

Massachusetts Water Resources Authority



Combined Sewer Overflow
Control Plan

Quarterly Progress Report
June 16, 2003

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This quarterly progress report has been prepared to comply with reporting requirements in the Federal District Court's Orders in the Boston Harbor Case. For the combined sewer overflow (CSO) projects referenced in the Court's Order and its schedule of milestones, Schedule Six, the report summarizes progress made during the period from March 15, 2003 to June 16, 2003, and identifies current project schedules relative to corresponding Court milestones, as well as issues that have affected or may affect compliance with Schedule Six. This report also identifies the status of certain planning and regulatory efforts that relate to continuing state and federal reviews of MWRA's CSO plan, toward full regulatory approval.

Detailed descriptions of the CSO projects and identification of corresponding Court milestones for design and construction are not presented in this report, but can be found in MWRA's *CSO Annual Progress Report 2002*, dated March 2003. The Annual Report can be accessed at MWRA's website, www.mwra.com.

No additional projects were completed in the second quarter of 2003. To date, MWRA has completed 14 of the 25 projects in its long-term CSO control plan, as shown in Table 1. Six projects are in construction (portions of two of these projects, East Boston Branch Sewer and Cambridge/Alewife Brook Sewer Separation, are also being reassessed by MWRA). The remaining five projects are in design or project reassessment and have not yet proceeded into construction.

The following are highlights of the CSO-related progress in the second quarter of 2003. More information is provided in later sections of this report.

- MWRA issued the Notice To Proceed with the construction contract for the Union Park Detention/Treatment Facility on March 31, in compliance with Schedule Six.
- MWRA issued Notice To Proceed with the first construction contract for the East Boston Branch Sewer Relief project on March 31, in compliance with Schedule Six.
- MWRA finalized the scope and schedule of engineering services to reassess the work necessary to complete the East Boston Branch Sewer Relief project. MWRA plans to commence the reassessment by the end of June, subject to the approval of its Board of Directors at its meeting on June 25.
- MWRA completed work to update project conditions and reassess engineering approaches, cost and benefit for the Fort Point Channel storage/consolidation conduit (outfalls BOS072 and BOS073) and the BOS019 storage conduit. MWRA plans to submit a Notice of Project Change for the Fort Point Channel project to the Massachusetts

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Environmental Protection Act (MEPA) Unit, EPA and DEP on June 16. The Notice of Project Change will recommend that CSO control goals at outfalls BOS072 and BOS073 be achieved with sewer separation and system optimization at significantly less cost and long-term impacts than the storage conduit that had been recommended in the 1997 Final CSO Facilities Plan and Environmental Impact Report ("1997 Final FP/EIR"). MWRA continues to recommend a storage conduit at BOS019, and this project has moved into preliminary design.

- MWRA began Phase II of the comprehensive reassessment of the South Boston CSO control plan (North Dorchester Bay and Reserved Channel projects), which involves a detailed evaluation of CSO control options recommended in Phase I.
- Boston and Water and Sewer Commission and the City of Cambridge continued to make design and construction progress on community-implemented sewer separation and floatables control projects, as described in the corresponding project sections below.
- MWRA and the City of Cambridge continued to perform work and interact with regulatory agencies and the public towards obtaining permits and licenses necessary to construct the revised sewer separation plan for Alewife Brook CSO control. MWRA and Cambridge submitted the Response to Comments document to the MEPA Unit on May 31, 2003. The document responds to the public comments that were received on MWRA's April 2001 Notice of Project Change.
- MWRA continued to comply with the conditions of regulatory variances for CSO discharges to the Charles River and Alewife Brook/Upper Mystic River and continued to coordinate related watershed planning activities with others. MWRA plans to submit the Final Variance Report for the Alewife Brook/Upper Mystic River by July 1, as required by a condition in the Variance. MWRA has informed EPA and DEP that it will be unable to submit the Cottage Farm Reevaluation Report required by a condition with the Charles River Variance by July 1, in part due to further delay in the Cottage Farm water quality sampling program also required by a Variance condition. MWRA now plans to submit that report by September 1.
- MWRA submitted additional information to EPA in seeking EPA approvals on MWRA's recommendations to delete certain work within the region-wide floatables control and outfall closing projects. Specifically, MWRA had recommended not to continue to install floatables control devices upstream of CSO outfalls MWR010, 018, 019, and 020 and not to close outfall MWR010, which were originally proposed in the 1997 Final FP/EIR. Instead, MWRA was able to reduce CSO discharges at these outfalls to levels that would not warrant further floatables control. DEP issued its approvals on the new recommendations in October 2002.

- BWSC continued construction work to complete system optimization plans (SOPs) to lower CSO discharges to the Dorchester Brook Conduit and Fort Point Channel (outfall BOS070). The SOPs include raising an overflow weir and installing a new tidegate. On-site preparation work is complete, but the contractor is waiting for delivery of the manufactured tide gate and stop logs.

2. Charles River and Alewife Brook/Upper Mystic River Variances

Charles River Variance

MWRA continued to coordinate with DEP, BWSC and Cambridge to satisfy conditions in the Charles River Variance and latest variance extension. Other related MWRA work has focused on water quality sampling at the Cottage Farm CSO facility, which began on April 1; preparation of the report evaluating the cost and benefit of additional storage at Cottage Farm (which MWRA has reported to DEP cannot be submitted by July 1 due to delays in the Cottage Farm sampling and in collecting certain other information, but will instead be submitted by September 1); and hydraulic modeling exercises to determine the efficacy of system optimization plans and real-time controls to reduce CSO discharges at Cottage Farm.

Alewife/Mystic Variance

MWRA completed the Final Variance Report in draft form in May. On June 11, the MWRA Board of Directors authorized submission of a final report to DEP and other appropriate regulatory agencies by July 1. MWRA has been coordinating efforts with DEP and the cities of Somerville and Cambridge to comply with other requirements in the Variance extension conditions, particularly regarding Public Notification requirements.

3. Project Implementation

3.1 MWRA-Managed Projects

North Dorchester Bay and Reserved Channel

MWRA commenced Phase II of the South Boston CSO Reassessment in March. Work has since progressed in the two areas of primary focus in Phase II: 1) defining facility and pipeline layout alternatives (within the three CSO technology options recommended in Phase I) for detailed evaluation and environmental review and 2) developing scenarios that provide for phasing in incrementally higher levels of CSO control, toward elimination of CSO discharges along the South Boston beaches. Phasing in higher levels of control provides the opportunity for assessing interim levels through monitoring programs that can verify hydraulic and water quality benefits.

MWRA staff met with the EPA Regional Administrator and EPA staff in June to brief them on the progress made since March. MWRA plans to brief DEP, Conservation Law Foundation and other interested parties later this month and to hold a public meeting soon.

East Boston Branch Sewer Relief (BOS003-014)

MWRA issued the Notice to Proceed with the first construction contract on March 31, 2003. This first contract primarily involves relining the main trunk sections of MWRA's East Boston Branch Sewer to improve hydraulic conditions and provide long-term structural integrity. The construction work is expected to take 10 months to complete.

Final design work associated with the remaining two construction contracts for this project was suspended last year pending a reevaluation of the costs and benefits of engineering options for completing the project. MWRA recently finalized the scope of services and schedule for the reassessment, which it expects to commence by June 30, 2003, subject to approval by its Board of Directors.

The reassessment work will include an updating of baseline hydraulic conditions and a reevaluation of the hydraulic relief plan recommended in the 1997 Final FP/EIR, as updated in MWRA's 2001 Preliminary Design Report, against other CSO control alternatives. The alternatives, which will be evaluated on cost, performance and impacts, primarily involve combinations of hydraulic relief and sewer separation work over a range of CSO control levels. Based on the results of the reassessment, MWRA may significantly revise its recommended plan to control CSO discharges at outfalls BOS003-014, which MWRA would have to address in a MEPA Notice of Project Change. The reassessment schedule calls for MWRA to complete the reassessment and file a Notice of Project Change, if appropriate, by December 31, 2003.

MWRA has continued to coordinate with BWSC on BWSC's plans for sewer separation in the East Boston neighborhood. MWRA determined last year that selective sewer separation, together with some hydraulic relief, had the potential to increase the level of CSO control and/or reduce cost. Over the last several months, BWSC has proposed sewer separation work in the Jeffries Point neighborhood and adjacent areas, which could provide hydraulic relief to the sewer system, reduce CSO discharges and potentially allow the closing of certain CSO outfalls. MWRA plans to incorporate any firm plans for sewer separation by BWSC into an updating of baseline hydraulic conditions early in the reassessment.

Fort Point Channel (BOS072-073) and BOS019 Storage Conduits

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In June, MWRA completed its early design reassessment of the these two projects and submitted a Technical Memorandum ("TM") to EPA and DEP on June 12 that presented the results of the reassessment investigations, an evaluation of CSO control alternatives and a revised recommended plan for CSO control for Fort Point Channel outfalls BOS072 and BOS073. The TM reported that ongoing and planned changes in land use will have a significant effect on the hydraulic performance of the wastewater system in the Fort Point Channel project area in the short term, placing into question the cost effectiveness of the original recommended plan.

What was modeled in the 1997 Final FP/EIR as a 144 acre combined sewer area tributary to CSO outfalls BOS072 and BOS073 is now estimated to be only 55 acres, with sewer separation work now underway or planned as part of the Convention Center and the other development projects. Consequently, the estimate of current annual CSO discharge volume at outfalls BOS072 and BOS073 has been reduced 58%, from 7.2 million gallons in the 1997 Final FP/EIR to 3.0 million gallons. BOS072 and BOS073 were estimated to activate 15 times each in a typical rainfall year under existing conditions, but are now estimated to activate seven times at BOS072 and nine times at BOS073. In 1997, these two outfalls contributed 5% of the total CSO volume to Fort Point Channel. They are now estimated to contribute only 2% of the total volume.

These major changes to the wastewater system's performance and the project's design assumptions opened up alternatives that were not feasible in 1997 and provided MWRA the opportunity to evaluate options to what would be a very expensive and difficult tunnel solution. The reassessment examined the two most feasible CSO strategies for this area: 1) storage, including a reevaluation of the tunnel plan and examination of storage tank options, and 2) sewer separation. The TM concluded that the CSO control goals of the 1997 Final FP/EIR could be met and possibly exceeded with a combination of sewer separation in the BOS073 tributary area and system optimization measures in the BOS072 combined sewer system at greatly reduced cost, construction risk and impacts.

On June 11, 2003, the MWRA Board of Directors approved staff's recommendation to submit to MEPA a Notice of Project Change (NPC) for the Fort Point Channel CSO Storage Conduit, recommending that the storage project in the 1997 Final FP/EIR be replaced with a plan for sewer separation and system optimization. MWRA plans to file the NPC by June 16, 2003, and would then expect to receive a MEPA decision on the NPC sometime in late July, following a public comment period. MWRA also plans to hold a public meeting on July 8 to discuss the revised recommended plan.

Compared to Fort Point Channel, relatively few changes were found in the area tributary to BOS019 since the 1997 Final FP/EIR. This outfall discharges to the Little Mystic Channel in Charlestown. In 1997, current CSO discharges at outfall BOS019 were estimated to be 12 overflows per

year with a total annual CSO volume of 3.5 million gallons. Results of recent flow metering and modeling indicate an increase to 13 overflows and total volume of 4.4 million gallons. Consequently, the storage volume necessary to reduce activations at BOS019 to the goal of two per year on average may need to be increased from 410,000 gallons recommended in the 1997 plan to 530,000 gallons, at a proportional increase in cost. However, the reassessment report confirms that CSO control at outfall BOS019 is best achieved with the 1997 storage conduit plan. MWRA plans to conduct engineering evaluations during preliminary design to optimize the configuration and volume of the storage conduit.

The reassessment was delayed due to anomalous results of a temporary metering program performed for this project in Fall 2002. The results indicated much larger flows during relatively small storm events than previously predicted. Eventually, MWRA staff TV-inspected the line and found that a section of the Charlestown Branch Sewer previously relocated by the Central Artery/Tunnel ("CA/T") project was partially collapsed and obstructed by a soldier pile installed by a CA/T contractor in 2001. Repair and cost recovery meetings with MWRA and CA/T are ongoing. It is expected that the obstruction will eventually be removed and full sewer service will be restored. MWRA has determined that this issue will not affect the design or schedule for the BOS019 storage conduit.

Union Park Detention/Treatment Facility

On March 31, 2003, MWRA issued the Notice to Proceed with the construction contract for the Union Park Detention/Treatment Facility. MWRA estimates the work will take 30 months to complete, after which MWRA plans to conduct start-up and optimization efforts to ensure that the facility is operating reliably and efficiently.

MWRA held its first construction phase public meeting on April 24, 2003. The Contractor has focused his efforts on preparation of preliminary shop drawings. Mobilization on site has commenced with site survey, preconstruction videos, placement of jersey barriers around the perimeter of the site, rodent control/traps and demobilization of the Boston Parks playground. The Contractor's baseline schedule indicates completion of the project by September 2005 in accordance with the Contract Documents.

Upgrades to MWRA CSO Facilities

MWRA has completed the start-up and optimization periods referenced in Footnote 35 of Schedule Six at the upgraded Fox Point and Somerville Marginal CSO facilities, but remains in the start-up and optimization period at the upgraded Commercial Point CSO facility. MWRA previously reported that it had completed the start-up and optimization periods at the upgraded Cottage Farm and Prison Point facilities.

3.2 Community-Managed Projects

South Dorchester Bay Sewer Separation

BWSC commenced construction in April 1999. To date, BWSC has completed construction of three contracts, totaling over 25,000 linear feet of new storm drains. The Commission has four ongoing construction contracts, which are now approximately 9%, 12%, 80% and 98% complete, representing an additional 64,300 linear feet of new storm drain. BWSC's last storm drain installation contract is well into final design and is scheduled to be advertised at the end of this year. In January 2003, BWSC awarded the contract for removal of sediments and other work in the Fox Point and Commercial Point outfalls, which will serve as storm drain outfalls when sewer separation is complete. This contract is 25% complete. Final street paving is being laid under separate contracts. The first paving contract is complete. A second paving contract was awarded in February 2003 and is approximately 10% complete. Overall, this project is approximately 41% complete, consistent with the required level of progress referenced in Schedule Six.

Stony Brook Sewer Separation

BWSC has completed one construction contract totaling 1,288 linear feet of storm drain. A second contract totaling 27,230 linear feet is approximately 78% complete. An additional construction contract was awarded in December 2002. Together these three contracts represent 75% of the proposed work to implement this project. In addition, BWSC has awarded the final paving and downspout disconnect contracts. The Stony Brook Sewer Separation project is approximately 37% complete, nearly on target with the required level of progress referenced in Schedule Six (15% of construction per year beginning in July 2000). Actual progress is expected to meet or exceed the progress required in Schedule Six by the end of this year.

Cambridge/Alewife Brook Sewer Separation (CAM002 and CAM004)

MWRA and the City of Cambridge completed the Response to Comments document ("RTC") to address issues and questions raised in public and regulatory comments on the Notice of Project Change filed on April 30, 2001. The Authority and the City of Cambridge submitted the RTC to MEPA on May 30, 2003. MEPA noticed the document in the Environmental Monitor on June 10, 2003, commencing a public comment period.

Efforts also continued on the preparation of the Final Variance Report for the Alewife Brook/Upper Mystic River. The report will present the results of the reassessment of the recommended Alewife Brook/Mystic River CSO control plan (as presented in the RTC) compared with other alternatives that provide higher levels of CSO control. This report is

expected to be submitted to DEP on July 1, 2003, as required by the Variance.

In addition, on April 22, 2003, Authority staff participated in a public presentation on flooding issues, with the *tri-community working group*, which includes members from the City of Cambridge and the towns of Arlington and Belmont, to discuss relationships between sewer overflows and flooding along Alewife Brook.

Cambridge had completed construction of sewer separation contract 2B in July 2002. That construction significantly reduced annual CSO discharge activations and volumes to Alewife Brook. Remaining construction contracts have been postponed pending completion of the MEPA process and receipt of necessary regulatory permits and approvals.

3.3 Region-wide Floatables Control and Outfall Closing Projects

BWSC Floatables Control

BWSC completed the floatables control work at all ten locations by March 2002.

Cambridge Floatables Control

Floatables control is planned at five Cambridge outfalls, one Somerville outfall and one MWRA outfall along Alewife Brook, all part of the Cambridge/Alewife Brook sewer separation project. These controls are included in the various regulatory filings that have recently been made or will soon be made relative to the sewer separation project and the Alewife Brook/Upper Mystic River Variance, including the Response to Comments document and the Final Variance Report. However, the contract for installation of floatables control at CAM401A, one of the Alewife Brook outfalls, was incorporated into a drainage improvement contract by the City to expedite the installation. Construction commenced in October.

Floatables controls are also proposed at four Cambridge outfalls along the Charles River. Cambridge expects to begin construction in 2003 and complete construction by 2005.

Floatables Control at MWR018, 019 and 020 and MWR010 Outfall Closing

On May 20, MWRA submitted information to EPA and DEP evaluating CSO discharge activations at outfalls MWR018, MWR019 and MWR020, which can relieve MWRA's Boston Marginal Conduit ("BMC") by releasing overflows to the Lower Charles River Basin. MWRA reviewed data from a depth sensor installed in the upstream end of the BMC in 2001 as an indicator of overflows at the outfalls and determined that storms in the period

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January through September 2002 did not cause a single activation at any of the outfalls. Given the size of some of the storms in the period, MWRA believes that the data suggests that the outfalls do not activate in a typical rainfall year, as MWRA had predicted in earlier reports that were submitted to EPA and DEP to support MWRA's recommendation not to continue to install floatables controls in the upstream combined sewer system. DEP issued its approval of this recommendation on October 29, 2002, along with its approval of MWRA's recommendation not to close outfall MWR010. MWRA awaits EPA's decisions on these recommendations.

In the meantime, MWRA has commenced an inspection of the Boston Marginal Conduit to evaluate the extent of any sedimentation since the conduit was cleaned in early 2002 and an inspection of the City of Brookline's connection to MWRA's Charles River Valley Sewer near outfall MWR010 since it was cleaned and brought back to service, also early last year. MWRA has also begun a series of modeling exercises to evaluate the hydraulic benefits of system optimization measures in the Ward Street Headworks and Cottage Farm subsystem, in an attempt to lower Cottage Farm CSO facility activations and minimize overflows at MWR010. MWRA plans to include the results of the Cottage Farm system modeling in a report evaluating the cost and benefits of providing additional storage at Cottage Farm, required by the Charles River CSO Variance.

Table 1. CSO Project Progress

Contract	<u>CSO Projects</u>	Current Status		
		IN DESIGN	IN CONSTRUCTION	COMPLETE
North Dorchester Bay and Reserved Channel	North Dorchester Bay Conduit	*		
	Reserved Channel Conduit	*		
	Reserved Channel CSO Facility	*		
Hydraulic Relief Projects	CAM005 Relief			✓
	BOS017 Relief			✓
East Boston Branch Sewer Relief		✓	✓	
Fort Pt. Channel and BOS019 Storage	Fort Point Channel Storage	✓		
	BOS019 Storage Conduit	✓		
Chelsea Relief Sewers	Chelsea Trunk Sewer Relief			✓
	Chelsea Branch Sewer Relief			✓
	CHE008 Outfall Repairs			✓
Union Park Detention/Treatment Facility			✓	
CSO Facility Upgrades and MWRA Floatables	Cottage Farm Upgrade			✓
	Prison Point Upgrade			✓
	Commercial Point Upgrade			✓
	Fox Point Upgrade			✓
	Somerville-Marginal Upgrade			✓
	MWRA Floatables and Outfall Closings			✓
South Dorchester Bay Sewer Separation		✓	✓	
Stony Brook Sewer Separation		✓	✓	
Neponset River Sewer Separation				✓

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Constitution Beach Sewer Separation			✓
Somerville Baffle Manhole Separation			✓
Cambridge Sewer Separation	✓	✓	
Region-wide Floatables Control and Outfall Closings	✓	✓	