

Wastewater System Improvements Section

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 began in January 2005 and was completed in April 2008.

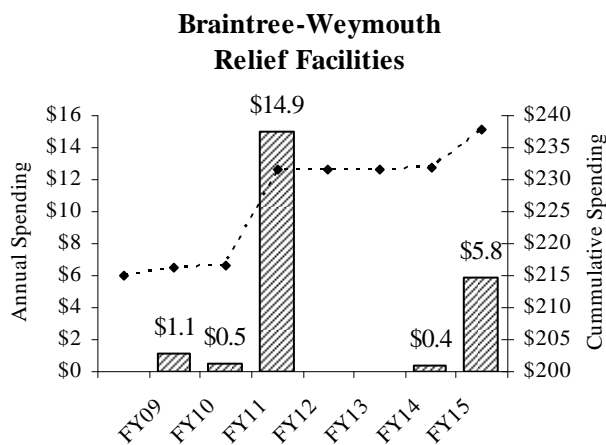
Scope

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-foot diameter tunnel beginning at the Nut Island shaft of the Inter-Island Tunnel and ending at the Fore River Staging Area. Two 14-inch sludge pipelines within the tunnel will convey Deer Island sludge from the Inter-Island Tunnel to the pelletizing plant. 0.4 miles of twin 12-inch pipelines within the tunnel will convey filtrate from the pelletizing plant to the Intermediate Pump Station. 2.5 miles of 42-inch force main will carry flows and filtrate to the Inter-Island Tunnel. Also includes a MOA with Quincy, Braintree, and Weymouth for tunnel rescue and fire support services.
Intermediate Pump Station Construction	Construction of a 45-mgd pump station and headworks in North Weymouth. Also includes modifications to the sludge pumping facilities at Deer Island and the filtrate facilities at Fore River.
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-foot long twin siphons beneath the Fore River from the Idlewell section of Weymouth to the southeast corner of the Exelon Energy site in North Weymouth. Constructing 1,000 linear feet of 36-inch to 54-inch new sewers in Idlewell.
B-W Replacement Pump Station	Construction of a new 28-mgd Braintree-Weymouth Pump Station which will handle flows from Hingham, Weymouth, and portions of Quincy.
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.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$241,867	\$215,032	\$26,836	\$1,129	\$460	\$16,533	\$10,303	\$0



Project Status 11/08	89.0%	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. Design for the Rehabilitation of Section 624 is anticipated to commence in FY15.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$232,491	\$241,867	\$9,376	Jun-13	Aug-15	26 mos.	\$16,298	\$16,533	\$235

Explanation of Changes

- Project cost due to revised land acquisition cost based on court decision and revised cost for Section 624 Rehabilitation. Schedule revised to be in compliance with 5-year spending cap.

CEB Impact

- Impacts absorbed within the current year's CEB.

S. 131 Upper Neponset Valley Sewer System

Project Purpose and Benefits

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

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

Project History and Background

The Upper Neponset Valley Sewer 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 April 2008. The project also includes design and construction of Section 687 to replace Section 530 which was awarded in October 2006 and completed in April 2008.

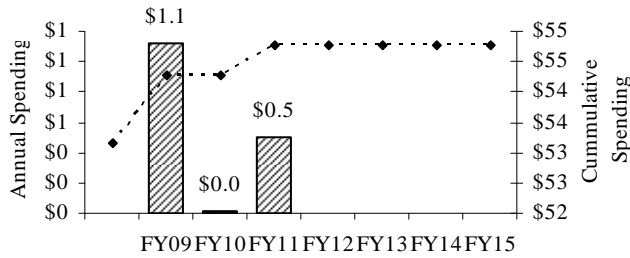
Scope

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$54,782	\$53,150	\$1,632	\$1,124	\$9	\$1,632	\$0	\$0

Upper Neponset Valley Relief Sewer



Project Status 11/08	98.1%	Status as % is approximation based on project budget and expenditures. Construction on Sections 685 and 686 began in April 2005. Section 687 was awarded in October 2006. Substantial completion on both contracts was reached in April 2008.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$55,777	\$54,782	(\$996)	Apr-08	Apr-08	None	\$1,149	\$1,632	\$483

Explanation of Changes

- Project cost decrease due to expected credit change order on Replacement 685-686 contract and balancing credit change order on Replacement 687 contract.

CEB Impact

- No impacts identified at this time.

S. 127 Cummingsville Replacement Sewer

Project Purpose and Benefits

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

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

Project History and Background

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

In 1995, MWRA published the Cummingsville Branch Sewers Facilities Plan recommending construction of the Cummingsville Branch Replacement Sewer to add a total of 8 mgd of capacity to the system. The facilities plan also recommended the rehabilitation of Section 86 to ensure its continued service.

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

On September 18, 2002, the Board of Directors approved a Settlement Agreement between the Town of Winchester, MWRA and the Secretary of the Office of Environmental Affairs, which provided closure to the litigation matter. In consideration of the mutual promises contained in the Agreement, MWRA agreed to design and construct a modification of the Section 113 downstream siphon chamber to provide 30-foot wide (above elevation 115) river access across the Aberjona River to alleviate the historical constriction that the Town asserts results in chronic flooding. The construction contract for the Cummingsville Branch Replacement Sewer was awarded in March 2005 and was substantially complete in May 2006. The construction contract for the modification of Section 113 siphon chamber was awarded in January 2007 and was substantially complete in August 2007.

Scope

Sub-phase	Scope
Facility Plan/EIR	Evaluation of potential adverse impacts associated with additional flows downstream and recommendations for improvements to the system.
Design/CS/RI	Design and construction services during the construction phase.
Construction (new sewer) and Rehab (existing sewers)	Replacement of the Section 47 sewer with a new 4,850 linear feet, 36-inch gravity line and cleaning and repair of the existing 5,000 linear feet Section 86 sewer.
Siphon Modifications	Construction of new downstream chamber for section 113 siphon in Winchester, and new permanent access roads to the upstream and downstream chambers.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$9,189	\$8,955	\$234	\$234	\$0	\$234	\$0	\$0

Project Status 11/08	97.9%	Status as % is approximation based on project budget and expenditures. Construction of the Cummingsville Branch Replacement Sewer reached substantial completion in May 2006. Construction of siphon modifications began in February 2007 and reached substantial completion in August 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$9,189	\$9,189	\$0	Jul-08	Jul-08	None	\$158	\$234	\$75

Explanation of Changes

- n/a

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$2,679	\$940	\$1,739	\$0	\$0	\$120	\$1,619	\$0

Project Status 11/08	35.1%	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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$2,605	\$2,679	\$74	Sep-15	Sep-15	None	\$114	\$120	\$6

Explanation of Changes

- n/a

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 (biofilters) 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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$14,776	\$3,003	\$11,774	\$0	\$69	\$3,132	\$8,642	\$0

Project Status 11/08	20.3%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$14,637	\$14,776	\$139	Jun-17	Jun-17	None	\$3,134	\$3,132	(\$3)

Explanation of Changes

- Budget increased due to inflation adjustments based on new ENR index.

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 (\$125,000) in FY14.

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.

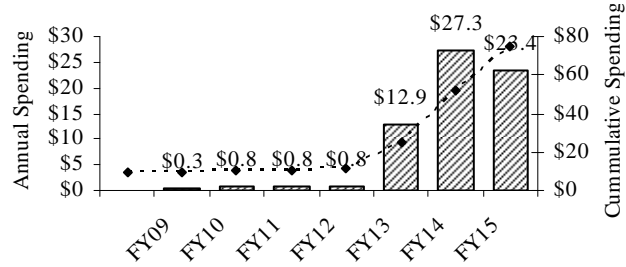
Scope

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$79,064	\$8,880	\$70,184	\$345	\$829	\$15,719	\$54,465	\$0

West Roxbury Tunnel



Project Status 11/08	11.2%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$88,880	\$79,064	(\$9,816)	May-15	Jan-15	(4) mos.	\$36,478	\$15,719	(\$20,759)

Explanation of Changes

- Project cost and planned spending decreased due to updated Tunnel Design estimate based on cost proposals received in August 2008. Schedule shifted based on RFQP received for Tunnel Design contract.

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 three construction packages began in March 2006. This construction addresses SCADA needs at most pumping and CSO facilities, as well as establishing overall data communications improvements. The second construction package will provide for SCADA needs at the remote headworks facilities, taking into consideration future CIP improvements at the older headworks facilities. The primary goal of the third construction package will be to improve MWRA's ability to continuously monitor wastewater flows and levels throughout the collection system that are impacted by facility operations or are prone to flooding. The third package will also provide improvements to newer facilities, ensuring consistent data collection from all wastewater facilities.

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 will also include the major components of the SCADA communications infrastructure (microwave radios, routers, etc.).
Construction 2 (CP2)	Construction and installation of SCADA instrumentation and control equipment at the three older headworks facilities and Nut Island Headworks. OCC improvements will also be made to support these additional facilities.

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) 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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$19,958	\$13,939	\$6,019	\$5,048	\$971	\$6,019	\$0	\$0

Project Status 11/08	81.9%	Status as % is approximation based on project budget and expenditures. Construction 1 contract was substantially complete in December 2007. Construction 2 contract began in February 2008.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$21,165	\$19,958	(\$1,207)	Aug-09	May-09	(3 mos.)	\$7,282	\$6,019	(\$1,263)

Explanation of Changes

- Project cost and planned spending decreased due to Amendment No. 6 to Design & Integration Services contract which removes CP-3 from the program. High priority CP-3 work will be performed by in-house staff using Consultant guidelines. Spending shift due to CP-2 award delayed caused by changes to original contract scope.
- Schedule changed due to the removal of CP3.

CEB Impact

- The FY09 CEB already reflects staffing reductions in preparation for implementation of remote monitoring. Future operating budgets will reflect any further optimization of 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 repairs to Outfall 023 with work scheduled to commence in fiscal year 2010.

Milton Financial Assistance

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

Pump Station Feasibility

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

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$4,945	\$3,440	\$1,505	\$0	\$0	\$0	\$943	\$562

Project Status 11/08	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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$4,945	\$4,945	\$0	Dec-11	Dec-18	85 mos.	\$1,500	\$0	(\$1,500)

Explanation of Changes

- Schedule and spending shift due to project priorities and staffing.

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 is 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 projects.

Scope

Sub-phase	Scope
Planning	Evaluate collection system and facility modification alternatives to maximize wastewater treatment and minimize operating and maintenance costs.
Somerville Sewer	Design and construct a connection between the upstream end of the Somerville Medford Branch Sewer and the North Metropolitan Relief Sewer to reduce surcharge and divert flow away from the Cambridge Branch Sewer and Delauri Pump Station.
Siphon Planning	Further evaluate the benefits of constructing a redundant siphon crossing the Mystic River from the Cambridge Branch Sewer to the Delauri Pump Station.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$2,365	\$930	\$1,435	\$0	\$0	\$103	\$1,332	\$0

Project Status 11/08	39.3%	Status as % is approximation based on project budget and expenditures. The Notice-to-Proceed for the Somerville Sewer Design is scheduled for October 2011.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$2,319	\$2,365	\$46	Aug-11	Aug-14	37 mos.	\$1,389	\$103	(\$1,286)

Explanation of Changes

- Project cost increase due to inflation adjustment on Somerville Sewer contract based on new ENR index.
- Schedule and spending shift due to project priorities and staffing.

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

Scope

Sub-phase	Scope
Planning	Development of a long-term plan to upgrade or replace the existing wastewater metering system (hardware, software, telemetry) is complete.
Equipment Purchase/Installation	Purchase and installation of equipment is complete.
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	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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$26,578	\$5,089	\$21,490	\$54	\$0	\$790	\$7,201	\$13,499

Project Status 11/08	19.4%	Status as % is approximation on project budget and expenditures. The purchase and installation of new meters is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$26,578	\$26,578	\$0	Jan-48	Jan-48	None	\$202	\$790	\$587

Explanation of Changes

- Spending shift to purchase materials for in-house installations.

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.
Interceptor Renewal #7 Study, Design & Construction	#7 – Rehabilitation of Melrose, Malden Sections 41,42,49,54 and 65.
Melrose Sewer and Repayment	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.
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.
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 Screen Replacement	The three Headworks, Chelsea Creek, Ward Street, and Columbus Park have screens that are experiencing a high rate of operational and maintenance failures. There are 12 climber-type screens installed in 1985 that are at the end of their useful lives. This project will include design and installation of a new state-of-the-art screening system. An in-depth mechanical assessment was completed to address immediate operations and maintenance needs until the screens are replaced under this CIP. The screens will be further evaluated for replacement alternatives under the Remote Headworks Concept Design.
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.
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. An isolation gate will allow work in the wetwell and on grinders and other related station equipment. This project will include the design and installation of a mechanical means, such as sluice gates in a diversion chamber, to isolate the station and bypass flow if required. This will allow maintenance to take place in the station without interruption of service.

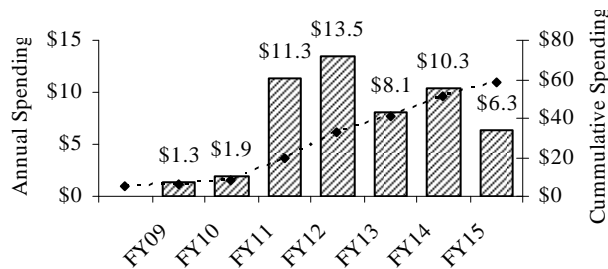
Sub-phase	Scope
Alewife Brook Pump and Screen Replacement Design and Construction	The Alewife Brook Pump Station was built in 1951 and the pumps are original equipment. They are discharging with less efficiency and the check valves are leaking. Staff has replaced rotating parts on the pumps over the past several years and it is difficult to maintain proper tolerances for internal pump components due to the age and wear of the pumps. The replacement is intended to increase pump reliability 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.
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 is under development to provide design services and to assess any equipment or components installed to-date. The consultant will recommend upgrades or replacement.
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.
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	Future rehabilitation, replacement and upgrades (design and construction) of projects recommended in the Remote Headworks Concept Design. These recommendations will be for upgrades to the Chelsea Creek, Columbus Park and Ward Street Headworks and are expected to be prioritized and spread over the 20-year planning period from FY09 through FY28. The recommendations from the Remote Headworks Concept Design are expected to incorporate previous CIP project recommendations for headworks improvements (including odor control system replacement, grit collection system replacement, grit and screenings ejection system replacement and Columbus Park Headworks heating system).
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.
Headworks Antenna Tower Replacement	Replace the three Headworks antenna towers. Towers provide basis for radio communications as a redundant source to Verizon Communications for processing data between Deer Island and the Headworks. The Columbus Park tower will be used for communications to the North Dorchester Bay CSO shafts. That tower may also be used for security camera communications in the future.
Columbus Park & Ward St. HVAC Upgrades	The heating and ventilation equipment at these facilities is beyond its useful life (20-yr old) requiring excessive maintenance and creating worker safety issues. The equipment is also very inefficient burning excessive fuel oil (30,000-40,000 gallons). This work is part of the larger Remote Headworks Upgrade program from which the funds were made available. Staff recommend that this be fast-tracked before other, less critical headworks upgrades begin.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$86,862	\$5,337	\$81,526	\$1,314	\$1,939	\$36,050	\$26,126	\$19,350

I&P Asset Protection



Project Status 11/08	7.1%	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 prioritized recommendations for upgrade and replacement projects for all 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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$69,715	\$86,862	\$17,148	Dec-28	Dec-28	None	\$28,115	\$36,050	\$7,935

Explanation of Changes

- Budget and spending increase primarily due to new subphases added including Interceptor Renewal #3 and #4 and Headworks Antenna Tower Replacement, updated cost estimates for Nut Island Mechanical & Electrical Replacements and Prison Point HVAC Upgrades. Also, inflation adjustment on Interceptor Renewal #2, Alewife Brook Pump Station Rehabilitation and Nut Island Headworks Fire Alarm/Wiring contracts based on new ENR index. Columbus Park & Ward St. HVAC Upgrades new subphase is a transfer of funds from Headworks Upgrades Construction subphase.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$5,000	\$0	\$5,000	\$0	\$0	\$0	\$5,000	\$0

Project Status 11/08	0.0%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$750	\$0	\$750	\$0	\$0	\$656	\$94	\$0

Project Status 11/08	0.0%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$750	\$750	\$0	Jun-13	Jun-13	None	\$656	\$656	\$0

Explanation of Changes

- n/a

CEB Impact

- No additional impacts expected at this time.

S. 200 Deer Island Plant Optimization

Project Purpose and Benefits

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

This series of projects addresses the need for capital investment to optimize plant operations after initial start-up. The projects provide for design, construction, support, and services during construction, for work at the Deer Island Treatment Plant (DITP) necessary for safe, efficient start-up and/or to optimize the operational functionality in various areas of the facility.

Project History and Background

The Deer Island Treatment Plant consists of an extensive infrastructure of facilities and utility services. Due to the size, scope, and complexity of the Deer Island facility, it was inevitable that unanticipated repairs and/or modifications to various structures and utilities would be necessary following substantial completion of the plant. Contracts under this program are to support these modifications. The projects required to address routine plant operations and maintenance needs are under the S.206-Deer Island Treatment Plant Asset Protection project series. Once Ancillary Modifications 4 is completed under this program, the As-Needed Technical Design phases may potentially be moved into the DITP Asset Protection Program, allowing this project series to be closed out.

Scope

Sub-phase	Scope
Supplementary Modification Package	Installation of safety railings, primary access hatches, scum screen bypass, and access platforms at the Deer Island grit facility. Project completed in March 2000.
As-Needed Design Phases 1 through 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. Starting with Phase 6, added in FY09, the contract length is extended to three years each. These design phases are currently scheduled to end in 2012, replaced by 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. 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.
BHP Site Completion	Final landscaping and installation of public safety, education, and orientation signage. Completed in December 2004.
<i>Ancillary Modifications:</i>	
Design and Construction 1	Replaced catenary screens and extended the garage to enclose the grit hoppers at the Winthrop Terminal Facility; replaced primary scum screens in Residuals, valves and gas meters at digester modules; corrosion repair; replaced sumps at North Main Pump; and telescoping valve work in digester module 3. Substantially complete March 2006.
Design and Construction 2-2	Installation of Variable Frequency Drives (VFDs) and DC chokes at the South System Pump Station. Substantially complete by October 2007.
Design and Construction 3-1	Improved the secondary clarifier scum removal; installed clarifier access manholes; corrected sludge manifold vibrations; replaced clarifier intermediate hatches; and other secondary clarifier improvements. Completed construction in November 2004.
Preliminary Design, Final Design, and Construction 4	Added the Preliminary Design phase in FY07. The project involves modifications to the cryogenics facility and plant-wide odor control systems, including the digester gas systems and wet scrubber improvements.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$73,507	\$34,474	\$39,033	\$1,451	\$1,660	\$9,380	\$14,453	\$15,200

Project Status 11/08	47.7%	Status as % is an approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Contracts in process include As-Needed Design Phases 5-1 and 5-2. Ancillary Modifications Construction 2-2 was completed in October 2007. Expect to award Ancillary Modifications Preliminary Design 4 by July 2009. As-Needed Design 6-1 and 6-2 expected to begin in March 2009.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$71,454	\$73,507	\$2,052	Aug-14	Jul-14	(1mos.)	\$8,798	\$9,380	\$582

Explanation of Changes

- The project cost and planned spending increase is primarily due to an increase in the Ancillary Modifications Construction 4 cost estimate based on a review of scope and recent bids for similar projects, amendments for As-Needed Design Phase 5-2 contract, and settlement paid on Ancillary Modifications Construction 2-1 contract.

CEB Impact

- The As-Needed Design and Ancillary Modifications phases are intended to improve the operational functionality of various areas of the plant, potentially reducing maintenance costs and utility expenses. The actual cost benefits have not been quantified. Any budgetary impacts will be absorbed within the existing budget projections.

S. 206 Deer Island Treatment Plant Asset Protection

Project Purpose and Benefits

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

To protect the investment of MWRA ratepayers in the 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	Scope
<i>Equipment Replacement:</i>	
Equipment Replacement Projection (ERP) and Deer Island Equipment Replacement Projection (DIERP)	Two long-term projected cost placeholders 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 these placeholders and then shown under new subphases. The DIERP phase was added per the Master Plan in FY08, at \$2M/year for FY09 through FY44. 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 FY09 – FY13 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 <i>Equipment Replacement:</i>	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 to be completed by in-house staff by FY10.
LOCAT Scrubber Replacement 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.).
Grit Blower Replacement Construction	Replace a high-maintenance grit blower with a dedicated air-handling/compressor system for improved grit handling. Successful modifications to grit handling systems and equipment have since allowed for removal of this project in the FY10 CIP.
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, the schedule is advanced to add pumps with higher flow rates, reducing potential grit settlement in the pipes. Designed under As-Needed Design task order, with construction to commence in FY10.
Centrifuge Back-drive Replacements	Replace the centrifuge back-drives, which have become obsolete. Scheduled to commence in FY11 and will take 2 years to complete.
Grit & East/West Odor Ctrl Air Handler Replacements	Replace the air handlers due to deterioration. Added per the Master Plan, with \$6.1M in FY09-12, then every 15 years. Grit AHU replacement project began July 2008, E/W Odor Replacements scheduled to follow in FY11.
Fire Alarm System Replacement – Design & Construction	Newly identified in FY08, added to the Master Plan prior to publication. To replace obsolete fire alarm monitoring & control systems. Design in FY11, replace in FY12/13 and every 15 - 20 years. Estimated cost is \$4M per cycle.
HVAC Equipment Replacement – Design/ESDC & Construction	Newly identified in FY08, added to the Master Plan prior to publication. To replace two obsolete HVAC control systems with one manufacturer's system, reducing replacement parts and improving automation. Design in FY10, replace in FY11/12 and then every 15 years. Additional scope items increased the cost for FY10 to \$6.9M for the first cycle. Funding for future replacements will therefore need to be added in subsequent 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 FY10/11. Other work to commence in FY14-17 with future rehab and upgrade work occurring every 10 years.

Sub-phase	Scope
<i>Equipment Replacement:</i>	
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 \$2.2 million, scheduled for FY10-11.
Digester Modules 1 & 2 Pipe Replacement	During digester pipe cleaning undertaken in May/June 2007, deterioration of the glass lining in these pipes was noted. As a result, this subphase was added as an emergency project (and therefore was not in the Master Plan). The \$8M funding estimate was taken from the Equipment Replacement Projection subphase, so no net CIP increase for DITP occurred. Scheduled for FY10-12.
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 butterfly 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 is being sent out to be rebuilt. Several others have begun to leak, indicating that the gaskets and seals are failing. Need to plan for replacements if valve rehab doesn't work.

Sub-phase	Scope
<i>Architectural:</i>	
Study/Concept Design-Concrete Repairs	Study, to be followed by conceptual design (if needed) for installation of a protective coating on concrete below the water line in the secondary clarifiers and disinfection basins. Study scheduled for FY11 at \$300,000.
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 early FY10.
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.
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 \$1.3 million for FY11, on a 20-year repeat cycle.

Sub-phase	Scope
<i>Utilities:</i>	
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 at the end of their useful lives. Busduct 2&22 replacement was completed in October 2001, and EEU - 2 was completed by March 2007. EEU-3 began in FY08, EEU-4 is scheduled for FY11. Under the Master Plan, Phase 5 was added at \$20.6M and scheduled to start in FY12; scope includes \$500k/year for FY14 - FY48.
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), South System Pump Station (done in FY07-08), Winthrop Terminal Facility (FY12), 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 design and construction of modifications to DITP's electrical system as recommended in the consultant report after an FY04 power outage. Expect to complete the construction in a series of three projects in FY09-11.

Sub-phase	Scope
<i>Utilities:</i>	
Thermal Power Plant Modifications – REI for 7061B (formerly DI Electrical Modifications)	Initially for electrical modifications recommended after the October 2005 power outage. Scope and funding of \$2.6M added to the Power System Improvements Construction project in Proposed FY09 cycle. Subphase now covers REI work for one of the 3 projects mentioned above, modifications in the Thermal Power Plant, estimated at \$345k. Scheduled to begin in FY09.
Switchgear REI for 7061 & 7061A	Project subphase added in the Prop FY09 CIP, to provide REI services on two of the Power System Improvement projects involving switchgear work as mentioned above, estimated at \$990k. Scheduled to begin in FY09.
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 FY11/12, 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 FY10-13 at \$1.8M, 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 health and safety hazards.
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 substantially complete by February 2008. Phase 3 added per the Master Plan; increased from \$6.5M to \$10.7M and scheduled to commence in late FY09. 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; design to begin in FY09, construction scheduled for mid-FY11.
North Main Pump Station Motor Control Center Design and Construction	Sequential replacement of the motor control center equipment in the Pump Station since the components are becoming obsolete and unreliable.
CTG Rebuilds	Rebuilds of the combustion turbines in the Thermal Power Plant. Included in the Master Plan at \$2M for 2015, with repeat cycles every 15 years.
Leak Protection System Upgrade	Removed in the Proposed FY09 cycle, since the fuel line replacement project has been accelerated and will involve installing a new leak detection system.
DI Wind Power Construction	This subphase was renamed “Alternative Energy Initiatives” in the Proposed FY09 cycle, and \$7M in funds moved to Business & Operations Support. Includes solar panel installation at DITP and wind power feasibility study.

Sub-phase	Scope
<i>Utilities:</i>	
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 is scheduled to begin in FY09; includes the services of an Owners Rep.
Low Voltage Lighting Replacement	Replace the obsolete DOS-based lighting control system with a newer program. Lights will be automatically turned off during off hours, saving electricity.
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	Scope
<i>Support:</i>	
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.

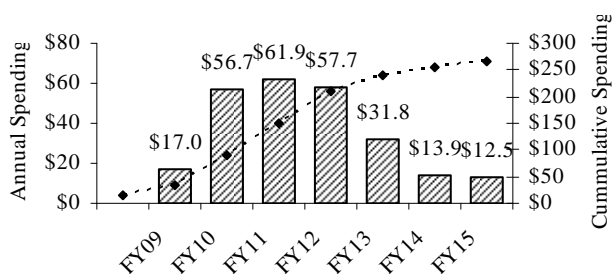
Sub-phase	Scope
<i>Specialties:</i>	
Sodium Hypochlorite Tank Liner Removal	Removed the failed lining in tank #1 of the four sodium hypochlorite storage tanks. Completed in September 2006.
Hypochlorite Tanks 1&3 Reline	Renamed the "Sodium Hypo Tank Repair 1" subphase during the Proposed FY08 CIP cycle, to include 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). Gravity Thickener Rehab scope removed in FY09; project scope expanded to include secondary clarifiers due to deterioration in the longitudinal chains and scum collection systems. Scheduled to begin once the Construction phase listed below is awarded.
Primary & Secondary Clarifier Rehab Construction	Replace longitudinal and cross collector chains and sprockets, chain drives, wear shoes; modify tip tubes, replace hose bibs; repair wall expansion joints, add more drop boxes, etc. Added the secondary clarifiers to the scope for FY09 and specified a higher-grade stainless steel, which substantially increased the project cost by \$30M. Separated out the gravity thickener scope due to the need for separate, distinct schedules. Work scheduled to commence in mid-FY09 and take three years to complete.
Gravity Thickener Rehab - Design	New subphase in FY09 for designing gravity thickener improvements, as discussed further below. In the Proposed FY09 cycle, the primary & secondary clarifier project priority resulted in the need to separate the projects again due to scheduling issues, and a separate design phase is needed.

Sub-phase <i>Specialties:</i>	Scope
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. Separated back out as a stand-alone project for FY09. The first phase involves replacing the covers in FY10 for \$1M. The remainder of the project involves installing catwalks around the perimeter of several tanks, removing concrete blocks in the effluent channels, and modifying the sludge thickener roofing to improve staff access and the operating efficiency of the thickeners.
All central Laboratory projects (Metals Lab Fume Hood Replacement, Metals Lab Modifications, Lab Sample Area Modifications, etc.)	All laboratory projects were removed from the DITP asset protection program and put into a separate, discrete project area. See the S.211, Laboratory Services section below.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$424,506	\$16,046	\$408,460	\$16,979	\$56,662	\$225,021	\$84,161	\$99,279

DI Asset Protection



Project Status 11/08	5.0%	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 Miscellaneous VFD Replacements, Electrical Equipment Upgrade Construction 3, Hypochlorite Tanks 2 & 4 Relining, Power System Improvement Design and Grit Air Handler Unit Replacement. Heat Loop Pipe Replacement Construction 3, Digester Sludge Pump Replacement Construction, Digester Modules 1 & 2 Pipe Replacement, HVAC Equipment Replacement Design, Fuel Transfer Pipe Replacement Design, STG System Modifications Design, Primary & Secondary Clarifier Rehab work and several Power System Improvements – Construction contracts are also expected to start by FY10.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$402,571	\$424,506	\$21,935	Jun-48	Jun-48	None	\$200,717	\$225,021	\$24,304

Explanation of Changes

- The project cost and planned spending increase is primarily due to several revised cost estimates including Primary and Secondary Clarifier Rehabilitation Construction, North Main Pump Station VFD Replacement Construction, NMPS Motor Control Center Construction, DI Switchgear Replacement Construction, Power System Improvement Construction, TPP Fuel & Steam Modifications-REI, and LOCAT Scrubber Replacement Design phases. Also due to inflation adjustments based on new ENR index. Some project schedules have shifted additional spending into the FY09-13 timeframe.

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 control system 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 (\$520,000) in annual electricity costs as of FY11 and +\$125,000 in RPS revenue; NMPS (\$130,000 in FY14), WTF (\$30,000 in FY14) and Future SSPS VFD Replacements (\$125,000 in FY20) are expected to result in combined annual electricity cost savings of \$285,000. Transformer Replacements in FY14 and Electrical Equipment Upgrades 3 in FY12 and Upgrade 4 in FY13 are each expected to result in savings of \$50,000 upon completion for an annual total of \$150,000. HVAC Equipment Replacement assume (\$145,000 in FY13) and Power System Improvements assume (\$26,000 in FY12 and \$26,000 in FY13). The low-voltage and other lighting projects as well as installation of wind turbines at Deer Island are all expected to reduce dependency on outside sources of energy.
- 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 is 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 CLTP 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 the FY08 budget cycle.

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.

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; in some areas the concrete is spalling and the 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.
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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$3,128	\$345	\$2,783	\$161	\$343	\$2,783	\$0	\$0

Project Status 11/08	15.8%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$482	\$3,128	\$2,646	Sep-08	Mar-12	43 mos.	\$114	\$2,783	\$2,670

Explanation of Changes

- The project cost, schedule and planned spending changes are all due to the addition of new subphases for Clinton Plant-Wide Concrete Repair, Digester Cleaning & Rehabs, and Aeration Efficiency Improvements.

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 (\$52,800) in incremental avoided costs as of FY12. 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 the metals lab fume hood. 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 scheduled to begin in FY09, construction in FY10.
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.
Lab Sample Area Modifications Design and Construction	Design and construction of improvements at the Central Lab at Deer Island. Improvements include changes in the physical layout to improve workflow and to capture fumes from sample containers and bottle-wash process. Design scheduled to begin in FY11, construction in FY12.
Central Lab Fume Hood Replacements	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 FY14 at \$1.8M, with future replacements expected every fifteen years.
Laboratory As-needed Technical Design	Technical design services & construction support, increased in the Final FY09 CIP from \$100k per year to \$250k annually from FY10 through FY25 for a total estimated project cost of \$4 million. Future requirements for these services from FY25-FY48 to match Master Planning schedules will need to be funded in subsequent CIP cycles.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$8,987	\$929	\$8,058	\$215	\$796	\$4,463	\$1,803	\$1,792

Project Status 11/08	10.8%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$8,409	\$8,987	\$578	Jun-48	Jun-48	None	\$4,079	\$4,463	\$385

Explanation of Changes

- Project cost and planned spending increase due to revised cost estimates for the Lab Sample Area Modification contracts as well as inflation adjustment on these and the Central Lab Fume Hood Replacement contract based on new ENR index.

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, and which/how many spare parts to pre-purchase. 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 project is planned for the FY09-10 timeframe (concurrent with a study to assess the latest technology and regulatory trends) 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 project 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 are 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

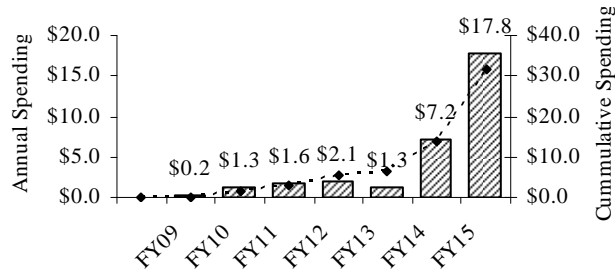
Sub-phase	Scope
Condition Assessment/Reliability Study* (1)	Evaluate the condition of the entire facility at the mid-point of the current contract and assess other residuals processing options and regulatory changes which may provide cost-saving opportunities. First phase is a present condition assessment followed by a technology and regulatory review. Currently scheduled at \$1M to commence in 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 FY10 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 main control console (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 if/as needed, at an estimated cost of \$700k. MWRA does not own Pier 2; however, the pier may need to be demolished at some future date.
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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$148,570	\$0	\$148,570	\$238	\$1,295	\$6,570	\$61,208	\$80,792

Residuals Asset Protection



Project Status 11/08	0.0%	Status as % is approximation based on project budget and expenditures. The Residuals Plant Condition Assessment/Reliability Study is expected to begin in February 2009.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$148,570	\$148,570	\$0	Jun-48	Jun-48	None	\$6,570	\$6,570	\$0

Explanation of Changes

- n/a

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 permittees 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 permittees 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 a large set of projects covering a range of control technologies to achieve long-term, site-specific CSO control goals based on site-specific and watershed-based assessments of receiving water impacts and uses. MWRA recommended 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 plan was approved by EPA and DEP in March 2006 and accepted by the Federal Court in April 2006. MWRA predicts that the long-term plan will further reduce total annual CSO discharge in a typical rainfall year to 0.4 million gallons (resulting in an 85% reduction from the 1988 level), with 93% of the remaining discharge to be treated at four MWRA screening and disinfection 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 all the variances will be limited to the requirements of the Court Order (i.e. that 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).

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 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 large tunnels, such as 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 December 2008, MWRA and the CSO communities had completed 22 of the 35 projects in the plan, and an additional 12 projects were in design or construction. 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 630 million gallons, an 81% reduction. In addition, 73% of the remaining overflow receives treatment at MWRA's four CSO treatment facilities. While 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	<ul style="list-style-type: none"> • Cambridge/Alewife Sewer Separation • MWR003 Gate and Rindge Siphon Relief • Interceptor Connection Upgrades • Somerville Baffle Manhole Separation • Cambridge Floatables Control 	64.3
Mystic River/Chelsea Creek Confluence	1 untreated and 39 treated @ Somerville Marginal	0.6 60.6	<ul style="list-style-type: none"> • Somerville Marginal CSO Facility Upgrade • Somerville Baffle Manhole Separation • Hydraulic Relief at BOS017 • Chelsea Trunk Sewer Replacement 	9.2
Charles River (including Stony Brook and Back Bay Fens)	2 untreated and 2 treated @ Cottage Farm	6.8 6.3	<ul style="list-style-type: none"> • 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 	90.5
Inner Harbor (including Chelsea Creek)	6 untreated and 30 treated @ Prison Point	9.6 335.0	<ul style="list-style-type: none"> • Prison Point CSO Facility Upgrade • Prison Point Optimization Study • Chelsea Trunk Sewer Replacement • Chelsea Branch Sewer Relief • CHE008 Outfall Repairs • BOS019 Storage Conduit • E. Boston Branch Sewer Relief 	131.4
Fort Point Channel	3 untreated and 17 treated @ Union Park	2.5 71.4	<ul style="list-style-type: none"> • Union Park Treatment Facility • BOS072-073 Sewer Separation and System Optimization • BWSC Floatables Control • Lower Dorchester Brook Sewer Modifications 	62.0
Constitution Beach	Eliminate		• Constitution Beach Sewer Separation	3.8
North Dorchester Bay	Eliminate		<ul style="list-style-type: none"> • N. Dorchester Bay Storage Tunnel and Related Facilities • Pleasure Bay Storm Drain Improvements • Morrissey Blvd Storm Drain 	274.8
Reserved Channel	3 untreated	1.5	• Reserved Channel Sewer Separation	113.3
South Dorchester Bay	Eliminate		<ul style="list-style-type: none"> • Fox Point CSO Facility Upgrade (interim improvement) • Commercial Pt. CSO Facility Upgrade (interim improvement) • South Dorchester Bay Sewer Separation 	125.1
Neponset River	Eliminate		• Neponset River Sewer Separation	2.7
Regional			• Planning, Technical Support and Land Acquisition	50.2
TOTAL		505.1		927.3
Treated		476.8		

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 estimates of CSO discharges using actual field data and model simulations are essential to verify the predicted benefits of the CSO-related improvements, to ensure the system hydraulic model reflects updated conditions, and to provide up-to-date information 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. 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 to be submitted by 2020.

Table 2
(Shading indicates completed project.)

Project		Commence Design	Commence Construction	Complete Construction
North Dorchester Bay Storage Tunnel and Related Facilities		Aug 97	Aug 07	Mar 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	Jun 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	Jan 11
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	Jun 09
Reserved Channel Sewer Separation		Jul 06	May 09	Dec 15
Bulfinch Triangle Sewer Separation		Nov 06	Aug 08	Dec 14
Brookline Sewer Separation		Nov 06	Nov 08	Jun 12
Somerville Baffle Manhole Separation			Apr 96	Dec 96
Cambridge/Alewife Brook Sewer Separation	CAM004 Outfall and Detention Basin		Oct 09	Oct 11
	CAM004 Sewer Separation	Jan 97	Jul 98	Apr 15
	CAM400 Manhole Separation	Oct 08	Oct 09	Oct 10
	Interceptor Connection Relief/ Floatables Control	Oct 08	Apr 10	Mar 11
	MWR003 Gate and Rindge Ave. Siphon	Jul 11	Feb 13	Apr 14
Region-wide Floatables Control and Outfall Closings		Sep 96	Mar 99	Dec 07

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 (BOS017) and Cambridge (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 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 to CSO outfall BOS070, which discharges into the Fort Point Channel 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 not associated with treatment facilities (located along the Lower Charles River Basin).
MWR003 Gate and Siphon	Minimize CSO discharges to Alewife Brook as part of MWRA’s Alewife Brook CSO control plan 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.
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Fox Point CSO Facility.

Project	Purpose
South Dorchester Bay Sewer Separation (Commercial Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Commercial Point CSO Facility. Also, relocate a CSO regulator and perform limited sewer separation to reduce CSO discharges from the Lower Dorchester Brook Sewer to Fort Point Channel at a funding cap of \$2.03 million to BWSC.
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	Elimination of CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean Beach) by separating combined sewer systems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with outfalls BOS093 and BOS095.
Constitution Beach Sewer Separation	Elimination of CSO discharges at the Constitution Beach CSO Facility, allowing decommissioning of the facility, by separating combined sewer systems in parts of East Boston.
Cambridge CAM002-004 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 eight Cambridge CSO outfalls.
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.
Morrissey Boulevard Drain	Reroute stormwater away from the BOS087 area and the North Dorchester Bay consolidation storage tunnel to Savin Hill Cove, to increase level of stormwater control along the South Boston beaches.
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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$927,326	\$522,216	\$405,110	\$102,591	\$106,354	\$370,580	\$34,380	\$149

Program Status 11/08	61.5%	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).
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Changes to Program Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$924,577	\$927,326	\$2,749	Dec-15	Dec-15	None	\$351,686	\$370,580	\$18,894

Explanation of Changes

- **MWRA Managed +\$2.1M**
Project Changes: North Dorchester Bay +\$3.7M, East Boston Branch Sewer Relief (\$1.7M).
- **Community Managed +\$0.6M**
Project Changes: Reserved Channel Sewer Separation (\$0.5M), Brookline Sewer Separation +\$0.5M, Bulfinch Triangle Sewer Separation (\$0.6M) Cambridge Sewer Separation +\$1.7M, Cambridge Floatables Control +\$0.5M, South Dorchester Bay Sewer Separation (Fox. Pt.) (\$0.3M), South Dorchester Bay Sewer Separation (Comm. Pt.) +\$0.5M, Stony Brook Sewer Separation (\$1.2M).

CEB Impact

- Completion and start-up of these projects will result in a total net increase of \$380,000 (in FY09 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.

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 remote odor control facility 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, force main and odor control facility) 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.

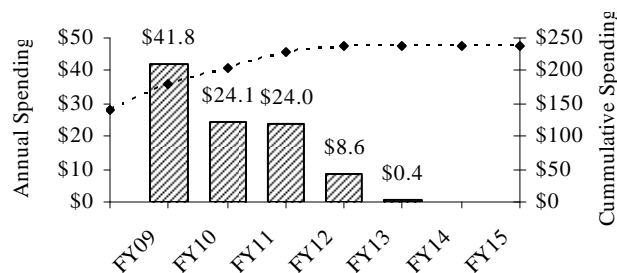
Scope

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, force main and remote odor control facility.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater control structures.
Dewatering Station/Odor Control Facility Construction	Construction of the 15 mgd dewatering pump station at Conley Terminal and connecting force main.
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, force main and remote odor control facility.
ROCF Construction	Construction of the remote odor control facility on DCR land at the upstream end of the tunnel.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$237,988	\$139,042	\$98,946	\$41,816	\$24,125	\$98,946	\$0	\$0

North Dorchester Bay



Project Status 11/08	70.4%	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, and related construction is scheduled to begin in March 2009.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$234,299	\$237,988	\$3,689	Mar-11	Apr-11	1 mo.	\$90,020	\$98,946	\$8,926

Explanation of Changes

- Project cost and planned spending increase associated with higher construction costs due to the addition of a separate construction contract for the remote odor control facility.

CEB Impact

- Estimate \$450k/year as of FY12 for operation, maintenance and odor control for infrastructure associated with this project.

S. 354 Hydraulic Relief

Project Purpose and Benefits

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

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

Project History and Background

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

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

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$2,295	\$2,295	\$0	\$0	\$0	\$0	\$0	\$0

Project Status 11/08	100%	Completed in 2000.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$2,295	\$2,295	\$0	Aug-01	Aug-01	None	\$0	\$0	\$0

Explanation of Changes

- n/a

CEB Impact

- No impacts identified at this time.

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.

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 14,500 feet of replacement sewers primarily by microtunneling.
Boston Paving	Payment to City of Boston for paving.
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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
86,750	\$10,705	\$76,044	\$25,239	\$37,848	\$76,044	\$0	\$0

Project Status 11/08	15.3%	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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$88,423	\$86,750	(\$1,674)	Jun-10	Jul-10	1 mo.	\$77,793	\$76,044	(\$1,749)

Explanation of Changes

- Project cost and planned spending decrease due to award of the East Boston Branch Relief Sewer being less than budgeted.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$14,288	\$14,332	(\$44)	(\$44)	\$0	(\$44)	\$0	\$0

Project Status 11/08	100.0%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in March 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$14,344	\$14,288	(\$56)	Mar-07	Mar-07	None	\$40	(\$44)	(\$84)

Explanation of Changes

CEB Impact

- No additional impacts are identified at this time.

S. 349 Chelsea Trunk Sewer Relief

Project Purpose and Benefits

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

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

Project History and Background

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

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$29,779	\$29,779	\$0	\$0	\$0	\$0	\$0	\$0

Project Status 11/08	100%	Status as % is approximation based on project budget and expenditures. Project is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$29,779	\$29,779	\$0	Jun-02	Jun-02	None	\$0	\$0	\$0

Explanation of Changes

- Project completed.

CEB Impact

- No impacts 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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$49,805	\$49,811	(\$6)	(\$6)	\$0	(\$6)	\$0	\$0

Project Status 11/08	100%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in April 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$49,736	\$49,805	\$68	Apr-07	Jun-07	2 mos.	\$0	(\$6)	(\$6)

Explanation of Changes

- n/a

CEB Impact

- No additional impacts are identified at this time.

S. 353 Upgrade Existing CSO Facilities and MWRA Floatables Control

Project Purpose and Benefits

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

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

Project History and Background

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

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

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

Scope

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

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$22,385	\$22,385	\$0	\$0	\$0	\$0	\$0	\$0

Project Status 11/08	100%	Status as % is approximation based on project budget and expenditures. Project is completed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$22,385	\$22,385	\$0	Oct-02	Oct-02	None	\$0	\$0	\$0

Explanation of Changes

- Project completed.

CEB Impact

- No impacts identified at this time.

S. 355 MWR003 Gate and Siphon

Project Purpose and Benefits

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

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

Project History and Background

The MWR003 Gate and Siphon project was recommended in the *Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook, April 2001*, and is part of the revised recommended CSO plan for Alewife Brook. The project consists of the following elements: an automated hydraulic relief gate and associated controls at CSO regulator RE031 upstream of CSO outfall MWR003; an inverted siphon barrel parallel to the existing inverted siphon barrel connecting the Alewife Brook Sewer and Alewife Brook Conduit; and floatables control consisting of an in-line net in outfall MWR003. Also included are improvements to the Alewife Reservation in the immediate project area that are expected conditions of the Department of Conservation and Recreation (DCR) construction permit and license agreement, based on preliminary discussions with DCR. Implementation of this project and other elements of the recommended plan for Alewife Brook 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 to 2020.

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$2,839	\$0	\$2,839	\$0	\$0	\$1,352	\$1,487	\$0

Project Status 11/08	0%	Status as % is approximation based on project budget and expenditures. Design contract is now expected to be awarded in July 2011.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$2,718	\$2,839	\$121	Nov-13	Apr-14	5 mos.	\$1,780	\$1,352	(\$428)

Explanation of Changes

- Revised planning level cost estimate based on expected permitting, modeling, and coordination demands. Also, construction inflation adjustment due to new ENR index.
- Schedule changed due to delay in wetlands appeal decision for Cambridge Contract #12 (stormwater outfall and wetland detention basin).

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 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.

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.
Existing Gate Control System	Construction and improvements designed above regarding existing gates between the Charles River Valley Sewer and the South Charles Relief Sewer.

REI Services Cottage Farm Brookline Connection Inflow Controls	New subphase added for Resident Engineering Inspection Services for the Cottage Farm Brookline Connection Inflow Controls.
Additional Interceptor Connections Construction	Construction of any additional connections recommended in the study above. Scope, schedule, and cost to be determined from study recommendations.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$5,601	\$1,101	\$4,500	\$2,631	\$911	\$4,500	\$0	\$0

Project Status 11/08	28.0%	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 awarded in June 2008.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$5,601	\$5,601	\$0	Jan-11	Jan-11	None	\$4,354	\$4,500	\$146

Explanation of Changes

- n/a

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. While Schedule Seven requires MWRA and BWSC to complete the project by November 2008, BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007. BWSC is conducting flow monitoring and hydraulics evaluations to verify that the project performance objectives have been achieved and that the CSO regulators can remain closed permanently. Downspout disconnection and street paving contracts will continue into 2008.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$53,485	\$53,763	(\$278)	\$19	(\$296)	(\$278)	\$0	\$0

Project Status 11/08	100.0%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$53,783	\$53,485	(\$298)	Nov-06	Nov-06	None	\$20	(\$278)	(\$298)

Explanation of Changes

- Budget decreased due to actual police detail invoices being less than original 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. While Schedule Seven requires MWRA and BWSC to complete the project by November 2008, BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007. BWSC is conducting flow monitoring and hydraulics evaluations to verify that the project performance objectives have been achieved and that the CSO regulators can remain closed permanently. A placeholder contract (and budget) for additional hydraulic relief, if necessary, is included in the CIP. Downspout disconnection and street paving contracts will continue into 2008.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$ 63,638	\$54,891	\$8,747	\$3,062	\$427	\$8,747	\$0	\$0

Project Status 11/08	90.3%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$63,134	\$ 63,638	\$504	Nov-08	Nov-08	None	\$7,467	\$8,747	\$1,280

Explanation of Changes

- Project cost increase due to higher police detail costs and escalation on unawarded construction related to Dorchester Interceptor Relief work.
- FY09-13 spending increase due to revised schedule for Dorchester Interceptor Relief work.

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 will continue through 2007 and into 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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$44,094	\$45,052	(\$958)	\$270	(\$1,228)	(\$958)	\$0	\$0

Project Status 11/08	100.0%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$45,322	\$44,094	(\$1,228)	Sep-06	Sep-06	None	\$270	(\$958)	(\$1,228)

Explanation of Changes

- Project cost decrease due to reduced police detail costs and correction to budget to remove costs associated with Morrissey Boulevard related change order (cost already carried under Morrissey Blvd. storm drain).

CEB Impact

- No impacts identified at this time.

S. 342 Neponset River Sewer Separation

Project Purpose and Benefits

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

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

Project History and Background

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

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$2,681	\$2,444	\$236	\$0	\$236	\$236	\$0	\$0

Project Status 11/08	91.2%	Status as % is approximation based on project budget and expenditures. Project was substantially complete in October 2002. MWRA will release remaining balance pending completion of its final review of cost eligibility.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$2,681	\$2,681	\$0	Oct-02	Oct-02	None	\$236	\$236	\$0

Explanation of Changes

- Project completed.

CEB Impact

- No impacts identified at this time.

S. 343 Constitution Beach Sewer Separation

Project Purpose and Benefits

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

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

Project History and Background

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

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$3,769	\$3,769	\$0	\$0	\$0	\$0	\$0	\$0

Project Status 11/08	100%	Status as % is approximation based on project budget and expenditures. Project is completed.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$3,769	\$3,769	\$0	Apr-02	Apr-02	None	\$0	\$0	\$0

Explanation of Changes

- Project completed.

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 scope of work for this project is outlined above.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$57,816	\$18,451	\$39,365	\$1,500	\$9,664	\$36,445	\$2,920	\$0

Project Status 11/08	33.4%	Status as % is approximation based on project budget and expenditures. City of Cambridge has submitted the Second Supplemental Preliminary Design Report for the final recommended plan.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$56,151	\$57,816	\$1,665	Dec-14	Apr-15	4 mos.	\$34,286	\$36,445	\$2,159

Explanation of Changes

- Project cost and planned spending increase due to revised cost estimates and escalation on unawarded contracts.
- Schedule shift due to delay in resolution of wetlands appeal related to Cambridge Contract 12.

CEB Impact

- No impacts identified at this time.

S. 351 BWSC Floatables Control

Project Purpose and Benefits

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

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

Project History and Background

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

Scope

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

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$933	\$933	\$0	\$0	\$0	\$0	\$0	\$0

Project Status 11/08	100%	Status as % is approximation based on project budget and expenditures. Project is complete.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$933	\$933	\$0	Mar-02	Mar-02	None	\$0	\$0	\$0

Explanation of Changes

- Project completed.

CEB Impacts

- 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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$3,886	\$922	\$2,963	\$268	\$1,097	\$2,963	\$0	\$0

Project Status 11/08	23.7%	Status as % is approximation based on project budget and expenditures.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$3,377	\$3,886	\$509	Nov-10	Jun-12	19 mos.	\$2,455	\$2,963	\$509

Explanation of Changes

- Budget increase primarily due to revised cost estimates for floatable control at Alewife Brook CSO outfalls.
- Schedule shift due to delay in resolution of wetlands appeal at Alewife Brook, Cambridge Contract 12.

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 goal of the project is 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.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$11,285	\$8,291	\$2,994	\$1,057	\$1,310	\$2,994	\$0	\$0

Project Status 11/08	82.5%	Status as % is approximation based on project budget and expenditures. Construction reached substantial completion in March 2007.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$11,239	\$11,285	\$46	Mar-07	Dec-10	46 mos.	\$2,948	\$2,994	\$46

Explanation of Changes

- n/a

CEB Impact

- No impacts identified at this time.

S. 358 Morrissey Boulevard Drain

Project Purpose and Benefits

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

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

Project History and Background

In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary’s Certificate, issued in June 2001, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating the planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel. The revised recommended plan included rerouting stormwater away from the North Dorchester Bay storage tunnel to Savin Hill Cove in storms greater than the 1 year design storm, in order to provide a 5-year level of stormwater control along the South Boston beaches. BWSC began design in June 2005 and commenced the first construction contract in December 2006. BWSC awarded a second and much larger construction contract in July 2007. Construction is scheduled to be complete by June 2009.

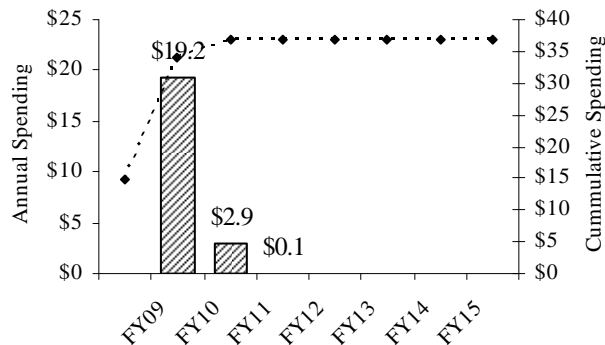
Scope

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$36,860	\$14,676	\$22,183	\$19,195	\$2,937	\$22,183	\$0	\$0

Morrissey Boulevard Drain



Project Status 11/08	64.8%	Status as % is approximation based on project budget and expenditures. Design began in June 2005 and construction began in December 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$36,863	\$36,860	(\$4)	Jun-09	Jun-09	None	\$22,187	\$22,183	(\$4)

Explanation of Changes

- n/a

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

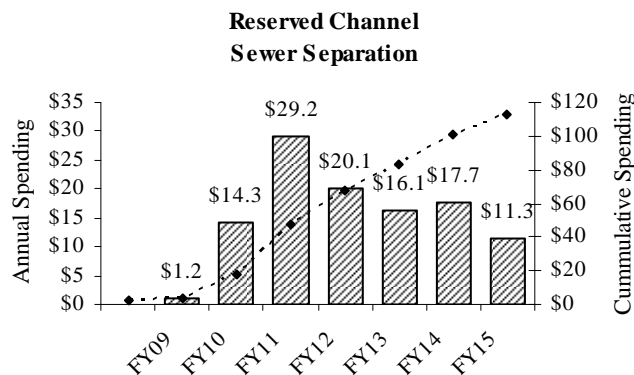
In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and the Reserved Channel. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report 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 in May 2009 and complete construction in December 2015.

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 tributary area to the SBI-NB. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$113,336	\$2,717	\$110,619	\$1,205	\$14,257	\$80,930	\$29,689	\$0



Project Status 11/08	3.2%	Status as % is approximation based on project budget and expenditures. BWSC began design in July 2006.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$113,835	\$113,336	(\$499)	Dec-15	Dec-15	None	\$71,443	\$80,930	\$9,487

Explanation of Changes

- Project cost decrease due to updated cost estimates from BWSC.
- Spending increase due to restructuring and phasing of construction contracts by 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.

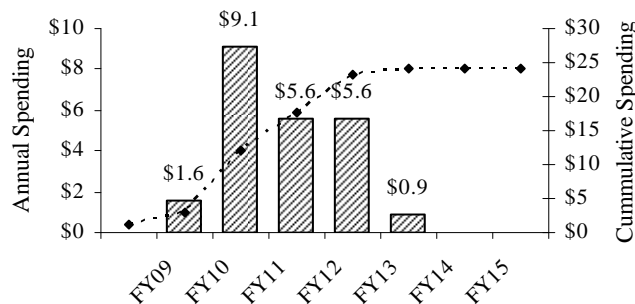
Scope

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$23,999	\$1,272	\$22,727	\$1,603	\$9,149	\$22,727	\$0	\$0

Brookline Sewer Separation



Project Status 11/08	7.5%	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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$23,483	\$23,999	\$516	Jun-12	Jul-13	13 mos.	\$22,211	\$22,727	\$516

Explanation of Changes

- Project cost, schedule shift and planned spending increase due to increased design cost related to the splitting of construction contracts and escalation of unawarded construction contract.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$9,626	\$497	\$9,129	\$2,470	\$4,810	\$9,129	\$0	\$0

Project Status 11/08	12.6%	Status as % is approximation based on project budget and expenditures. BWSC began design in August 2006 and construction began in September 2008.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$10,236	\$9,626	(\$610)	Dec-14	Jul-10	(54) mos.	\$9,739	\$9,129	(\$610)

Explanation of Changes

- Project cost and planned spending decrease due to lower construction bid and award.
- Schedule change due to revised construction duration.

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 FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$50,191	\$45,088	\$5,103	\$2,307	\$1,107	\$4,669	\$285	\$149

Project Status 11/08	91.1%	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.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$50,191	\$50,191	\$0	Jun-20	Dec-20	6 mos.	\$4,437	\$4,669	\$231

Explanation of Changes

- Spending shifted in FY09-13 due to revised schedule for easement expenses.

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 Phase 1 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, and an additional \$40 million for Phase 6 on June 28, 2006. The grant/loan ratio was revised for Phase 3, 4, 5 and 6 to 45% grants and 55% interest-free loans. As of June 2008, funds through Phase 3 have been fully utilized by member communities. 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 FY2015. Through November 2008, MWRA has distributed \$63 million in grants and \$106 million in no-interest loans to fund 360 separate projects in 43 communities under the I/I Local Financial Assistance Program.

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

Total Budget	Payments thru FY08	Remaining Balance	FY09	FY10	FY09-13	FY14-18	Beyond FY18
\$86,594	\$90,746	(\$4,152)	\$1,037	(\$1,109)	(\$3,638)	\$2,620	(\$3,135)

Project Distribution Status 11/08	79.0%	Through November 2008, MWRA has distributed \$65.7 million in grants and \$108.7 million in no-interest loans to fund 360 separate projects in 43 communities under the I/I Local Financial Assistance Program.
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Project Repayment Status 11/08	75.9%	Through November 2008 a total of \$82.3 million has been repaid by member communities receiving interest-free loans.
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Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY09-13 Spending		
FY09	PFY10	Chge.	FY09	PFY10	Chge.	FY09	PFY10	Chge.
\$86,594	\$86,594	\$0	Jun-20	Jun-20	None	(\$4,085)	(\$3,638)	\$447

Explanation of Changes

- Spending shift is a result of the timing of member community requests for financial assistance.

CEB Impact

None