122	0	0	186	186	0	0
S.935 Alternative Energy Initiatives	25,452	24,249	611	0	14,140	13,547	0	0	11,312	10,702	611	0

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

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
FY11 Budget Cycle									
S.145 I&P Facility Asset Protection						**$159,934**	**$29,644**	**$124,081**	
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 John J. Carroll Water Treatment Plant						**$429,436**	**$39,116**	**$17,567**	
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						**$66,097**	**$2,768**	**$2,851**	
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						**$0**	**$63,703**	**-$154,779**	
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						**$16,992**	**$1,325**	**$0**	
S.75512.7338 Winsor Dam High Line Replacement	3	FY11	3	Jan-11	Dec-11	1,000	1,000	0	
FY11 Master Plan Totals						**19,726**	**34,976**	**-15,250**	

Appendix 5
Master Plan/CIP Status

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						**122,594**	**6,043**	**25,153**	
S.10471.7293 Grants-Phase VII	**3**	FY10	3	Aug-09	Jun-18	18,000	4,950	13,050	
S.10472.7294 Loans - Phase VII	**3**	FY10	3	Aug-09	Jun-18	22,000	6,050	15,950	**One Initiative - 3 subphases**
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	
S.10475.7297 Loans - Phase VIII	**3**	FY10	3	Aug-13	Jun-21	22,000	0	22,000	**One Initiative - 3 subphases**
S.10476.7298 Repayments-Phase VIII	**3**	FY10	3	Aug-14	Jun-26	(22,000)	0	(22,000)	
S.210 Clinton Wastewater Treatment Plant						**3,115**	**2,771**	**0**	
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						**87,058**	**37,349**	**43,499**	
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						**8,762**	**3,112**	**1,226**	
S.92366.7282 Ware River Intake Valve Replancement	**3**	FY10	3	Jul-14	Jul-17	1,200	0	1,200	
S.604 MetroWest Tunnel						**713,836**	**64,900**	**15,136**	
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						**61,956**	**17,728**	**38,910**	
S.92368.7284 Section 75 Extension	**3**	FY10	3	Oct-15	Oct-19	4,400	0	4,400	
S.931 Business Systems Plan						**36,700**	**9,008**	**5,684**	
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 Doc Control Sys Software App Replace	**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						**58,672**	**15,502**	**43,170**	

Appendix 5
Master Plan/CIP Status

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
FY09 Budget Cycle									
S.145 I&P Facility Asset Protection						**69,715**	**28,116**	**36,063**	
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						**2,605**	**114**	**1,551**	
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						**750**	**656**	**94**	
S.10461.7220 Study	3	FY09	3	Jul-11	Jun-13	750	656	94	
S.132 Corrosion & Odor Control						**14,637**	**3,135**	**8,500**	
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						**402,574**	**200,717**	**186,140**	
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	
S.616 Quabbin Transmission System						**7,778**	**3,114**	**6**	
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						**84,931**	**48,421**	**35,851**	
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						**32,572**	**6,790**	**2,850**	
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						**31,270**	**19,486**	**11,785**	

Appendix 5
Master Plan/CIP Status

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
FY08 Budget Cycle									
S.104 Braintree-Weymouth Relief Facilities						**221,336**	**6,233**	**0**	
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						**11,503**	**0**	**8,500**	
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						**88,881**	**33,400**	**46,300**	
S.10400.6897 Tunnel Design	1	FY08	1	Mar-08	Sep-10	16,000	8,500	7,200	
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						**26,578**	**145**	**21,200**	
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						**59,603**	**22,418**	**31,180**	
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	0	
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						**5,000**	**0**	**5,000**	
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						**70,944**	**10,109**	**26,783**	
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						**353,470**	**128,052**	**198,718**	
S.19285.6974 Alternative Energy Initiatives	5	FY08	2	Jan-08	Dec-08	7,000	5,000	0	**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	0	
S.19312.7122 DI Digester Sludge Pump Repl Des	1	FY08	1	Jul-09	Nov-11	906	507	400	
S.19313.7123 DI Digester Sludge Pump Repl Const	1	FY08	1	Nov-10	Nov-11	3,624	2,023	1,600	
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	
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	0	
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	0	
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	0	
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	-1,402	

Appendix 5
Master Plan/CIP Status

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
S.271 Residuals Asset Protection						**148,570**	**6,252**	**141,999**	
S.26069.7143 Residual Plant System Reliability	1	FY08	1	Sep-07	Sep-09	870	580	0	
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	60,001	
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	0	
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						**437,668**	**51,965**	**7,205**	
S.53457.7085 Ancillary Mods Const 2	2	FY08	2	Jan-08	Jun-13	6,080	5,616	32	
S.53458.7192 Ancil Mods Design 3	2	FY08	2	Jan-08	Jan-10	750	613	13	
S.53459.7208 Ancillary Mods Design 4	2	FY08	2	Jan-08	Jan-10	750	613	13	
S.550 Low Service Storage Near Spot Pond						**39,456**	**16,692**	**22,531**	
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						**11,372**	**11,084**	**0**	
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	0	
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	
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						**3,500**	**3,208**	**0**	
S.60035.6273 Redundancy StudyTunnel Insp Fea Study	1	FY08	1	Mar-08	Feb-10	3,500	3,208	0	
S.618 Northern High NW Trans Sect 70-71						**1,000**	**1,000**	**0**	
S.60063.6895 Planning	2	FY08	2	Jul-10	Jun-12	1,000	1,000	0	
S.623 Dam Projects						**4,529**	**4,299**	**0**	
S.60089.7154 Engineering Studies for Dam Risk	1	FY08	1	Jul-07	Jun-09	460	230	0	
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						**100,000**	**7,000**	**93,000**	
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						**100,000**	**0**	**100,000**	
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	

Appendix 5
Master Plan/CIP Status

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
S.677 Valve Replacement						**19,254**	**6,351**	**2,500**	
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						**24,551**	**7,035**	**30**	
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						**66,570**	**24,666**	**24,225**	
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						**57,200**	**36,712**	**19,519**	
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						**41,312**	**22,065**	**18,532**	
S.53397.6452 Concept Plan/Prelim Des/Env Rev	1	FY08	2	Feb-07	Aug-08	840	125	0	
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						**29,976**	**4,520**	**2,850**	
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						**955,014**	**217,800**	**734,343**	

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. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.104 Braintree-Weymouth Relief Facilities	**233,573**	**215,535**	**92.3%**	**92.3%**		
S.10045.5311 Facilities Planning Phase 1	331	331	Complete	100.0%		
S.10046.5312 EIR Phase 1	514	514	Complete	100.0%		
S.10057.5324 Final EIR/Fac.Plan	1,111	1,111	Complete	100.0%		
S.10044.5332 Geotechnical - Land	8	8	Complete	100.0%		
S.10001.5333 Geotechnical - Marine	443	443	Complete	100.0%		
S.10047.5313 Design 1/CS/RI	18,882	18,882	Complete	100.0%		
S.10251.6016 Sedimentation Testing	96	96	Complete	100.0%		
S.10058.5331 Design 2/CS/RI	15,265	14,262	93.4%	93.4%		Dec-11
S.10470.7290 Wetlands Replication	700	0	Future	0.0%	Jul-10	
S.10048.5314 Land Acquisition	14,390	3,673	25.5%	25.5%		Jun-10
S.10049.5315 Tunnel Construction/Rescue	83,551	83,551	Complete	100.0%		
S.10050.5316 Intermediate P.S. Construction	47,445	47,445	Complete	100.0%		
S.10051.5303 No. Weymouth Relief Interceptor	4,705	4,705	Complete	100.0%		
S.10052.5373 HDD Siphon Construction	16,357	16,357	Complete	100.0%		
S.10054.5375 B-W Replacement Pump Station	17,728	17,728	Complete	100.0%		
S.10060.5310 Rehab Section 624	5,008	0	Future	0.0%	Jul-10	
S.10302.6368 Mill Cove Siphon Construction	2,749	2,749	Complete	100.0%		
S.10055.5308 Design - Rehab	24	24	Complete	100.0%		
S.10056.5309 Construction - Rehab	255	255	Complete	100.0%		
S.10265.6074 Hazardous Waste	8	8	Complete	100.0%		
S.10263.6072 Legal	767	757	Complete	98.7%		
S.10061.5951 Technical Assistance	144	144	Complete	100.0%		
S.10278.6119 Design - Marine Pipeline	1,100	1,100	Complete	100.0%		
S.10354.6631 Community Technical Assistance	1,111	1,111	Complete	100.0%		
S.10375.6766 Geotechnical Consultant	56	56	Complete	100.0%		
S.10378.6792 IPS/RPS Communication System	225	225	Complete	100.0%		
S.10480.7327 Mill Cove Sluice Gates Const	600	0	Future	0.0%	Jan-12	
S.130 Siphon Structure Rehabilitation	**2,613**	**940**	**36.0%**	**36.0%**		
S.10253.6017 Planning	938	938	Complete	100.0%		
S.10293.6224 Design/CS/RI	478	0	Future	0.0%	Jul-12	
S.10294.6225 Construction	1,195	0	Future	0.0%	Oct-14	
S.10280.6165 Land Acquisition	2	2	Complete	100.0%		
S.132 Corrosion & Odor Control	**14,647**	**3,003**	**20.5%**	**20.5%**		
S.10279.6137 Planning/Study	587	587	Complete	100.0%		
S.10327.6553 Design/CS/RI	1,788	1,788	Complete	100.0%		
S.10323.6549 Land Acquisition	3	3	Complete	100.0%		
S.10325.6551 Legal	2	2	Complete	100.0%		
S.10373.6743 Interim Corrosion Control	622	622	Complete	100.0%		
S.10405.6918 FES Tunnel Rehab	6,800	0	Future	0.0%	Dec-15	
S.10406.6919 FES/FERS Biofilters Design	998	0	Future	0.0%	Jan-12	
S.10453.7196 FES Tunnel Rehab Des	1,700	0	Future	0.0%	Jul-15	
S.10456.7215 FES/FERS Biofilters Const.	2,146	0	Future	0.0%	Oct-13	
S.136 West Roxbury Tunnel	**88,784**	**8,918**	**10.0%**	**10.0%**		
S.10299.6230 Inspection	344	344	Complete	100.0%		
S.10333.6570 Design/CS/RI	1,412	1,412	Complete	100.0%		
S.10332.6569 Construction	6,674	6,674	Complete	100.0%		
S.10329.6566 Tunnel Easements-Permits	50	0	Future	0.0%	Mar-10	
S.10330.6567 Legal	2	2	Complete	100.0%		
S.10331.6568 Land Acquisition	440	440	Complete	100.0%		
S.10366.6709 Technical Assistance	8	8	Complete	100.0%		
S.10400.6897 Tunnel Design	4,853	39	0.8%	0.8%		Dec-16
S.10401.6898 Tunnel Construction	75,000	0	Future	0.0%	Sep-12	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.137 Wastewater Central Monitoring	**19,939**	**19,188**	**96.2%**	**96.2%**		
S.10301.6232 Planning	563	563	Complete	100.0%		
S.10319.6532 Design and Integration Services	6,502	5,851	90.0%	90.0%		Jul-10
S.10320.6533 Construction 1 (CP1)	7,662	7,662	Complete	100.0%		
S.10321.6534 Construction 2 (CP2)	5,139	5,041	98.1%	98.1%		
S.10322.6535 Technical Assistance	7	6	85.7%	85.7%		Jul-10
S.10398.6861 Equipment Prepurchase	65	65	Complete	100.0%		
S.139 South System Relief Project	**4,940**	**3,440**	**69.6%**	**69.6%**		
S.10309.6419 CS/RI-Archdale	6	6	Complete	100.0%		
S.10310.6420 Construction-Archdale	211	211	Complete	100.0%		
S.10318.6519 Sec 70&71 HLS Eval.	215	215	Complete	100.0%		
S.10349.6611 Sec 70 & 71 HLS Construction	417	417	Complete	100.0%		
S.10345.6595 Design Outfall 023	1	1	Complete	100.0%		
S.10346.6596 Cleaning Outfall 023	1,098	1,098	Complete	100.0%		
S.10347.6605 Land Acquisition/Easements	5	5	Complete	100.0%		
S.10350.6616 Milton Financial Assistance	1,488	1,488	Complete	100.0%		
S.10386.6801 Outfall 023 Str Impovements	1,500	0	Future	0.0%	Jan-17	
S.141 Wastewater Process Optimization	**10,310**	**930**	**9.0%**	**9.0%**		
S.10367.6733 Planning	930	930	Complete	100.0%		
S.10412.6930 Hydr Flood Engr Analysis N. System	2,500	0	Future	0.0%	Jan-11	
S.10413.6931 Somerville Sewer-Design	200	0	Future	0.0%	Oct-11	
S.10414.6932 Somerville Sewer-Construction	1,030	0	Future	0.0%	Mar-14	
S.10415.6933 Siphon- Planning	150	0	Future	0.0%	Nov-14	
S.10416.6934 Manhole Struc Flood Protec Des	500	0	Future	0.0%	Jan-11	
S.10417.6935 Manhole Struct Flood Protec Constr	5,000	0	Future	0.0%	Jul-13	
S.142 Wastewater Meter Sys-Equip Replace	**26,578**	**5,143**	**19.4%**	**19.4%**		
S.10371.6739 Planning/Study	100	0	Future	0.0%	Jan-12	
S.10379.6793 Equipment Purchase/Installation	5,278	5,143	97.4%	97.4%		
S.10410.6928 Design	200	0	Future	0.0%	Jul-13	
S.10411.6929 Construction	1,000	0	Future	0.0%	Jan-15	
S.10451.7191 WW Metering Asset Prot/Equip Purch	20,000	0	Future	0.0%	Jul-12	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.145 I&P Facility Asset Protection	**159,934**	**6,558**	**4.1%**	**4.1%**		
S.10383.6798 Rehab of Section 93A Lexington	1,566	1,566	Complete	100.0%		
S.10392.6829 Technical Assistance	40	37	92.5%	92.5%		
S.10394.6842 Sections 80&83	365	365	Complete	100.0%		
S.10395.6843 Section 160	1,581	1,581	Complete	100.0%		
S.10396.6857 Survey	11	11	Complete	100.0%		
S.10397.6858 Permits	8	8	Complete	100.0%		
S.10418.6936 Interceptor Renewal No. 2	5,807	0	Future	0.0%	Jul-14	
S.10423.6987 93 A Force Main Replacement	462	462	Complete	100.0%		
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	542	542	Complete	100.0%		
S.10440.7073 Land/Easements	150	103	68.7%	68.7%		
S.10447.7163 Interceptor AP-Interc Renewal Des #1	200	0	Future	0.0%	May-10	
S.10448.7164 Interceptor AP-Interc Renew #1 Const	1,600	0	Future	0.0%	Oct-12	
S.10457.7216 MAL & MEL HYD & Struc Study	300	0	Future	0.0%	Jan-11	
S.10458.7217 MAL & MEL S/T HYD & Struc Const	1,000	0	Future	0.0%	Jan-12	
S.10464.7248 Melrose Sewer	602	0	Future	0.0%	Feb-10	
S.10467.7279 Inter Ren # 3 Camb/Some Sect 26/27	5,000	0	Future	0.0%	Jul-14	
S.10468.7280 Inter Ren # 4 Everett Sect 23/24/156	3,000	0	Future	0.0%	Jul-16	
S.10477.7312 NIH Elec & G & S Conveyance Des	1,200	0	Future	0.0%	Oct-10	
S.10478.7313 NIH Elec & G & S Conveyance Con	3,000	0	Future	0.0%	Jan-12	
S.10481.7328 Interceptor # 5 Milton	4,000	0	Future	0.0%	Jul-13	
S.10482.7329 Interceptor Renewal # 6 Chelsea	11,000	0	Future	0.0%	Jul-13	
S.10483.7330 New Neposet VFD Replacement	300	0	Future	0.0%	Jan-12	
S.10380.6795 Prison Point HVAC Upgrades	3,174	0	Future	0.0%	Aug-10	
S.10381.6796 Remote Headworks Heating Sys Upgrade	1,175	1,175	Complete	100.0%		
S.10382.6797 Alewife Brook PS Rehab Constr	3,333	0	Future	0.0%	Oct-11	
S.10387.6802 Headworks Upgrade - CM Services	6,500	0	Future	0.0%	Jul-11	
S.10399.6886 Remote Headworks Concept Plan	739	568	76.9%	76.9%		
S.10419.6937 Alewife Brook PS Rehab DES/CA	1,047	0	Future	0.0%	Apr-10	
S.10420.6938 Des-Prison Pt HVAC Upgrades	397	132	33.2%	33.2%		Nov-12
S.10426.7032 N.Dor Outfall Cleaning Study Des	350	0	Future	0.0%	Sep-10	
S.10427.7033 Hingham PS Isolation Gate Const	350	0	Future	0.0%	Sep-10	
S.10431.7037 Caruso PS Replace Generator	250	0	Future	0.0%	Jun-14	
S.10433.7039 P/P & C/F Washdown Sys Pipe Des	150	0	Future	0.0%	Jul-11	
S.10434.7040 P/P & C/F Washdown Sys Pipe Const	500	0	Future	0.0%	Mar-12	
S.10444.7144 Nut Island Headworks Fire Alarm/Wire	285	8	2.8%	2.8%		
S.10445.7161 Headdworks Upgrades Construction	81,300	0	Future	0.0%	Sep-12	
S.10446.7162 PS/CSO Condition Assessment	3,000	0	Future	0.0%	Jul-11	
S.10455.7206 Headworks Upgrades Design/CA	8,000	0	Future	0.0%	Jul-10	
S.10459.7218 NI Fire Pump Bldg Study	300	0	Future	0.0%	Nov-10	
S.10460.7219 NI Mech & Elec Replacements	6,000	0	Future	0.0%	Jun-11	
S.10462.7231 Squantum FM Engr Analysis	250	0	Future	0.0%	Jan-11	
S.10463.7237 Headworks Effluent Shaft Study	500	0	Future	0.0%	Jul-13	
S.10469.7281 Cottage Farm Fuel System Upgr	300	0	Future	0.0%	Mar-11	
S.10484.7344 Som/Marginal Gate Replacement	300	0	Future	0.0%	Jul-10	
S.146 D.I. Cross Harbor Tunnel Inspection	5,000	0	Future	0.0%		
S.10454.7199 Tunnel Shaft Repairs Plan/Des/Const	5,000	0	Future	0.0%	Jul-14	
S.147 Randolph Trunk Sewer Relief	**750**	**0**	**Future**	**0.0%**		
S.10461.7220 Study	750	0	Future	0.0%	Jul-13	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.206 DI Treatment Plant Asset Protection	**512,501**	**31,566**	**6.2%**	**6.2%**		
S.19182.6478 Equip Replacement Projection	25,000	0	Future	0.0%	Jul-14	
S.19193.6594 Equipment Condition Monitoring	1,777	1,777	Complete	100.0%		
S.19231.6742 Drive Chain Replacement	264	264	Complete	100.0%		
S.19238.6765 CTG Modifications	482	482	Complete	100.0%		
S.19176.6422 Pump Packing Replacement	732	732	Complete	100.0%		
S.19177.6423 Demineralizer Construction	51	51	Complete	100.0%		
S.19263.6880 Locat Scrub Replace Des	900	0	Future	0.0%	Nov-12	
S.19264.6881 Grit Air Handler Replacement	2,100	450	21.4%	21.4%		May-10
S.19265.6882 CEMS Equip. Replacement	102	102	Complete	100.0%		
S.19273.6904 Fire Alarm Syst Repl -Des	1,800	0	Future	0.0%	Jun-11	
S.19287.7005 Digester Chiller Replacement	635	635	Complete	100.0%		
S.19288.7006 Dystor Tank Membrane Replacement	640	640	Complete	100.0%		
S.19289.7051 Fire Alarm Syst Repl Const	4,450	0	Future	0.0%	Oct-12	
S.19290.7052 Digester Mods Pipe Repl Des	1,725	0	Future	0.0%	May-11	
S.19291.7053 Thick Prim Sldg Pump Repl Des	575	0	Future	0.0%	Sep-11	
S.19292.7054 TPS Pump Replac Construction	2,439	27	1.1%	1.1%		Apr-14
S.19293.7055 Digester Mod 1&2 Pipe Replc.	11,462	0	Future	0.0%	Nov-10	
S.19294.7056 LOCAT Scrubber Replac Const	4,741	0	Future	0.0%	May-14	
S.19295.7057 Centrifuge Backdrive Replac	2,643	26	1.0%	1.0%		Mar-13
S.19309.7111 HVAC equipment replacement Des/ESDC	3,500	0	Future	0.0%	Jan-11	
S.19310.7110 HVAC equipment replacement constr	12,500	0	Future	0.0%	Sep-12	
S.19313.7123 DI Digester Sludge Pump Repl Const	4,300	0	Future	0.0%	Oct-09	
S.19325.7135 DI Dystor Membrane Replacements	3,000	0	Future	0.0%	Jul-14	
S.19327.7137 DI Centrifuge Replacements Des	4,160	0	Future	0.0%	Jul-13	
S.19328.7138 DI Centrifuge Replacements Constr	16,640	0	Future	0.0%	Oct-14	
S.19329.7139 DI Cryogenics Plant-Equip Repl Des	1,600	0	Future	0.0%	Jul-13	
S.19330.7140 DI Cryogenics Plant-Equip Repl Constr	6,400	0	Future	0.0%	Dec-10	
S.19335.7169 South Systm PS Lube System Repl	2,900	0	Future	0.0%	Dec-10	
S.19336.7170 E/W Odor Ctrl Air Handler Repl	2,000	0	Future	0.0%	Jun-25	
S.19339.7275 Butterfly Valve Replace NMPS & WTF	2,500	0	Future	0.0%	Jun-11	
S.19222.6723 Eastern Seawall Design - 1	469	0	Future	0.0%	Jan-12	
S.19223.6724 Eastern Seawall Construction - 1	2,008	0	Future	0.0%	May-13	
S.18045.6196 DITP Roof Replacements	3,000	0	Future	0.0%	Jun-10	
S.19230.S464 Roof Replacement Phase I	2,750	321	11.7%	11.7%		
S.19204.6668 Expansion Joint Repair-Design	149	149	Complete	100.0%		
S.19205.6669 Expansion Joint Repair- Constr 1	305	305	Complete	100.0%		
S.19218.6705 Expansion Joint Repair- Constr 3	182	0	Future	0.0%	May-12	
S.19217.6704 Expansion Joint Repair- Constr 2	1,000	0	Future	0.0%	Oct-10	
S.19244.6812 Secondary Clarifier Access	275	275	Complete	100.0%		
S.19334.7168 Barge Berth and Fac. Replacement	2,265	0	Future	0.0%	Sep-10	
S.19243.6811 Outfall Modification-Inspection	174	174	Complete	100.0%		
S.19239.6767 Elec Equip Upgrade Constr 2	1,913	1,913	Complete	100.0%		
S.19236.6763 Busduct Replacement (2+22)	196	196	Complete	100.0%		
S.19245.6813 Transformer Replacement	2,538	785	30.9%	30.9%		Jun-13
S.19227.6728 DIGAS Flare#4 Des	422	0	Future	0.0%	Dec-11	
S.19228.6729 DI Digesters Flare #4	660	0	Future	0.0%	Apr-13	
S.19252.6851 Chemical pipe Replacement-Des	492	0	Future	0.0%	Sep-11	
S.19253.6852 Chemical pipe Replac - Constr	1,641	0	Future	0.0%	Jan-13	

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S.19254.6853 Sodium Hypo Pipe Repl-Des	1,204	0	Future	0.0%	Sep-11	
S.19255.6854 Sodium Hypo Pipe Repl- Constr	4,737	0	Future	0.0%	Feb-13	
S.19256.6855 Elect Equip Upgrade Const 3	15,040	8,183	54.4%	54.4%		Feb-11
S.19258.6875 WTF VFD Replace Constr	2,908	0	Future	0.0%	Jan-12	
S.19259.6876 Heat Loop Pipe Repl Constr 1	615	615	Complete	100.0%		
S.19260.6877 Misc. VFD Replacements	2,625	932	35.5%	35.5%		May-11
S.19266.6883 Heat Loop Pipe Replac Constr 2	1,488	1,488	Complete	100.0%		
S.19267.6884 PICS Replacement Const	1,929	0	Future	0.0%	Nov-10	
S.19270.6901 Elect Equip Upgrade Const 4	6,051	0	Future	0.0%	Mar-11	
S.19271.6902 NMPS VFD Repl Des/ESDC	1,723	385	22.3%	22.3%		Feb-14
S.19272.6903 NMPS VFD Replace Constr	46,000	0	Future	0.0%	Nov-10	
S.19278.6967 STG System Modifications-Des	549	0	Future	0.0%	Jun-09	
S.19279.6968 Electr Equip Upgrade 3-REI	1,207	293	24.3%	24.3%		Feb-11
S.19280.6969 Fuel Transfer Pipe Repl Des	1,150	0	Future	0.0%	Nov-10	
S.19281.6970 Fuel Transfer Pipe Repl Const	3,430	0	Future	0.0%	Feb-12	
S.19282.6971 NMPS Motor Ctrl Ctr Des	953	0	Future	0.0%	Mar-11	
S.19283.6972 NMPS Motor Ctrl Ctr Constr	7,086	0	Future	0.0%	Apr-11	
S.19284.6973 STG System Mods-Constr	2,560	0	Future	0.0%	May-10	
S.19296.7058 DITP Switchgear Replac Design	1,108	0	Future	0.0%	Jan-11	
S.19297.7059 DITP Switchgear Repl Constr	3,984	0	Future	0.0%	Nov-10	
S.19298.7060 Power Consult Recs Design	2,115	2,000	94.6%	94.6%		
S.19299.7061 Power System Improv Constr	9,924	110	1.1%	1.1%		Feb-13
S.19300.7062 NMPS VFD Repl-REI	2,000	0	Future	0.0%	Nov-10	
S.19301.7063 Heat Loop pipe Repl- Const 3	11,473	86	0.7%	0.7%		Dec-10
S.19307.7094 TPP Fuel & Steam Mods- REI	1,150	0	Future	0.0%	Dec-10	
S.19314.7124 DI Elec Equip Upgrade Ph.5	20,662	0	Future	0.0%	Jan-13	
S.19316.7126 Future SSPS VFD Replacements Des	4,800	0	Future	0.0%	Jul-15	
S.19317.7127 Future SSPS VFD Replacements Constr	19,200	0	Future	0.0%	Nov-16	
S.19318.7128 Future NMPS VFD Replacements Des	4,420	0	Future	0.0%	Jun-21	
S.19319.7129 Future NMPS VFD Replacements Constr	17,680	0	Future	0.0%	Sep-22	
S.19320.7130 Future Misc. VFD Replacements Des	1,333	0	Future	0.0%	Jul-25	
S.19321.7131 Future Misc. VFD Replacements Constr	5,334	0	Future	0.0%	Nov-11	
S.19322.7132 DI Switchgear Replacement Design	4,500	0	Future	0.0%	Jul-15	
S.19323.7133 DI Switchgear Replacement Constr	16,000	0	Future	0.0%	Apr-17	
S.19324.7134 DI PICS Replacement Construction	5,400	0	Future	0.0%	Jul-23	
S.19326.7136 DI CTG Rebuilds	6,000	0	Future	0.0%	Jun-13	
S.19338.7172 DI PICS Dist. Proc. Units Replac	8,000	0	Future	0.0%	Jul-16	
S.19162.6241 DISC Application	250	125	50.0%	50.0%		Jun-12
S.19241.6791 Document Format Conversion	145	61	42.1%	42.1%		May-12
S.19305.7090 As-needed Des Phase 5-1	955	807	84.5%	84.5%		
S.19306.7091 As-needed Des Phase 5-2	1,056	1,050	Complete	99.4%		
S.19220.6721 As Needed Des Phase 6-1	1,850	0	Future	0.0%	May-09	
S.19221.6722 As-Needed Des Phase 6-2	1,850	25	1.4%	1.4%		May-12
S.19311.7121 DI As needed Tech Design	26,450	0	Future	0.0%	May-12	
S.19237.6764 Hypochlorite tanks 1&3 Reline	1,691	1,691	Complete	100.0%		
S.19250.6849 Hypochlorite Tanks 2&4 Reline	2,242	2,242	Complete	100.0%		
S.19268.6899 Prim & Sec Clarifier Rehab Constr	59,541	1,913	3.2%	3.2%		Feb-12
S.19274.6963 Gravity Thickner Rehab Des	978	0	Future	0.0%	Aug-11	
S.19276.6965 Prim & Sec Clarifier Rehab Des	2,049	60	2.9%	2.9%		Feb-13
S.19277.6966 Gravity Thickener Imp Constr	6,595	0	Future	0.0%	Jan-13	
S.19304.7089 Sodium Hypo Tk Lnr Removal	196	196	Complete	100.0%		
S.19332.7142 Future Sodium Hypo Tank Rehab	10,000	0	Future	0.0%	Jul-17	
S.19303.7088 Ancils Mods Final Des 4	1,591	0	Future	0.0%	Oct-11	
S.19188.6538 Ancil Mods-Con 4	6,266	0	Future	0.0%	Jun-15	
S.210 Clinton Wastewater Treatment Plant	**3,115**	**493**	**15.8%**	**15.8%**		
S.19302.7075 Clinton Soda Ash Replacement	263	263	Complete	100.0%		
S.19308.7095 Clinton Perm Standby Generator	230	230	Complete	100.0%		
S.19340.7276 Clinton Plant-Wide Concrete Repair	750	0	Future	0.0%	Feb-11	
S.19341.7277 Clinton Digester Cleaning & Rehabs	1,500	0	Future	0.0%	May-10	
S.19342.7278 Clinton Aeration Effciency Improvement	372	0	Future	0.0%	Jan-11	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.211 Laboratory Services	**6,667**	**1,021**	**15.3%**	**15.3%**		
S.19152.6197 Metals Lab Fume Hood Repl Const	875	0	Future	0.0%	Oct-10	
S.19249.6848 Metals Lab Fume Hood Repl	391	53	13.6%	13.6%		Jul-11
S.19251.6850 Metals Lab Modification Constr	969	969	Complete	100.0%		
S.19261.6878 Central Lab Renovations Design	792	0	Future	0.0%	Oct-12	
S.19262.6879 Central Lab Renovations Constr	1,583	0	Future	0.0%	Dec-13	
S.19337.7171 Central Lab Fume Hood Replacement	2,058	0	Future	0.0%	Sep-12	
S.271 Residuals Asset Protection	**147,930**	**0**	**Future**	**0.0%**		
S.26069.7143 Residual Facil Plan/EIR	870	0	Future	0.0%	Sep-11	
S.26070.7145 Residuals Facil Upgrade Design	4,000	0	Future	0.0%	Jan-12	
S.26071.7146 Residuals Facil Upgrade Constr	10,000	0	Future	0.0%	Jul-14	
S.26072.7147 Cond Asses/Tech & Reg Review	1,060	0	Future	0.0%	May-09	
S.26074.7149 Six Rotary Dryer Replacements Constr	57,000	0	Future	0.0%	Jul-13	
S.26076.7151 Six Air Scrubber Replacements Constr	8,000	0	Future	0.0%	Jul-15	
S.26078.7153 Plant MCC Replacements Const	4,500	0	Future	0.0%	Jul-16	
S.26082.7176 Rehab Rail System Const.	3,000	0	Future	0.0%	Jul-16	
S.26084.7178 Replace 9 Pellet Storage Silos Const.	6,000	0	Future	0.0%	Jul-15	
S.26086.7180 Sludge Conveyor Replacement Const.	3,000	0	Future	0.0%	Jul-14	
S.26088.7182 Sludge Storage Tank Rehab	3,000	0	Future	0.0%	Jul-15	
S.26090.7184 Upgrade Pumping System Const.	6,000	0	Future	0.0%	Jul-14	
S.26092.7186 Replace 12 Centrifuges Const.	34,000	0	Future	0.0%	Jul-14	
S.26094.7188 Utility Upgrades Const.	6,000	0	Future	0.0%	Jul-16	
S.26096.7190 Odor Control System Upgrade Const.	1,500	0	Future	0.0%	Jul-17	
S.339 North Dorchester Bay	**223,299**	**177,531**	**79.5%**	**79.5%**		
S.32660.6220 Design ESDC/Tunnel	24,618	22,608	91.8%	91.8%		Apr-11
S.32661.6244 Tunnel Construction (Ch30)	147,151	143,482	97.5%	97.5%		
S.32662.6245 Dewater/PS & Sewers	26,037	300	1.2%	1.2%		Apr-11
S.32726.6993 Tunnel & Facilities CM Services	11,244	4,581	40.7%	40.7%		Apr-12
S.32732.7012 Pleasure Bay Construction	3,195	3,195	Complete	100.0%		
S.32733.7013 Design ESDC/Facilities	4,853	3,064	63.1%	63.1%		May-12
S.32744.7103 Tunnel Rescue/Emergency Response	822	302	36.7%	36.7%		
S.32745.7259 Ventilation Building Construction	5,178	0	Future	0.0%	Dec-09	
S.32746.7345 Communication Systems	200	0	Future	0.0%	Jul-10	
S.347 East Boston Branch Sewer Relief	**88,037**	**36,947**	**42.0%**	**42.0%**		
S.32673.6256 Design	3,463	3,463	Complete	100.0%		
S.32674.6257 East Boston Branch Relief Sewer	63,239	24,443	38.7%	38.7%		Jul-10
S.32719.6840 East Boston Branch Sewer Rehab	5,222	5,222	Complete	100.0%		
S.32720.6841 Sections 38 & 207 Replacement	8,554	322	3.8%	3.8%		Jul-10
S.32742.7087 Design 2 CS	3,169	2,516	79.4%	79.4%		Jul-11
S.32743.7097 Resident Inspection Services	4,389	980	22.3%	22.3%		Jul-10
S.355 MWR003 Gate & Siphon	**3,489**	**0**	**Future**	**0.0%**		
S.32722.6952 Design	1,083	0	Future	0.0%	Apr-12	
S.32723.6953 Construction	2,406	0	Future	0.0%	Nov-13	
S.357 Charles River CSO Controls	**4,406**	**3,059**	**69.4%**	**69.4%**		
S.32729.7009 CF Brookline Conn Inflow Controls Des	1,260	1,098	87.1%	87.1%		Jun-10
S.32730.7010 Interceptor Optimization Eng/Des	1,166	573	49.1%	49.1%		Jan-11
S.32740.7080 CF Brookline Conn Controls Constr	1,981	1,388	70.1%	70.1%		Oct-11
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)	**64,551**	**58,047**	**89.9%**	**89.9%**		
S.32650.6154 Design	17,328	14,430	83.3%	83.3%		
S.32665.6248 Construction	47,223	43,616	92.4%	92.4%		Jun-13
S.346 Cambridge Sewer Separation	**63,985**	**21,382**	**33.4%**	**33.4%**		
S.32654.6161 Design/CS/RI	21,878	9,511	43.5%	43.5%		Jun-16
S.32672.6255 Construction	42,106	11,871	28.2%	28.2%		Dec-15
S.352 Cambridge Floatables Controls	**1,087**	**1,036**	**95.3%**	**95.3%**		
S.32655.6162 Design	428	377	88.1%	88.1%		Nov-10
S.32684.6267 Construction	659	659	Complete	100.0%		
S.356 Fort Point Channel Sewer Separation	**12,062**	**9,408**	**78.0%**	**78.0%**		
S.32725.6992 Construction	10,153	7,641	75.3%	75.3%		Dec-10
S.32724.6991 Design	1,908	1,767	92.6%	92.6%		Jun-11
S.358 Morrissey Boulevard Drain	**36,224**	**32,593**	**90.0%**	**90.0%**		
S.32713.6696 Construction	31,595	29,430	93.1%	93.1%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.32735.7015 Design	4,628	3,163	68.3%	68.3%		
S.359 Reserved Channel Sewer Separation	**73,684**	**4,272**	**5.8%**	**5.8%**		
S.32727.6994 Construction	59,981	60	0.1%	0.1%		Dec-15
S.32734.7014 Design	13,702	4,212	30.7%	30.7%		Jun-16
S.360 Brookline Sewer Separation	**29,599**	**3,082**	**10.4%**	**10.4%**		
S.32736.7076 Design CS/RI	3,359	2,092	62.3%	62.3%		Jan-13
S.32737.7077 Construction	26,240	990	3.8%	3.8%		Jul-12
S.361 Bulfinch Triangle Sewer Separation	**9,986**	**3,373**	**33.8%**	**33.8%**		
S.32738.7078 Design CS/RI	1,365	645	47.3%	47.3%		Jun-11
S.32739.7079 Construction	8,621	2,728	31.6%	31.6%		Jul-10
S.324 CSO Support	**50,892**	**47,179**	**92.7%**	**92.7%**		
S.32400.5790 Technical Assistance	228	228	Complete	100.0%		
S.32407.5970 Tech. Assistance-Geotech	61	61	Complete	100.0%		
S.32401.5791 Planning/EIR	10,769	10,769	Complete	100.0%		
S.32403.5716 Master Planning	21,763	21,763	Complete	100.0%		
S.32645.6036 Watershed Planning	877	877	Complete	100.0%		
S.32409.5795 Modeling	300	300	Complete	100.0%		
S.32411.5767 SOP Program	1,957	1,957	Complete	100.0%		
S.32691.6372 System Assessment	476	27	5.7%	5.7%		Dec-20
S.32648.6150 Technical Review	794	529	66.6%	66.6%		Dec-20
S.32658.6169 Land/Easement	13,668	10,669	78.1%	78.1%		Jun-14
S.128 I/I Local Financial Assistance	**122,594**	**94,149**	**76.8%**	**76.8%**		
S.10232.5300 Community I/I Grants	0	5,800				
S.10233.5393 Community I/I Loans	0	17,278				
S.10234.5394 Community I/I Loan Repayment	0	-17,257				
S.10273.6084 Grants - Phase II	15,938	10,129	63.6%	63.6%		
S.10274.6085 Loans - Phase II	47,664	30,386	63.8%	63.8%		
S.10282.6170 Repayment - Phase II	-47,664	-29,722	62.4%	62.4%		May-11
S.10315.6505 Grants-Phase III	0	16,650				
S.10316.6506 Loans-Phase III	0	20,350				
S.10317.6507 Repayment-Phase III	0	-18,379				
S.10368.6736 Grants - Phase IV	34,650	16,889	48.7%	48.7%		May-10
S.10369.6737 Loans - Phase IV	42,350	20,642	48.7%	48.7%		May-10
S.10370.6738 Repayment - Phase IV	-42,350	-14,302	33.8%	33.8%		May-15
S.10348.6609 Public Participation	6	6	Complete	100.0%		
S.10407.6925 Grants-Phase V	18,000	15,018	83.4%	83.4%		May-12
S.10408.6926 Loans-Phase V	22,000	18,355	83.4%	83.4%		May-12
S.10409.6927 Repayments-Phase V	-22,000	-6,286	28.6%	28.6%		May-17
S.10441.7107 Grants-Phase Vl	18,000	4,316	24.0%	24.0%		Jun-15
S.10442.7108 Loans - Phase Vl	22,000	5,275	24.0%	24.0%		Jun-15
S.10443.7109 Repayments-Phase Vl	-22,000	-1,000	4.5%	4.5%		Jun-20
S.10471.7293 Grants-Phase VII	18,000	0	Future	0.0%	Aug-09	
S.10472.7294 Loans - Phase VII	22,000	0	Future	0.0%	Aug-09	
S.10473.7295 Repayments-Phase VII	-22,000	0	Future	0.0%	Aug-10	
S.10474.7296 Grants-Phase VIII	18,000	0	Future	0.0%	Aug-13	
S.10475.7297 Loans - Phase VIII	22,000	0	Future	0.0%	Aug-13	
S.10476.7298 Repayments-Phase VIII	-22,000	0	Future	0.0%	Aug-14	
S.542 John J. Carroll Water Treatment Plant	**429,436**	**374,037**	**87.1%**	**87.1%**		
S.53293.5023 Study 1	444	444	Complete	100.0%		
S.53294.5024 Study 2	2,368	2,368	Complete	100.0%		
S.53375.6182 AWWARF Study	650	650	Complete	100.0%		
S.53376.6206 Emerg Dis Res Water Mgmt Study	1,454	1,454	Complete	100.0%		
S.53367.6118 Crypto. Inactivation Study	150	150	Complete	100.0%		
S.53390.6365 Cosgrove Disinfection Ph II	2,169	2,169	Complete	100.0%		
S.53391.6397 Cosgrove Disinfection Ph I	150	150	Complete	100.0%		
S.53393.6406 Immediate Disinf. MECO	10	10	Complete	100.0%		
S.53392.6401 Distribution Water Consultant	3	3	Complete	100.0%		
S.53304.5157 Permit Fees	79	50	63.3%	63.3%		Mar-14
S.53300.5997 Technical Assistance	72	72	Complete	100.0%		
S.53296.5042 EIR/Conceptual Design	5,808	5,808	Complete	100.0%		
S.53301.5017 Design/CS/RI - Wachusett WTP	46,606	46,606	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	15,489	15,489	Complete	100.0%		
S.53412.5522 WHCP2 Interim Rehab. Wach. Aque.	23,400	23,400	Complete	100.0%		
S.53413.6488 WHCP3 Sitework & Storage Tanks	67,368	67,368	Complete	100.0%		
S.53414.6489 WHCP4 Treatment Facility	145,871	145,871	Complete	100.0%		
S.53416.6491 WHCP6 Late Sitework	4,088	4,128	Complete	101.0%		
S.53426.6650 WHCP7 Existing Facilities Mods	5,000	0	Future	0.0%	Jul-11	
S.53371.6134 Design Management Support	1,730	1,730	Complete	100.0%		
S.53378.6208 Construction Management/RI	31,438	31,438	Complete	100.0%		
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	217	217	Complete	100.0%		
S.53410.6485 Community Chlorine Analyzers	49	49	Complete	100.0%		
S.53418.6494 OCIP	5,107	5,107	Complete	100.0%		
S.53419.6495 Professional Services	2,752	2,752	Complete	100.0%		
S.53420.6497 Marlboro MOA	5,859	5,859	Complete	100.0%		
S.53421.6520 WHWTP- MECO	128	128	Complete	100.0%		
S.53425.6613 Site Security Services	1,264	1,264	Complete	100.0%		
S.53427.6670 CSX Crossing	65	65	Complete	100.0%		
S.53428.6671 Wachusetts Algae Design CS/RI	450	0	Future	0.0%	Sep-12	
S.53432.6691 Public Health Research	1,703	1,703	Complete	100.0%		
S.53435.6756 Security Equipment	571	571	Complete	100.0%		
S.53437.6773 WHCP8 Cosgrove Screens Con	3,238	3,238	Complete	100.0%		
S.53443.6815 AWWARF-Evaluation Ozone & UV	302	302	Complete	100.0%		
S.53445.6827 Fitout/Construction	1,500	548	36.5%	36.5%		Jan-13
S.53448.6889 Wachusetts Algae ...	1,800	0	Future	0.0%	Feb-14	
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	4,394	273	6.2%	6.2%		Apr-15
S.53451.6924 WH Ultra Violet Disinfect Cons	34,000	0	Future	0.0%	Oct-11	
S.53452.6939 As needed Tech Assistance #1	491	491	Complete	100.0%		
S.53453.6951 Des WH CP7 Existing Fac Mods	1,623	209	12.9%	12.9%		Jan-14
S.53455.6989 As needed Tech Assistance ...	702	702	Complete	100.0%		
S.53456.7084 Ancillary Mods Constr 1	160	160	Complete	100.0%		
S.53457.7085 Ancillary Mods Const 2	6,460	719	11.1%	11.1%		Jun-13
S.53458.7192 Ancil Mods Design 3	563	29	5.2%	5.2%		Sep-10
S.53459.7208 Ancillary Mods Design 4	563	289	51.3%	51.3%		Sep-10
S.53464.7315 Technical Assistance 5	563	0	Future	0.0%	Aug-10	
S.53465.7316 Technical Assistance 6	563	0	Future	0.0%	Aug-10	
S.543 Quabbin Water Treatment Plant	**17,488**	**10,175**	**58.2%**	**58.2%**		
S.53363.6043 Quabbin WTP Des/CA/RI	3,794	3,794	Complete	100.0%		
S.53382.6212 Construction	5,071	5,071	Complete	100.0%		
S.53381.6211 Utilities	13	13	Complete	100.0%		
S.53380.6210 Permit Fees	10	7	70.0%	70.0%		Jan-12
S.53433.6706 Ware Fire Dept. MOA	25	25	Complete	100.0%		
S.53434.6711 W Q Analysis Equipment	49	49	Complete	100.0%		
S.53439.6775 Quabbin UVWTP: Des/CA/RI	1,791	74	4.1%	4.1%		Sep-13
S.53440.6776 Quabbin UVWTP: Construction	5,593	0	Future	0.0%	Jul-11	
S.53442.6804 Quabbin UVWTP:Study/Pilot	1,142	1,142	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.545 Blue Hills Covered Storage	**40,681**	**35,288**	**86.7%**	**86.7%**		
S.68025.6139 EIR/Preliminary Design/OR	2,557	2,312	90.4%	90.4%		Jun-10
S.53386.6216 Design Build	37,686	32,953	87.4%	87.4%		Apr-10
S.53385.6215 Tech Support/Permit Comp	104	24	23.1%	23.1%		Dec-15
S.53460.7213 Roadway Resurfacing Design	55	0	Future	0.0%	Jul-11	
S.53461.7214 Roadway Resurfacing Const	279	0	Future	0.0%	Apr-12	
S.550 Spot Pond Storage Facility	**62,547**	**264**	**0.4%**	**0.4%**		
S.53400.6455 Env Rev	233	233	Complete	100.0%		
S.53402.6457 Design/Build	52,492	0	Future	0.0%	Jul-11	
S.53447.6868 Easement/Land Acquisition	5,930	31	0.5%	0.5%		
S.53462.7233 Owners's Representative	2,892	0	Future	0.0%	Mar-10	
S.53463.7314 Early Const. Water Conn/Detention Bas	1,000	0	Future	0.0%	Nov-10	
S.604 MetroWest Tunnel	**704,027**	**634,288**	**90.1%**	**90.1%**		
S.59794.5043 Study	415	415	Complete	100.0%		
S.59796.5048 Construction-Sudbury Pipe Bridge	296	296	Complete	100.0%		
S.59795.5044 Design/EIR - Tunnel/ESDC	37,939	37,939	Complete	100.0%		
S.59798.6054 West Tunnel Segment - CP1	147,787	147,787	Complete	100.0%		
S.60109.7283 Valve Chamber Storage Tank Access Imp	3,000	0	Future	0.0%	Jul-12	
S.60013.6055 Midd.Tunnel Segment - CP2	245,809	245,809	Complete	100.0%		
S.60015.6059 Shaft 5A - CP3	5,872	5,872	Complete	100.0%		
S.60040.6374 East Tunnel Segment-CP3A	55,976	55,976	Complete	100.0%		
S.60014.6056 MHD Salt Sheds - CP5	1,314	1,314	Complete	100.0%		
S.60031.6205 CP6B Upper Hultman Rehab	8,430	0	Future	0.0%	May-12	
S.60030.6204 Testing & Disinfection-CP7	3,612	3,612	Complete	100.0%		
S.60029.6203 Loring Road Storage Tanks CP-8	41,368	41,368	Complete	100.0%		
S.59799.5284 Const. Mgmt/Resident Inspect	39,428	39,428	Complete	100.0%		
S.59806.5141 Hultman Study	1,864	1,864	Complete	100.0%		
S.60022.6128 Hultman Leak Repair	307	307	Complete	100.0%		
S.60026.6140 Hultman Repair Band	28	28	Complete	100.0%		
S.60042.6430 Hultman Investigation and Repair	1,604	1,604	Complete	100.0%		
S.60043.6492 Hultman Repair Bands 98-99	116	116	Complete	100.0%		
S.59805.5139 Land Acquisition	6,259	6,259	Complete	100.0%		
S.59804.5976 Technical Assistance	131	131	Complete	100.0%		
S.60012.6037 DEP Permit Fees	51	51	Complete	100.0%		
S.60020.6117 Prof. Services	731	731	Complete	100.0%		
S.60023.6129 Framingham MOU	2,444	2,444	Complete	100.0%		
S.60039.6367 Weston MOA	1,006	1,006	Complete	100.0%		
S.60038.6366 Southboro MOA	255	255	Complete	100.0%		
S.60053.6762 Wayland MOA	35	35	Complete	100.0%		
S.60017.6063 Local Sup Cont Des/CA/RI	859	859	Complete	100.0%		
S.60024.6130 Loc. Support Cont. Constr	4,308	4,300	Complete	99.8%		
S.60025.6131 Loc. Sup Cont. Legal/Easement	9	9	Complete	100.0%		
S.60018.6067 Community Technical Assistance	297	297	Complete	100.0%		
S.60021.6122 OCIP	26,022	26,022	Complete	100.0%		
S.60054.6777 Equipment Prepurchase	198	198	Complete	100.0%		
S.60058.6856 Hultman Rehab CP9	3,257	3,257	Complete	100.0%		
S.60059.6872 Interim Disinfection	1,245	1,245	Complete	100.0%		
S.60066.6911 Hultman Interconnect/Fin Des/CA Insp	6,073	3,396	55.9%	55.9%		May-14
S.60072.6950 Valve Chamber Modifications	5,108	0	Future	0.0%	Jan-12	
S.60073.6975 CP6A Lower Hultman Rehab	47,842	0	Future	0.0%	Sep-09	
S.60083.7082 Hultman Interconnect RI/Svcs	2,500	0	Future	0.0%	Jan-10	
S.60085.7105 CP6 Easements	175	0	Future	0.0%	Jan-08	
S.60086.7106 CP6A Demolition	57	57	Complete	100.0%		
S.597 Winsor Dam Hydroelectric/Pipeline Replace	**14,866**	**612**	**4.1%**	**4.1%**		
S.60032.6276 Preliminary Permit Study & Licensing	38	38	Complete	100.0%		
S.60077.7017 Quabbin Rel Pipeline Des ESDC/RI	657	0	Future	0.0%	Apr-11	
S.60087.7114 Qubb Aqued & WPS Upg DES/CA/RI	2,320	0	Future	0.0%	Dec-09	
S.60088.7115 Winsor PWR STN Rehab & Improve	4,499	0	Future	0.0%	Feb-12	
S.60096.7198 Shaft 1,2,9, & 12 Rehab & Inprove	4,927	0	Future	0.0%	Feb-12	
S.60101.7212 Winsor Power St. Chapman Valve Repair	416	279	67.1%	67.1%		
S.60105.7234 Purchase of Sleeve Valves	368	295	80.2%	80.2%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.60106.7235 Quabbin Release Pipeline Const	1,641	0	Future	0.0%	Jan-13	
S.616 Quabbin Transmission System	**11,420**	**4,423**	**38.7%**	**38.7%**		
S.75491.6690 Phase 1 Oakdale Valves Const.	1,811	1,811	Complete	100.0%		
S.60055.6828 Facilities Inspection	1,007	1,007	Complete	100.0%		
S.75496.6831 Ph 1 Oakdale Valves Study/Des	1,070	1,070	Complete	100.0%		
S.60075.7007 Equipment Pre-purchase	534	534	Complete	100.0%		
S.60103.7229 Oakdale Phase 1A Elec Des	800	0	Future	0.0%	Oct-09	
S.60104.7230 Oakdale Phase 1A Elec Constr	2,297	0	Future	0.0%	Nov-11	
S.60108.7282 Ware River Intake Valve Replacement	1,200	0	Future	0.0%	Jul-14	
S.60112.7332 CVA Intake Motorized Screen Replace	500	0	Future	0.0%	Jul-17	
S.60113.7333 Wachusett Lower Roof	2,200	0	Future	0.0%	Jul-13	
S.617 Sudbury / Weston Aqueduct Repairs	**3,267**	**635**	**19.4%**	**19.4%**		
S.75486.6617 Haz Material Sudbury Aqueduct	265	265	Complete	100.0%		
S.60056.6838 Sudbury Aqueduct Inspection	370	370	Complete	100.0%		
S.60057.6839 Technical Assistance	17	0	Future	0.0%		
S.60070.6947 Weston Aqueduct Inspection	150	0	Future	0.0%	Apr-13	
S.60076.7016 Sudbury Short-Term Repairs	367	0	Future	0.0%	Jan-11	
S.60110.7317 Sudbury Short-Term Repairs-PH 2	2,098	0	Future	0.0%	Jul-12	
S.620 Wachusetts Res Spill Impr/Winsor Dam Repairs	**11,944**	**9,385**	**78.6%**	**78.6%**		
S.60078.7018 Equipment Pre-purchase	546	606	Complete	111.0%		
S.60079.7019 Design	2,456	2,274	92.6%	92.6%		May-10
S.60080.7020 Construction	4,960	4,960	Complete	100.0%		
S.60097.7207 Technical Assistance	138	116	84.1%	84.1%		
S.60098.7209 Cosgrove and Shaft A PCB Removal	875	875	Complete	100.0%		
S.60099.7210 Wachusett Dam PCB Removal	345	345	Complete	100.0%		
S.60102.7221 PH2 PCB Material Remediation	2,625	210	8.0%	8.0%		Jul-10
S.621 Watershed Land	**19,000**	**11,858**	**62.4%**	**62.4%**		
S.60081.7069 Land Acquisition	19,000	11,858	62.4%	62.4%		Jun-12
S.623 Dam Projects	**8,739**	**0**	**Future**	**0.0%**		
S.60094.7194 Dam Safety Modif & Repairs-CP2	5,673	0	Future	0.0%	Jul-11	
S.60100.7211 Dam Safety Modif & Rep-Des & CA/RI	1,535	0	Future	0.0%	Sep-09	
S.60118.7346 Quinapoxet Premits & Prel Des	100	0	Future	0.0%	Jan-11	
S.60119.7347 Quinapoxet Design/ESDC/RI	200	0	Future	0.0%	Apr-13	
S.60120.7348 Quinapoxet Dam Removal Const	750	0	Future	0.0%	Jul-14	
S.60121.7349 Dam Safety Modif & Repairs-CP1	482	0	Future	0.0%	Nov-10	
S.625 Long Term Redundancy	**326,032**	**256**	**0.1%**	**0.1%**		
S.60035.6273 Water Transmission Redun Plan	1,919	256	13.3%	13.3%		Mar-11
S.60090.7156 Consgrove Tunnel Redund PS Des/ESDC/R	8,012	0	Future	0.0%	Apr-11	
S.60091.7157 Consgrove Tunnel Redund PS Const.	40,060	0	Future	0.0%	Jul-13	
S.60092.7159 Sudbury Aqued Des/CA/RI	44,006	0	Future	0.0%	Jan-14	
S.60093.7160 Sudbury Aqued Constr	220,030	0	Future	0.0%	Jan-17	
S.60107.7291 Remote Vehicle Insp of Quabbin Aq	2,707	0	Future	0.0%	Sep-10	
S.60122.7352 Sudbury Aqued Prel Des/EIR	4,401	0	Future	0.0%	Jul-11	
S.60126.7356 Tops of Shafts Rehab Des/CA/RI	980	0	Future	0.0%	Jul-17	
S.60127.7357 Tops of Shafts Rehab Constr	3,918	0	Future	0.0%	Jul-19	
S.677 Valve Replacement	**19,132**	**9,059**	**47.3%**	**47.3%**		
S.67559.5126 Construction 1	718	718	Complete	100.0%		
S.68012.6105 Construction 2	1,357	1,357	Complete	100.0%		
S.68039.6278 Construction 3	1,338	1,338	Complete	100.0%		
S.68079.6345 Construction 4	1,540	1,540	Complete	100.0%		
S.68080.6346 Construction 5	1,389	1,389	Complete	100.0%		
S.68126.6435 Construction 6	1,572	1,572	Complete	100.0%		
S.68127.6436 Construction 7	1,590	0	Future	0.0%	Feb-11	
S.68005.6088 Equip. Purchase	4,038	1,027	25.4%	25.4%		Jun-18
S.67560.5124 Technical Assistance	113	113	Complete	100.0%		
S.68239.6859 Permits	5	1	20.0%	20.0%		May-10
S.68240.6860 Easements	6	6	Complete	100.0%		
S.68300.7195 Construction 8	2,734	0	Future	0.0%	Jan-13	
S.68307.7236 Construction 9	2,734	0	Future	0.0%	Dec-14	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.712 Cathodic Protection Of Distr.Mains	**1,405**	**141**	**10.0%**	**10.0%**		
S.68002.6058 Planning Phase I	108	108	Complete	100.0%		
S.68129.6438 Test Station Installation 2	421	0	Future	0.0%	Jun-19	
S.68130.6439 Test Station Installation 3	421	0	Future	0.0%	Jun-20	
S.68131.6440 Test Station Installation 4	421	0	Future	0.0%	Jun-21	
S.68216.6751 Technical Assistance	33	33	Complete	100.0%		
S.730 Weston Aqueduct Supply Mains (WASMs)	**260,084**	**60,977**	**23.4%**	**23.4%**		
S.68027.6142 Design/CA/RI-PhA/W1&2	5,075	5,075	Complete	100.0%		
S.67865.5147 Design/CA/RI - W4	6,013	5,879	97.8%	97.8%		
S.68041.6280 Newton WASM 1&2	9,219	9,219	Complete	100.0%		
S.68042.6281 Boston WASM 1&2	7,039	7,039	Complete	100.0%		
S.68166.6539 MEPA/Design/CA/RI WASM 3	28,967	0	Future	0.0%	Jan-12	
S.68170.6543 Waltham WASM 3-CP2	57,506	0	Future	0.0%	Jan-15	
S.68171.6544 Belmont WASM 3 - CP3	71,065	0	Future	0.0%	Apr-17	
S.68172.6545 Arlington WASM 3 - CP4	14,600	0	Future	0.0%	Jul-19	
S.68173.6546 Section 28, Arlington-CP1	2,226	0	Future	0.0%	Aug-09	
S.68031.6175 Auburndale WASM 1,2&4	4,001	4,001	Complete	100.0%		
S.68069.6312 Newton WASM 2&4	8,282	8,282	Complete	100.0%		
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	17,331	17,331	Complete	100.0%		
S.68032.6176 Construction Meter 103	61	61	Complete	100.0%		
S.59774.5034 Construction Newton Water Mains	669	669	Complete	100.0%		
S.59776.5975 Technical Assistance	186	186	Complete	100.0%		
S.68030.6174 Appraisal/Easement	753	293	38.9%	38.9%		Oct-18
S.68245.6870 Survey	210	89	42.4%	42.4%		Oct-18
S.68269.6996 Arlington Pipe Work	430	0	Future	0.0%	Jan-10	
S.68272.7000 Section PCCP W-12 ...	2,114	2,114	Complete	100.0%		
S.68273.7001 WASM3 SPL12 PCCP Des	266	266	Complete	100.0%		
S.68285.7083 Design/CA/RI Section 28	986	473	48.0%	48.0%		Apr-11
S.68167.6540 Des /CA/RI Sect 36/WS/Waltham Conn.	3,881	0	Future	0.0%	Oct-10	
S.68301.7222 Sect 36/WS/Waltham Conn. Constr.	19,204	0	Future	0.0%	Oct-12	
S.721 Southern Spine Distribution Mains	**69,495**	**20,045**	**28.8%**	**28.8%**		
S.68083.6290 Sec 21,43,22 Design	7,776	5,354	68.9%	68.9%		May-13
S.68084.6291 Sec 21,43,22 Easements	134	75	56.0%	56.0%		Feb-10
S.68085.6292 Section 22 South Construction	4,993	4,993	Complete	100.0%		
S.68089.6296 Sec 20 & 58 Design	2,497	0	Future	0.0%	Jun-18	
S.68090.6297 Sec 20 & 58 Easements	35	0	Future	0.0%	Sep-16	
S.68091.6298 Sec 20 & 58 Construction	11,753	0	Future	0.0%	Sep-20	
S.68122.6396 Adams Street Bridge	154	154	Complete	100.0%		
S.68193.6601 Southern High Public Part	15	15	Complete	100.0%		
S.68194.6602 Southern High Ext Study	242	242	Complete	100.0%		
S.68228.6787 Boston Paving	200	3	1.5%	1.5%		May-17
S.68235.6844 Section 22 North Construction	14,344	0	Future	0.0%	Jan-19	
S.68236.6845 Section 107 Ph 1 Constr	6,222	6,186	Complete	99.4%		
S.68237.6846 Legal	5	1	20.0%	20.0%		
S.68238.6847 Technical Assistance	28	28	Complete	100.0%		
S.68247.6885 Contract 1A Construction	2,859	2,859	Complete	100.0%		
S.68290.7099 Section 107 Ph2 Construction	14,603	0	Future	0.0%	Jan-10	
S.68291.7104 Milton Pressure Reg Valve	135	135	Complete	100.0%		
S.68298.7120 Section 22 North Design/ESDC	2,500	0	Future	0.0%	Jul-16	
S.68299.7155 Southern Spine Sect 22 N Fac Plan/EIR	1,000	0	Future	0.0%	Jul-13	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.727 SEH Redundancy & Storage	**93,841**	**6,587**	**7.0%**	**7.0%**		
S.53397.6452 Concept Plan/Prelim Des/Env Rev	840	516	61.4%	61.4%		Feb-11
S.53398.6453 SEH Red./Storage Final Des/CA/Rl Ph 1	5,285	0	Future	0.0%	Jul-11	
S.53399.6454 SEH Red. Pipe/Storage Ph 1	26,427	0	Future	0.0%	Jul-13	
S.68135.6444 SEH Red. Pipe Final Des/CA/Rl Ph 2	4,054	0	Future	0.0%	Jul-14	
S.68308.7245 SEH Red. Pipe Construction Ph 2	20,269	0	Future	0.0%	Jul-16	
S.68136.6445 University Ave Water Main	6,137	6,071	Complete	98.9%		
S.68292.7112 Design Sect 77/88 Rehab	1,161	0	Future	0.0%	Jul-22	
S.68293.7113 Section 77/88 Rehab	4,644	0	Future	0.0%	Jul-24	
S.68302.7223 Des CA/RI Short Term Impr	200	0	Future	0.0%	Jul-11	
S.68303.7224 Construction Short Term Impr	750	0	Future	0.0%	Jul-13	
S.68305.7226 Easements	300	0	Future	0.0%	Aug-08	
S.68306.7227 Permits	5	0	Future	0.0%	Aug-08	
S.68314.7265 Design Ph 3 Pump Station	2,676	0	Future	0.0%	Jul-17	
S.68313.7264 Constr Ph 3 PS	10,703	0	Future	0.0%	Jul-19	
S.68312.7263 Design Ph 4 2nd Tank	1,732	0	Future	0.0%	Jul-19	
S.68311.7262 Constr Ph 4 2nd Tank	8,658	0	Future	0.0%	Jul-21	
S.719 Chestnut Hill Connecting Mains	**30,481**	**17,462**	**57.3%**	**57.3%**		
S.68026.6141 Des/CA/RI PS Potable Connection	1,360	1,360	Complete	100.0%		
S.68051.6301 Preliminary Engineering	432	432	Complete	100.0%		
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	1,121	1,121	Complete	100.0%		
S.68052.6302 Construction- Chp 149	7,861	0	Future	0.0%	Jul-13	
S.68155.6501 Const - Emer. Pump Relocation	6,502	6,502	Complete	100.0%		
S.68053.6303 Easements	81	81	Complete	100.0%		
S.68180.6558 Boston Paving	133	133	Complete	100.0%		
S.68182.6560 Legal	1	1	Complete	100.0%		
S.68199.6623 BECO Emergency Pump Construction	431	431	Complete	100.0%		
S.68203.6651 Const.- Pump Station Potable Connection	7,132	7,132	Complete	100.0%		
S.68230.6814 Equipment pre-purchase	154	154	Complete	100.0%		
S.68231.6820 Demolition of Garages	72	72	Complete	100.0%		
S.68244.6869 Utilities	44	44	Complete	100.0%		
S.68267.6982 Construction-Chp 30	2,560	0	Future	0.0%	Jul-13	
S.68268.6995 Final Design CA/RI	2,599	0	Future	0.0%	Jul-11	
S.704 Rehab of Other Pumping Stations	**30,717**	**24,309**	**79.1%**	**79.1%**		
S.67885.5153 Preliminary Design	351	351	Complete	100.0%		
S.68017.6110 Design/CS/RI	2,546	2,546	Complete	100.0%		
S.68072.6304 Construction II&C	639	639	Complete	100.0%		
S.68102.6375 Rehab of 5 Pump Stations	22,288	17,046	76.5%	76.5%		Jun-10
S.68178.6556 Public Participation	5	0	Future	0.0%		
S.68179.6557 Legal	6	6	Complete	100.0%		
S.68204.6676 Proprietary Equipment Purchases	285	158	55.4%	55.4%		Jan-10
S.68266.6980 Design 2 CS/RI	4,596	3,564	77.5%	77.5%		Jun-11
S.722 NIH Redundancy & Storage	**79,253**	**727**	**0.9%**	**0.9%**		
S.68093.6306 Easements	300	0	Future	0.0%	Jul-11	
S.68252.6906 Section 89/29 Redundancy Design	7,547	0	Future	0.0%	Jan-11	
S.53454.6954 Concept Plan	969	727	75.0%	75.0%		Aug-10
S.68276.7026 Purchase Mobile Pump Unit	291	0	Future	0.0%	Jul-09	
S.68277.7045 Design CA/RI NIH Short Term Improveme	825	0	Future	0.0%	Sep-09	
S.68278.7047 Permits	5	0	Future	0.0%	Jan-10	
S.68279.7048 Technical Assistance	18	0	Future	0.0%	Jan-10	
S.68282.7066 Sec 89 & 29 Redundancy Const Ph 1	18,595	0	Future	0.0%	Jan-13	
S.68283.7067 Sec 89 & 29 Redundancy Const Ph 2	18,923	0	Future	0.0%	Apr-13	
S.68284.7068 NIH Storage Construction	15,094	0	Future	0.0%	Jan-18	
S.68294.7116 Section 89/29 Rehab Design	1,274	0	Future	0.0%	Jul-14	
S.68295.7117 Section 89/29 Rehab Construction	6,366	0	Future	0.0%	Jul-16	
S.68309.7260 Gillis Pump Station Inprovements	3,437	0	Future	0.0%	Sep-11	
S.68310.7261 Reading/Stoneham Interconnections	2,546	0	Future	0.0%	Oct-11	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.68316.7311 NIH Storage Design	3,063	0	Future	0.0%	Jan-16	
S.713 Spot Pond Supply Mains - Rehab	**66,097**	**60,995**	**92.3%**	**92.3%**		
S.68038.6223 Prelim Design & Design/CA/RI	10,869	10,869	Complete	100.0%		
S.68059.6316 Easements/Paving CP1	143	143	Complete	100.0%		
S.68106.6379 Easements CP2	50	50	Complete	100.0%		
S.68107.6380 Easements CP3	80	80	Complete	100.0%		
S.68151.6476 Easements CP4	1	1	Complete	100.0%		
S.68060.6317 North (Medford/Melrose)	6,597	6,597	Complete	100.0%		
S.68108.6381 Middle (Medford/Somerville)	22,177	22,177	Complete	100.0%		
S.68109.6382 South (Cambridge/Boston)	17,590	17,590	Complete	100.0%		
S.68150.6475 Early Valve Replacement Contract	2,387	2,387	Complete	100.0%		
S.68209.6697 Construction 4-Trusses	1,101	0	Future	0.0%	Apr-17	
S.68153.6483 Early Valve Equip. Purchase	161	161	Complete	100.0%		
S.68274.7003 CA/RI CP3	941	940	Complete	99.9%		
S.60114.7334 Section 4 Webster Ave Bridge Design	500	0	Future	0.0%	Jul-11	
S.60115.7335 Section 4 Webster Bridge Pipe Rep Con	1,500	0	Future	0.0%	Jul-12	
S.60116.7336 Section 50 Pipe Rehab Design /ESDC/RI	500	0	Future	0.0%	Jul-12	
S.60117.7337 Section 50 Pipe Rehab Const	1,500	0	Future	0.0%	Jul-13	
S.723 Nor Low Service Rehab Secs. 8	**19,600**	**1,564**	**8.0%**	**8.0%**		
S.68094.6321 Survey	80	0	Future	0.0%	Jul-11	
S.68095.6322 Sec 8 Construction	11,689	0	Future	0.0%	Jul-15	
S.68262.6962 Rehab Sects 37,46 Chel/EB Con	3,200	0	Future	0.0%	Jul-13	
S.68263.6977 Permits	299	285	95.3%	95.3%		Jul-18
S.68264.6979 Technical Assistance	44	44	Complete	100.0%		
S.68275.7021 Section 97A Construction	1,955	1,235	63.2%	63.2%		
S.68287.7092 Design CA/RI Sec 8	2,332	0	Future	0.0%	Jul-13	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.702 New Connecting Mains - Shaft 7 to ...	**30,131**	**5,388**	**17.9%**	**17.9%**		
S.68035.6199 Watertown MOU	167	167	Complete	100.0%		
S.67846.5163 Routing Study	397	397	Complete	100.0%		
S.68110.6383 Design/CA/RI DP1	3,537	3,537	Complete	100.0%		
S.68114.6387 Easements CP1 A&B	800	17	2.1%	2.1%		Mar-13
S.68111.6384 Des/CA/RI DP2/4 Meter 120	1,278	1,249	97.7%	97.7%		
S.68174.6548 Constr CP2 C&L Sec 59&60	3,727	0	Future	0.0%	Jan-18	
S.68175.6547 Easements CP2	33	0	Future	0.0%	May-17	
S.68119.6392 South Segment (CP3)	6,419	0	Future	0.0%	Oct-16	
S.68115.6388 Easements CP3	40	0	Future	0.0%	Jan-16	
S.68112.6385 Final Design/CA/RI (CP3)	1,423	0	Future	0.0%	Oct-14	
S.68121.6394 Northeast Segment (CP5)	4,881	0	Future	0.0%	Aug-09	
S.68117.6390 Easements CP5	29	22	75.9%	75.9%		Jan-11
S.68255.6955 Repl of Sect 25-Design CA/RI	400	0	Future	0.0%	Apr-16	
S.68256.6956 Repl of Sect 25-Construction	2,100	0	Future	0.0%	Apr-18	
S.68286.7086 Design CA/RI Sec 59&60	500	0	Future	0.0%	Jan-16	
S.68315.7284 Section 75 Extension	4,400	0	Future	0.0%	Oct-15	
S.693 NHS - Revere & Malden Pipeline Impr	**33,514**	**26,263**	**78.4%**	**78.4%**		
S.67780.5185 Design/CS/RI-Revere/Malden	1,786	1,786	Complete	100.0%		
S.67781.5186 Constr-Revere Beach	6,314	6,314	Complete	100.0%		
S.67782.5176 Constr-Malden Sect 53	10,026	10,026	Complete	100.0%		
S.68020.6113 Landscaping Malden Section 53	20	20	Complete	100.0%		
S.67792.5238 Construction - Linden Square	1,849	1,849	Complete	100.0%		
S.67793.5239 Construction Admin.-Linden Squar	125	125	Complete	100.0%		
S.67784.5177 Const-Revere Sect 53	2,938	2,368	80.6%	80.6%		
S.67996.6033 Des/CA/RI-Rd Restoration	77	77	Complete	100.0%		
S.67997.6034 Construction Road Restoration	1,714	1,714	Complete	100.0%		
S.68033.6183 Sidewalk Restoration	54	54	Complete	100.0%		
S.67785.5191 Constr-Control Valves	949	949	Complete	100.0%		
S.67786.5179 Const.-DI Pipeline C&L	158	158	Complete	100.0%		
S.67787.5178 Constr-Win C&L	575	575	Complete	100.0%		
S.67790.6335 Constr 68 & 53A	5,446	0	Future	0.0%	Jun-16	
S.67791.5986 Technical Assistance	246	246	Complete	100.0%		
S.68258.6958 Shaft 9A-D Ext Construction	1,200	0	Future	0.0%	Mar-18	
S.68265.6978 Survey	30	0	Future	0.0%	Jul-06	
S.68280.7049 Permits	5	0	Future	0.0%	Apr-05	
S.731 Lynnfield Pipeline	**7,635**	**536**	**7.0%**	**7.0%**		
S.68187.6584 Construction (Phase 2)	6,404	0	Future	0.0%	Jul-10	
S.68196.6619 Easem/Legal/License/Permits	200	0	Future	0.0%	Jul-07	
S.68251.6905 Design CA/RI	759	264	34.8%	34.8%		Jul-13
S.68289.7096 Temporary Interconnect Constr(Ph 1)	272	272	Complete	100.0%		
S.708 Nor Extra High Serv - New Pipelines	**6,569**	**3,632**	**55.3%**	**55.3%**		
S.67970.5242 Design/CA/RI	588	588	Complete	100.0%		
S.67972.6340 Construction	3,032	3,032	Complete	100.0%		
S.68162.6522 Construction-Sections 34,45	2,876	0	Future	0.0%	May-14	
S.68176.6554 Public Participation	5	0	Future	0.0%		
S.68177.6555 Legal	5	0	Future	0.0%		
S.68210.6707 Technical Assistance	54	8	14.8%	14.8%		Nov-15
S.68215.6749 PLC Equipment Purchases	4	4	Complete	100.0%		
S.68281.7050 Permits	5	0	Future	0.0%	Nov-10	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.753 Central Monitoring System	**16,992**	**15,705**	**92.4%**	**92.4%**		
S.75300.5025 Study	190	190	Complete	100.0%		
S.75301.5026 Design	2,651	2,651	Complete	100.0%		
S.75304.5160 Communications Structures	161	161	Complete	100.0%		
S.75305.5173 CS/Start Up Services	352	352	Complete	100.0%		
S.75302.5027 Equipment Prepurchase	2,162	2,162	Complete	100.0%		
S.75306.5171 Construction 1	209	209	Complete	100.0%		
S.75303.5028 SCADA Implementation	2,101	1,814	86.3%	86.3%		Dec-11
S.75474.6125 Microwave Equipment	782	782	Complete	100.0%		
S.75308.5849 Operations Center Construction	1,499	1,499	Complete	100.0%		
S.75309.5987 Technical Assistance	386	386	Complete	100.0%		
S.75488.6653 Microwave Comm System-Wide Backbone	1,694	1,694	Complete	100.0%		
S.75489.6654 Study & Design Monitoring & Control	1,808	1,808	Complete	100.0%		
S.75494.6816 Microwave Comm for Waterworks Facil	1,957	1,957	Complete	100.0%		
S.75495.6825 Ludlow Communications	41	41	Complete	100.0%		
S.75512.7338 Winsor Dam High Line Replacement	1,000	0	Future	0.0%	Jan-11	
S.763 Distribution Systems Facs. Mapping	**1,799**	**1,036**	**57.6%**	**57.6%**		
S.75458.5162 Planning Design	936	936	Complete	100.0%		
S.75476.6152 Data Purchase	100	100	Complete	100.0%		
S.75484.6525 Records Development	763	0	Future	0.0%	Jul-12	
S.764 Local Water Infrastr Rehab Ast Progr	7,488	7,488	Complete	100.0%		
S.75477.6343 Loans	22,304	22,304	Complete	100.0%		
S.75478.6344 Loan Repayment	-22,304	-22,304	Complete	100.0%		
S.75479.6408 Grants	7,488	7,488	Complete	100.0%		
S.765 Local Water Pipeline Imp. Loan Program	0	100,338				
S.75485.6608 Community Loans	256,797	163,394	63.6%	63.6%		Jun-13
S.75493.6759 Community Repayment	-256,797	-63,056	24.6%	24.6%		Jun-23
S.75513.7339 Local Water System Loans	200,000	0	Future	0.0%	Aug-10	
S.75514.7340 Local Water System Repayment	-200,000	0	Future	0.0%	Aug-11	
S.75515.7350 CVA Loans	10,000	0	Future	0.0%	Nov-10	
S.75516.7351 CVA Repayments	-10,000	0	Future	0.0%	Nov-11	
S.766 Waterworks Facility Asset Protection	4,813	221	4.6%	4.6%		
S.75490.6689 Meter Vault Manhole Retrofits	1,681	0	Future	0.0%	Sep-15	
S.75497.6832 Design-Walnut Hill Tank	300	0	Future	0.0%	Jul-11	
S.75498.6833 Construction-Walnut Hill Tank	1,000	0	Future	0.0%	Jan-14	
S.75501.6910 Waltham Pipe/Bridge Repl	238	221	92.9%	92.9%		
S.75502.6920 Permits/Legal Fees	15	0	Future	0.0%	Mar-04	
S.75506.7023 Design Cosgrove Turbine Isolation	480	0	Future	0.0%	Jul-12	
S.75509.7064 Cosgrove Valve Seat Repl	500	0	Future	0.0%	Jul-12	
S.75510.7065 Des Cosgrove Valve Seat Repl	100	0	Future	0.0%	Jul-11	
S.75511.7228 Transformer at Cosgrove Intake Bldg	500	0	Future	0.0%	Sep-10	
S.933 Capital Maintenance Planning/Development	**8,265**	**4,414**	**53.4%**	**53.4%**		
S.19175.6421 Inventory & Evaluation-1&2	2,579	2,579	Complete	100.0%		
S.92387.6976 As-needed Design Contract 1	314	314	Complete	100.0%		
S.92393.6988 As Needed Design Contract 2	318	318	Complete	100.0%		
S.92402.7101 As-Needed Des Contract 3	670	483	72.1%	72.1%		Feb-10
S.92403.7102 As-Needed Des Contract 4	434	342	78.8%	78.8%		
S.92399.7070 As-Needed Des Contract 5	736	145	19.7%	19.7%		Sep-10
S.92413.7242 As-Needed Des Contract 6	813	231	28.4%	28.4%		Aug-10
S.92414.7243 As-Needed Des Contract 7	1,200	0	Future	0.0%	Jan-10	
S.92415.7244 As-Needed Des Contract 8	1,200	0	Future	0.0%	Feb-10	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.881 Equipment Purchase	**14,971**	**7,273**	**48.6%**	**48.6%**		
S.92367.6732 TV Inspection Truck	0	175				
S.92374.6760 Security Equip & Installation	6,212	4,741	76.3%	76.3%		Jun-13
S.92379.6808 ICP-MS Lab Testing Equip	117	117	Complete	100.0%		
S.92381.6866 Back Hoe	0	130				
S.92382.6867 Vactor Truck	0	220				
S.92383.6907 Water Service Truck	0	114				
S.92384.6944 Bucket Machine	0	137				
S.92385.6945 Excavator	0	233				
S.92386.6946 Grove Crane	0	311				
S.92388.6981 Land Fill Loader	0	113				
S.92392.6986 PowerSweeper/Catch Basin ...	0	155				
S.92394.6990 Back Hoe (WRA385)	0	97				
S.92396.7028 Front-End Loader	0	110				
S.92397.7029 Dump Truck WRA-558	0	104				
S.92398.7030 Dump Truck (WRA 522)	0	100				
S.92400.7074 Crane (WRA-185)	0	298				
S.92411.7239 High Lift Fork Loader(Lull)	125	0	Future	0.0%	Oct-10	
S.92416.7246 Ford Ramp Truck	122	0	Future	0.0%	Apr-10	
S.92417.7247 Street Sweeper	182	0	Future	0.0%	Jul-09	
S.98449.7301 International Tractor Trailer	0	118				
S.98454.7306 Prior Vehicle Purchases	2,415	0	Future	0.0%		
S.98455.7307 FY09-13 Vehicle Purchases	1,923	0	Future	0.0%	Jul-09	
S.98456.7308 FY14-18 Vehicle Purchases	2,665	0	Future	0.0%	Jul-13	
S.98457.7309 FY09-13 Major Lab Instrumentation	1,000	0	Future	0.0%	Nov-11	
S.98467.7325 Front-End Loader	210	0	Future	0.0%	Oct-10	
S.925 Technical Assistance	**1,200**	**0**	**Future**	**0.0%**		
S.80000.SURV Surveying	150	0	Future	0.0%		
S.90000.HAZM Hazardous Material	900	0	Future	0.0%		
S.77000.LAND Land Appraisal	150	0	Future	0.0%		
S.931 Business Systems Plan	**36,700**	**23,420**	**63.8%**	**63.8%**		
S.92338.6014 Phase I (FY95-97)	1,146	1,146	Complete	100.0%		
S.92339.6013 Hardware-Phase I	441	441	Complete	100.0%		
S.92322.6015 Network-Phase I	142	142	Complete	100.0%		
S.92347.6362 Phase III (FY99-01)	10,748	10,748	Complete	100.0%		
S.92352.6508 Phase IV / Year 2000 Imp.	3,038	3,038	Complete	100.0%		
S.92353.6509 Phase V	1,942	1,567	80.7%	80.7%		Jun-12
S.92418.7249 DITP/OMS	142	0	Future	0.0%	Jun-08	
S.92419.7250 GIS/TV Inspection	45	0	Future	0.0%	Apr-09	
S.92420.7251 GIS Upgrades & Enhancements	300	0	Future	0.0%	Apr-09	
S.92380.6865 Phase VI	2,608	2,058	78.9%	78.9%		Jun-12
S.92422.7253 MIS Strategic Plan	500	0	Future	0.0%	Jan-11	
S.92423.7254 MIS Licensing	24	0	Future	0.0%	Jul-08	
S.92424.7255 Lawson Conversion	430	241	56.0%	56.0%		Jun-11
S.92404.7200 Computer Center - OCC Infrastructure	1,500	0	Future	0.0%	Jul-14	
S.92343.6177 Phase II FY97-99	4,174	4,038	96.7%	96.7%		Jun-10
S.92405.7201 Net 2020	1,500	0	Future	0.0%	Jul-10	
S.92406.7203 SAN II	600	0	Future	0.0%	Jul-11	
S.92408.7205 Telecommunications	750	0	Future	0.0%	Jul-13	
S.92410.7238 Laboratory Instrument Data Mgmt	250	0	Future	0.0%	Mar-11	
S.92407.7204 SAN III	600	0	Future	0.0%	Jul-14	
S.92425.7256 Cyber Security	330	0	Future	0.0%	Apr-09	
S.92412.7240 Corporate Server Infra & Doc Dist	1,000	0	Future	0.0%	Jun-10	
S.92426.7257 Original SAN	290	0	Future	0.0%	Jul-09	
S.92434.7285 Cyber Security	1,200	0	Future	0.0%	Sep-11	
S.92435.7286 Lawson System Upgrade	1,550	0	Future	0.0%	Sep-13	
S.92436.7287 Laboratory Infor Mgmt Sys (LIMS)	600	0	Future	0.0%	Sep-14	
S.92437.7288 PRE-Treatment Infor Mgmt Sys (PIMS)	600	0	Future	0.0%	Sep-14	
S.92438.7289 Doc Control Sys Software App Replace	250	0	Future	0.0%	Jul-11	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY09	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.932 Environmental Remediation	**1,805**	**1,464**	**81.1%**	**81.1%**		
S.92369.6745 Tech Asst./ Env. Remediation	545	545	Complete	100.0%		
S.92370.6746 Prision Point Tank Removal - Const.	777	436	56.1%	56.1%		Jan-13
S.92371.6747 Cottage Farm Tank Replace - Const	428	428	Complete	100.0%		
S.92376.6805 Oakdale Power Station	47	47	Complete	100.0%		
S.92377.6806 Cosgrove Power Station	8	8	Complete	100.0%		
S.934 MWRA Facilities Management & Planning	7,308	270	3.7%	3.7%		
S.92389.6983 Design/Engineering Services	800	0	Future	0.0%	Oct-10	
S.92390.6984 Facilities Construction	6,508	270	4.1%	4.1%		Jun-13
S.935 Alternative Energy Initiatives	**25,452**	**1,914**	**7.5%**	**7.5%**		
S.19285.6974 Deer Island Solar	904	904	Complete	100.0%		
S.92427.6974A DI Solar-Grant	0	-560				
S.92428.6974C DI Wind	3,999	1,229	30.7%	30.7%		Apr-10
S.92430.7270 NI Wind	4,005	0	Future	0.0%	Jun-10	
S.92432.6974E Loring Road Hydro Design	2	0	Future	0.0%	Mar-08	
S.92440.6974B Energy Adv Cons Svcs	59	29	49.2%	49.2%		
S.92439.7274 Technical Assistance Solar	385	32	8.3%	8.3%		May-12
S.92441.OP67 Wind Power Feas Study	658	280	42.6%	42.6%		Jun-10
S.92442.7292 DI Photovoltaic System Phase 1 - Constr	1,119	0	Future	0.0%	Sep-09	
S.92443.7274A Tech Assist Energy Efficiency	500	0	Future	0.0%	May-09	
S.92444.7274B Technical Assistance Solar II	380	0	Future	0.0%	May-09	
S.92445.7274C Tech Asst Emerging Technology	200	0	Future	0.0%	May-09	
S.92446.7274D Technical Assistance Wind	750	0	Future	0.0%	May-09	
S.98448.7300 Wachusett Hydro Design & Const	1,261	0	Future	0.0%	Jul-12	
S.98450.7302 Delauri Pump Station Wind-Const	4,687	0	Future	0.0%	Feb-10	
S.98452.7304 JJ Carroll WTP Solar - Construction	2,187	0	Future	0.0%	Jan-10	
S.98459.6974F Loring Road Hydro Const	1,857	0	Future	0.0%	Jan-10	
S.98463.7321 DI Wind Phase II - Const	2,500	0	Future	0.0%	Nov-10	

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
127	Cummingsville Replacement Sewer	Burlington, Winchester, Woburn
128	Infiltration/Inflow Local Financial Assistance Program.	All Wastewater Communities
130	Siphon Structure Rehabiliation	All Wastewater Communities
132	Corrosion and Odor Control Study	All Wastewater Communities
136	West Roxbury Tunnel	Ashland, Framingham, Natick, Wellesley, Dedham, Boston, Brookline, Newton, Nedham, and
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
200	Deer Island Plant Optimization	All Wastewater Communities
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
342	Neponset River Sewer Separation	Boston
343	Constitution Beach Sewer Separation	Boston
344	Stony Brook Sewer Separation	Boston
346	Cambridge CAM002-004 Sewer Separation	Cambridge
347	East Boston Branch Sewer Relief	Boston, Chelsea, Everett
348	Fort Point Channel & BOS019 Conduits	Boston
349	Chelsea Trunk Sewer	Chelsea, Revere
350	Union Park Detention Treatment Facility	Boston
351	BWSC Floatables Control	Boston
352	Cambridge Floatables Control	Cambridge
353	Upgrade Existing CSO Facilities	Boston, Cambridge, Revere, Somerville
354	Hydraulic Relief Projects	Boston, Cambridge
355	MWR003 Gate and Siphon	Boston, Cambridge
356	Fort Point Channel Sewer Separation	Boston
357	Charles River CSO Controls	Boston, Brookline, Cambridge
358	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)
615	Chicopee Valley Aqueduct Redundancy	Chicopee, South Hadley Fire District #1, Wilbraham
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
620	Wachusetts Reservior Spillway	All Water Communities
621	Watershed Land	All Water Communities
622	Cosgrove/Wachusett Redundancy	All Water Communities
623	Dam Projects	All Water Communities

APPENDIX 7

PROJECT/MUNICIPALITY(s)

Project	Number/ Project	Community(s) Served
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
722	NIH Redundancy & Covered Storage	Reading, Stoneham, Wakefield, Winchester, Woburn
723	Northern Low Service Rehab. - Sections 8	Chelsea, Boston, Everett
725	Hydraulic Model Update	All Water Communities
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
732	Walnut St. & Fisher Hill Pipeline Rehabilitation	Boston
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
200	Deer Island Plant Optimization
206	Deer Island Treatment Plant Asset Protection
271	Residuals Asset Protection

ALL WATER COMMUNITIES

541	Watershed Protection
597	Winsor Dam Hydroelectric
620	Wachusetts Reservoir Spillway
621	Watershed Land
623	Dam Projects
625	Long-Term Redundancy
677	Valve Replacement
712	Cathodic Protection of Distribution Mains
725	Hydraulic Model Update
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

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.)
342	Neponset River Sewer Separation
344	Stony Brook Sewer Separation
347	East Boston Branch Sewer Relief
348	BOS019 Storage Conduit
350	Union Park Detention Treatment Facility
351	BWSC Floatables Control
353	Upgrade Existing CSO Facilities
354	Hydraulic Relief Facilities
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
549	SEH Additional 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
714	Southern Extra High - Sections 41, 42, and 74
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
732	Walnut St. & Fisher Hill Pipeline Rehabilitation

Braintree

104	Braintree-Weymouth Relief Facilities
147	Randolph Trunk Sewer Relief

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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
	714 Southern Extra High - Sections 41, 42, and 74
	719 Chestnut Hill Connecting Mains
	721 Southern Spine Distribution Mains
	727 SHE Redundancy & Storage
Burlington	
	127 Cummingsville Replacement Sewer
Cambridge	
	324 CSO Support
	346 Cambridge CAM002-004 Sewer Separation
	352 Cambridge Floatables Control
	353 Upgrade Existing CSO Facilities
	354 Hydraulic Relief Projects
	355 MWR003 Gate and Siphon
	357 Charles River CSO Controls
	713 Spot Pond Supply Mains Rehabilitation
	730 Weston Aqueduct Supply Mains
Canton	
	101 Wastewater Metering System Upgrade
	545 Blue Hills Covered Storage
	549 SEH Additional Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SHE Redundancy & Storage
Chelsea	
	101 Wastewater Metering System Upgrade
	324 CSO Support
	347 East Boston Branch Sewer Relief
	349 Chelsea Trunk Sewer
	713 Spot Pond Supply Mains Rehabilitation
	723 Northern Low Service Rehab. - Sections 8 & 57
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
	548 Nash Hill Covered Storage
	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	Municipality	Project Number/Project
Marblehead		**Newton**	
618	Northern High NW Trans Section 70-71	131	Upper Neponset Valley Relief Sewer
692	Northern High Service Section 27	136	West Roxbury Tunnel
693	Northern High Service Pipe Improvements - Revere/Malden	702	New Connecting Mains - Shaft 7 to WASM 3
		715	Newton Service Improvements
Medford		719	Chestnut Hill Connecting Mains
547	Fells Covered Storage	730	Weston Aqueduct Supply Mains
702	New Connecting Mains - Shaft 7 to WASM 3		
713	Spot Pond Supply Mains Rehabilitation	**Norwood**	
		545	Blue Hills Covered Storage
Melrose		549	SEH Additional Storage
618	Northern High NW Trans Section 70-71	704	Rehabilitation of Other Pump Stations
		714	Southern Extra High - Sections 41 and 42
Milton		721	Southern Spine Distribution Mains
139	South System Relief Project	727	SEH Redundancy & Storage
545	Blue Hills Covered Storage		
704	Rehabilitation of Other Pump Stations	**Peabody**	
714	Southern Extra High - Sections 41, 42, and 74	618	Northern High NW Trans Section 70-71
721	Southern Spine Distribution Mains	693	Northern High Service Pipe Improvements - Revere/Malden
727	SEH Redundancy & Storage	721	Southern Spine Distribution Mains
		722	NIH Redundancy & Storage
Quincy		**Wilbraham**	
104	Braintree-Weymouth Relief Facilities	543	Quabbin Water Treatment Plant
545	Blue Hills Covered Storage	615	Chicopee Valley Aqueduct Redundancy
721	Southern Spine Distribution Mains	616	Quabbin Transmission System
Randolph		**Wakefield**	
104	Braintree-Weymouth Relief Facilities	618	Northern High NW Trans Section 70-71
147	Randolph Trunk Sewer Relief	722	NIH Redundancy & Covered Storage
Reading		**Waltham**	
722	NIH Redundancy & Covered Storage	702	New Connecting Mains - Shaft 7 to WASM 3
		704	Rehabilitation of Other Pump Stations
		708	Northern Extra High Service - New Pipelines
		730	Weston Aqueduct Supply Mains
Revere		**Watertown**	
324	CSO Support	702	New Connecting Mains - Shaft 7 to WASM 3
349	Chelsea Trunk Sewer	704	Rehabilitation of Other Pump Stations
353	Upgrade Existing CSO Facilities	730	Weston Aqueduct Supply Mains
693	Northern High Service Pipe Improvements - Revere/Malden		
Saugus		**Wellesley**	
618	Northern High NW Trans Section 70-71	136	West Roxbury Tunnel
693	Northern High Service Pipe Improvements - Revere/Malden	617	Sudbury/Weston Aqueduct Repairs
731	Lynnfield Pipeline	735	Section 80 Rehabilitation

APPENDIX 8
MUNICIPALITY/PROJECT(s)

Municipality / Project Number	Project
Somerville	
324	CSO Support
353	Upgrade Existing CSO Facilities
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
615	Chicopee Valley Aqueduct Redundancy
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	
714	Southern Extra High - Sections 41, 42, and 74
721	Southern Spine Distribution Mains
727	SEH Redundancy & Storage
Weymouth	
104	Braintree-Weymouth Relief Facilities
Winchester	
127	Cummingsville Replacement Sewer
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	
127	Cummingsville Replacement Sewer
722	NIH Redundancy & Covered Storage

APPENDIX 9

MWRA Completed Projects

Appendix 9

MWRA Completed Projects
(as of June 30, 2009)

Project	Total Cost ($000)	Completion Date	Summary
Wastewater	$4,188,287		
Waterworks	$387,578		
Business and Operations Support	$41,171		
MWRA Total	$4,617,036		

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 recreational and commercial uses.
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.349 Chelsea Trunk Sewer	$29,779	Jun-02	To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008.
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.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	**$4,188,287**		

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	$8,605	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.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	**$387,578**		
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