

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023**

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)**

NPDES PERMIT NUMBER: MA0101974

NAME AND MAILING ADDRESS OF APPLICANT:

**City of Cambridge
Department of Public Works
147 Hampshire Street
Cambridge, Massachusetts 02139**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

11 Combined Sewer Overflows (See Figure 1 and permit Attachments A and B)

RECEIVING WATER(S): Charles River and Alewife Brook

USGS Hydrologic Code #01090001, Charles River Watershed and Mystic River Watershed

**RECEIVING WATER CLASSIFICATION(S): Class B - Warm water fishery,
CSO Variance**

I. Proposed Action, Type of Facility, and Discharge Locations

The above named applicant has applied to the U.S. Environmental Protection Agency ("EPA") for the reissuance of its NPDES permit to discharge from 11 combined sewer overflows (CSOs) into the designated receiving waters. The current CSO discharge locations are shown on **Figure 1**. A list of the CSOs may be found in **Attachments A and B** of the draft permit.

The City's current permit was issued on March 26, 1993. The permit was reissued on September 23, 2005 but was appealed, and subsequently withdrawn by EPA on January 30, 2006. As a result, the City of Cambridge remains subject to the 1993 permit until the permit is reissued.

II. Description of Discharges

The City of Cambridge owns and operates a combined sewer system that serves a portion of the City. The wastewater collected in this system is transported to the Massachusetts Water Resources Authority's Deer Island Wastewater Treatment Plant. The City owns and operates 11 combined sewer overflows that discharge from the combined sewer system under certain wet weather conditions.

A combined sewer system is a wastewater collection system owned by a State or municipality (as defined by Section 502(4) of the CWA) which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and storm water through a single-pipe system to a publicly owned treatment works (POTW) treatment plant (as defined in 40 CFR 403.3(p)).

A combined sewer overflow (CSO) is the discharge from a combined sewer system at a point prior to the POTW treatment plant. CSOs are point sources subject to NPDES permit requirements including both technology-based and water quality-based requirements of the CWA. CSOs occur during wet weather¹ when the flow in the combined sewer system exceeds the system's capacity. CSOs are distinguished from bypasses which are "intentional diversions of waste streams from any portion of a treatment facility" (40 CFR §122.41(m)).

The City began separating its combined collection system (building separate sanitary sewage and storm water systems) in the early 1970s. Work to further abate CSOs has continued according to a schedule in a federal court order (Federal court order (U.S. v. M.D.C., et al., No. 85-0489 (D. Mass)), and includes further sewer separation, hydraulic relief projects, and floatables control structures. The frequency and volume of CSO discharges have been reduced as CSO abatement projects have been completed. However, as will be discussed further in Section IV, the required projects are not expected to eliminate CSO discharges entirely.

¹ Flows in combined sewers can be classified into two categories: dry weather flow and wet weather flow. Dry weather flow is the flow that results from domestic sewage, groundwater infiltration, commercial and industrial wastewaters, and any other non-precipitation related flows (e.g. tidal infiltration). Wet weather flow includes all of the dry weather flow components plus storm water flow, including snow melt runoff (see 40 CFR 122.26(b)(13)). The draft permit prohibits dry weather discharges from the City's CSOs.

Modeled estimates of the number of CSO activations and volumes currently discharged in a typical year and in those actually discharged in 2008 based on actual rainfall data are shown on fact sheet **Attachments A and B**. The actual monitoring reports submitted by the City for these outfalls, which include a daily summary of precipitation and estimated or measured flows at each CSO may be found in the permit file. The CSO discharges owned and operated by the City of Cambridge are currently untreated except for floatable controls (baffles) in CAM005, CAM007 and CAM 017, which discharge to the Charles River. Outfall CAM002 is comprised of one regulator structure which is associated with two (2) separate outfalls, which were previously designated as Outfalls CAM002A and CAM002B. Outfalls CAM009 and CAM011 have been temporarily sealed and the City of Cambridge is evaluating any upstream effects related this action. After this period, it will be determined whether these outfalls may remain sealed or whether they should be reopened.

There are other CSOs and CSO treatment facilities located in Cambridge that are included in other NPDES permits. The Massachusetts Water Resources Authority (MWRA) is authorized to discharge combined sewage from outfall MWR003, (previously CAM003) which discharges to the Little River, and also from the Cottage Farm and Prison Point CSO treatment facilities (MWR 201 and 203 respectively) which discharge to the Charles River. The City of Somerville is authorized to discharge combined sewage from Outfall SOM001A, which is located in Cambridge.

III. Receiving Water Description

Lower Charles River and Alewife Brook

The Massachusetts Surface Water Quality Standards, found at 314CMR4.00, designate the segment of the Charles River that runs from the Watertown Dam to the Science Museum in Boston (Segment MA72-08), and Alewife Brook (Segment MA71-04), as Class B waters, with variances for CSO discharges (A more detailed discussion of the CSO variances may be found in Section IV.) All of the Cambridge CSOs authorized by this permit discharge to one of these receiving waters.

Class B waters are designated as a habitat for fish, other aquatic life, and wildlife and for primary and secondary contact recreation. These waters are to be suitable for public water supply following appropriate treatment, irrigation and other agricultural uses, and compatible industrial cooling and process uses. The waters shall have consistently good aesthetic value. These segments do not always meet the state water quality standards prescribed for Class B waters, especially after wet weather.

This affected segment of the Charles River is on the MassDEP's 2006 303(d) list of impaired waters for unknown toxicity, priority organics, metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, oil and grease, taste, odor and color, noxious aquatic plants and turbidity.

Alewife Brook is on the MassDEP's 2006 303(d) list of impaired waters for metals, nutrients, organic enrichment/low dissolved oxygen, pathogens, oil and grease, taste, odor and color, and objectionable deposits.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Regulatory Background

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136. In this permit EPA considered (a) technology-based requirements, (b) water quality-based requirements, and (c) all limitations and requirements in the current/existing permit, when developing the permit limits.

CSOs are point source discharges subject to NPDES permit requirements, including technology-based and water quality-based requirements of the Clean Water Act. Pursuant to a federal court decision, (*Montgomery Environmental Coalition vs. Costle* (646F.2d 568 (D.C. Cir 1980)) CSOs are not subject to secondary treatment standards found in Section 301(b)(1)(B) of the CWA. Rather, CSO are subject to technology-based requirements applicable to discharges other than publicly owned treatment works, found in Sections 301(b)(1)(B), 301(b)(2)(A) and 301(b)(2)(D). Pursuant to Section 301(b)(1)(C) of the Clean Water Act, CSOs are also subject to effluent limitations based on water quality standards.

On April 19, 1994 EPA published the National CSO Control Policy (59 FR 18688). The purpose of the National CSO Control Policy (the CSO Policy) was to establish a consistent national approach for controlling discharges from CSOs to the Nation's waters. The CSO Policy reiterates the goals of the 1989 National Combined Sewer Overflow (CSO) Control Strategy, which were:

- To ensure that if the CSO discharges occur, they are only as a result of wet weather;
- To bring all wet weather CSO discharge points into compliance with the technology based requirements of the CWA and applicable federal and state water quality standards; and
- To minimize water quality, aquatic biota, and human health impacts from wet weather flows.

To achieve these goals, the Policy recommended technology-based limits developed using best professional judgment² (BPJ) and also recommended that each combined sewer system develop

² Section 402(a)(1)(B) of the CWA provides the authority to establish case-by case technology-based limitations. 40 CFR 125.3 establishes requirements and factors to be considered in establishing case-by case technology-based limits using best professional judgment (BPJ). See specifically 125.3 (c)(2) and 125.3(d).

and implement a long-term CSO control plan (LTCP) that will ultimately result in compliance with the requirements of the Clean Water Act.

In 2001, Congress added Section 402(q) to the CWA to specifically address CSOs by stating that “Each permit, order, or decree issued pursuant to this Act after the date of enactment of this subsection for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994.”

The CSO conditions in the draft permit are consistent with the National CSO Control Policy.

Technology-based requirements

As discussed above, EPA’s CSO Policy recommended technology-based effluent limitations for CSOs using best professional judgment. The policy establishes the minimum technology-based requirements as implementation of nine minimum controls (NMCs). The NMCs are:

1. Proper operation and regular maintenance programs for the sewer system and the CSOs;
2. Maximize use of the collection system for storage;
3. Review and modification of pretreatment requirements to assure CSO impacts are minimized;
4. Maximization of the flow to the POTW for treatment;
5. Prohibition of CSOs during dry weather;
6. Control of solid and floatable material in CSOs;
7. Pollution prevention;
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

The CSO Policy required CSO communities to submit documentation of their implementation of the nine minimum controls by January 1, 1997. The City of Cambridge submitted its documentation on January 30, 1997. The draft permit requires continued implementation of the nine minimum control program, but also requires that the City review and update its program no later than April 15th of the first year of the permit. The permit also authorizes modifications to the nine minimum controls program during the term of the permit to enhance its effectiveness, but it requires that certain minimum controls be maintained in any modification to the NMCs (see the minimum implementation levels Part I.C. of the draft permit).

Water Quality Based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards (WQS). See Section 301(b)(1)(C) of the CWA.

Receiving water requirements are established according to numerical and narrative standards adopted under state law for each water quality classification. When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR § 122.44(d)(1) and are implemented under 40 CFR § 122.45(d).

Narrative criteria from the state's water quality standards are often used to limit toxicity in discharges where (a) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (b) toxicity cannot be traced to a specific pollutant.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal WQS. The permit must address any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. See 40 CFR Section 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers (a) existing controls on point and non-point sources of pollution; (b) pollutant concentration and variability in the effluent and receiving water as determined from the permit application, Monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (c) sensitivity of the species to toxicity testing; (d) known water quality impacts of processes on wastewater; and, where appropriate, (e) dilution of the effluent in the receiving water.

WQS consist of three parts: (a) beneficial designated uses for a water body or a segment of a water body; (b) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (c) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards (MA SWQS), found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site-specific criterion is established. The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain WQS.

The WQS may also assign restrictions to receiving waters, which establish a subcategory of use assigned to a receiving water segment. One of the subcategories which may be established is for CSO-impacted segments. The permitting authority may allow overflow events to waters identified as impacted by CSOs provided that:

The permitting authority may allow overflows to waters identified as impacted by CSOs provided that;

- (1) an approved Final CSO Facilities Plan under 310 CMR 41.00 provides justification for the overflows (note – in this case the CSO Facilities Plan as defined by MassDEP and an LTCP, as defined by EPA, are the same document) ;
- (2) the MassDEP finds through a use attainability analysis (UAA), and EPA concurs, that achieving a greater level of CSO control is not feasible for one of the reasons specified at 314 CMR 4.03(4);
- (3) existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected; and
- (4) public notice is provided through procedures for permit reissuance or facility planning under M.G.L.c.21 §§ 26 through 53 and regulations promulgated pursuant to M.G.L.c. 30A.

Conversely, if a Final CSO Facilities Plan shows that elimination of CSO discharges is feasible, through relocation or sewer separation, no CSO discharges are authorized into that receiving water and the CSO- impacted subcategory is removed.

The state may also, with EPA concurrence, establish a water quality standards variance. A variance is a short-term modification of the standards, designed to obtain the information necessary to determine the appropriate water quality standard and level of CSO control for the segment. Variances are discharger and pollutant specific, are time-limited, and do not forego the currently designed use. At the end of the variance, a final Administrative Determination is made regarding the appropriate level of CSO control and final water quality determinations, in accordance with National and State CSO Policy.

Antibacksliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA [see Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA.

Antidegradation

Federal regulations found at 40 CFR Section 131.12 require states to develop and adopt a statewide antidegradation policy which maintains and protects existing instream water uses and the level of water quality necessary to protect the existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and

to support recreation in and on the water. The Massachusetts Antidegradation Regulations are found at Title 314 CMR 4.04. There are no new or increased discharges being proposed with this reissuance.

MWRA CSO Facilities Plan/Water Quality Standards

The CSO Policy recommended that each combined sewer system prepare and implement an LTCP that would result in attainment of CWA requirements. In 1987, MWRA stipulated to responsibility and legal liability for all combined sewer overflows hydraulically connected to its collection system³, which in addition to discharges owned and operated by MWRA includes CSOs owned and operated by the communities of Boston, Cambridge, Chelsea, and Somerville. The CSO planning conducted by MWRA subsequent to 1987 addressed all of these CSOs, in accordance with the stipulation, and MWRA has funded the planning, design, and construction of the recommended CSO control facilities.

In 1994, MWRA completed a Conceptual CSO Control Plan that formed the basis of its final Combined Sewer Overflow Plan and Environmental Impact Report (“Facilities Plan”), completed in July 1997. The recommended CSO control projects for Cambridge CSOs included sewer separation, hydraulic relief and floatables control projects. The following table shows the estimated activation frequency and volume for each of the Cambridge CSOs under baseline (1992) conditions and after completion of the projects recommended by the Facilities Plan:

Outfall	Typical Year			
	Baseline (1992)		Recommended Plan	
	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)
Alewife Brook				
CAM001	5	0.15	3	0.64
CAM002	11	2.73	NA	Plugged
CAM003 *	6	0.67	3	0.62
CAM004	20	8.19	3	0.42
CAM400	13	0.93	3	0.19
CAM401	18	2.12	4	1.16
Total		14.79		2.39
Charles River				
CAM005	6	41.56	2	0.78
CAM007	1	0.81	1	0.03
CAM009	19	0.19	1	0.08
CAM011	1	0.07	0	0
CAM017	6	4.72	2	1.23
		47.35		2.12

* – relocated as part of Alewife MBTA construction and now included in MWRA’s NPDES permit as MWRA CSO outfall 003

³ Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows

For those CSOs that MWRA believed could not be eliminated, the plan included information to support a UAA pursuant to 40 CFR Section 131.10 (g). A UAA is an evaluation conducted by the state which supports removal of a National Goal Use based on criteria such as costs and impacts associated with attaining that use. The state submitted its final administrative determinations, including a UAA, to EPA for approval on December 31, 1997. On February 27, 1998, EPA approved the state's changes to water quality standards, which included removal of CSO-impacted designations for the Neponset River, North Dorchester Bay, South Dorchester Bay, and Constitution Beach; a SB-CSO designation for Boston Inner Harbor; a B-CSO designation for the Muddy River; and a tentative determination for the issuance of WQS variances for the Lower Charles River, the Alewife Brook, and the Upper Mystic River due to CSO discharges. Variance conditions for CSOs discharging to the Lower Charles River were issued on September 2, 1998 and variance conditions for CSOs discharging to the Alewife/Upper Mystic sub-basin were issued on March 5, 1999.

In accordance with the requirements of the variances, MWRA collected information that led to several changes in the recommended CSO plan and the associated level of CSO control for Cambridge CSOs. These changes are discussed in detail in the attached Variance fact sheets (fact sheet **Attachments C and D**). The major change was in the Alewife/Mystic basin, and resulted from a variance-required reassessment that is documented in the April 30, 2001 MWRA report titled "Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook". The project change resulted from extensive field investigations in 1997 through 1999 by the City of Cambridge that revealed that in certain areas the combined sewer systems in Cambridge were very different than the record plans used to develop the 1997 plan, including the discovery of a previously unknown CSO discharge (CAM401B). When the sewer system model was updated to reflect the new system information it estimated baseline CSO discharges much higher than those in the 1997 CSO Plan previously estimated. The field work done by Cambridge also indicated that previous work had underestimated the hydraulic capacity required in the Cambridge storm drain system to provide an appropriate level of storm drainage service. This discovery significantly raised the estimated cost of combined sewer separation. As a result of the project change, the costs for CSO controls and associated construction for CSO controls on discharges to the Alewife Brook (including both Cambridge and Somerville CSOs) rose from \$12.1 million to \$ 74 million. The revised control plan, and the estimated performance is documented in the MWRA report "Final Variance Report for Alewife Brook and the Upper Mystic River", July, 2003 and in a supplemental letter report by Metcalf & Eddy, Inc., dated July 8, 2003.

The most current estimates of CSO discharge frequency and volume expected after full implementation of the CSO abatement projects required by the court order are documented in Exhibit B of the "Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflow Control" and are presented below:

Outfall	Typical Year	
	Activation Frequency	Volume (MG)
Alewife Brook		
CAM001	5	0.19
CAM002	4	0.69
CAM004	To be closed	0
CAM400	To be closed	0
CAM401A	5	1.61
CAM401B	7	2.15
Total		4.64
Charles River		
CAM005	3	0.84
CAM007	1	0.03
CAM009	2	0.01
CAM011	0	0.00
CAM017	1	0.45
Total		0.88

Variance conditions for the Lower Charles River have been in effect continuously since first issued on September 2, 1998. The variance was most recently extended by letter of August 30, 2007, was approved by EPA on July 29, 2008, and is effective through October 1, 2010. EPA expects that the MassDEP will renew this variance in 2010.

Variance conditions for the Alewife/Upper Mystic sub-basin have been in effect continuously since first issued on March 5, 1999. This variance was most recently extended by letter of August 30, 2007, was approved by EPA on July 29, 2008, and is effective through September 1, 2010. EPA expects that the MassDEP will renew this variance in 2010.

A copy of the variance conditions for the Lower Charles River Basin may be found as permit **Attachment C** and the variance conditions for Alewife/Upper Mystic sub-basin permit may be found in permit **Attachment D**. The Fact Sheets accompanying these variances are included in this fact sheet as **Attachments C and D**.

Water Quality-Based Effluent Limitations

Charles River discharges

The discharge from the Cambridge CSOs into the Charles River have been limited in accordance with the conditions of the current water quality variance. As required by the variance, the typical year activation frequency and volume for each discharge shall be in accordance with the performance of the CSO Long term Control Plan, as defined in Exhibit B of the Second CSO Stipulation incorporated into the Federal Court Order on April 27, 2006. These limits can be seen in **Attachment A** of the draft permit.

The variance includes other conditions, all of which have been incorporated into the permit. Variance conditions B.i. (implementation of the nine minimum controls) and C.i. (public notification) have been specifically incorporated into the draft permit. The other requirements of the variance not specifically incorporated into the permit are incorporated by reference, and are equally enforceable conditions of the permit.

The current variance extends to October 1, 2010. At the end of the variance term, it may be extended, or MassDEP may make a final determination regarding water quality standards. If MassDEP should modify the variance or make a final determination regarding water quality standards during the term of this permit, this would be considered new information pursuant to 40 CFR part 122.62(a)(2) and would be cause for modification of the permit.

Alewife Brook discharges

The discharges from the Cambridge CSOs into Alewife Brook have been limited in accordance with the conditions of the current water quality variance. As required by the variance, the typical year activation frequency and volume for each discharge shall be in accordance with the performance of the Revised Recommended Plan as characterized in the July, 1, 2003 MWRA Final variance Report (these are the same activation frequency and discharge volume estimates that are presented in Exhibit B of the Second CSO Stipulation incorporated into the Federal Court Order on April 27, 2006.) These limits can be seen in **Attachment B** of the draft permit.

The variance includes other conditions, all of which have been incorporated into the permit. Variance conditions B.i. (implementation of the nine minimum controls) and C.i. (public notification) have been incorporated into the draft permit (see Section I.C of the draft permit) because they require specific practices to meet technology-based nine minimum control requirements, and implementation of the nine minimum controls is a standards requirement of all NPDES permits for CSOs. The other requirements of the variance not specifically incorporated into the permit are incorporated by reference, and are equally enforceable conditions of the permit.

The current variance extends to September 1, 2010. At the end of the variance term, it may be extended, or MassDEP may make a final determination regarding water quality standards. If MassDEP should modify the variance or make a final determination regarding water quality standards during the term of this permit, this would be considered new information pursuant to 40 CFR part 122.62(a)(2) and would be cause for modification of the permit.

VI. State Certification Requirements

EPA may not issue a permit unless the MassDEP certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the MassDEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

VII. Public Comment Period, Public Hearing, and Procedures for Final Decision

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Massachusetts Office of Ecosystem Protection (CMP), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested party with standing may contest the final decision. Appeals must satisfy the requirements of 40 CFR 124.19.

VIII. EPA and MassDEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

George Papadopoulos, Industrial Permits Branch
One Congress Street - Suite 1100 - Mailcode CIP
Boston, MA 02114-2023
Telephone: (617) 918-1579 FAX: (617) 918-1505

Paul Hogan, Massachusetts Department of Environmental Protection
Division of Watershed Management, Surface Water Discharge Permit Program
627 Main Street, 2nd Floor, Worcester, Massachusetts 01608
Telephone: (508) 767-2796 FAX: (508) 791-4131

July 20, 2009

Date

Ken Moraff, Acting Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachment A

Summary of 2008 and Typical Year Model Simulation Results

Discharges to Charles River : Class B – Variance

Outfall	2008 Rainfall Under 2008 System Conditions¹			Typical Year Rainfall Under 2008 System Conditions²	
	Activation Frequency⁴	Duration (hours)	Volume (MG)⁵	Activation Frequency	Volume (MG)
CAM005	7	10.38	3.55	4	1.73
CAM007	4	7.13	3.80	3	0.91
CAM009	Closed ³	NA	NA	Closed	NA
CAM011	Closed ³	NA	NA	Closed	NA
CAM017	1	0.75	1.75	1	0.51

1. These values are modeled estimates made by the MWRA and are based on actual 2008 rainfall data from CSO treatment facilities. From April 30, 2009 letter of M. Hornbrook (MWRA) to T. Borci (EPA) and K. Brander (MassDEP).
2. These values are based on MWRA modeled estimates and historical storm data with the current CSO configuration.
3. These outfalls are temporarily sealed.

Attachment B

Summary of 2008 and Typical Year Model Simulation Results

Discharges to Alewife Brook : Class B - Variance

Outfall	2008 Rainfall Under 2008 System Conditions¹			Typical Year Rainfall Under 2008 System Conditions²	
	Activation Frequency⁴	Duration (hours)	Volume (MG)⁵	Activation Frequency	Volume (MG)
CAM001	4	4.62	0.11	1	0.01
CAM002	12	33.68	5.04	9	2.39
CAM004	20	66.35	25.08	10	11.66
CAM400	16	43.44	2.81	9	1.22
CAM401A	11	16.20	5.98	6	2.21
CAM401B	23	134.23	18.04	22	10.83

1. These values are modeled estimates made by the MWRA and are based on actual 2008 rainfall data from CSO treatment facilities. From April 30, 2009 letter of M. Hornbrook (MWRA) to T. Borci (EPA) and K. Brander (MassDEP).
2. These values are based on MWRA modeled estimates and historical storm data with the current CSO configuration.

**FACT SHEET
ATTACHMENT C**

**EXTENSION TO VARIANCE FOR
COMBINED SEWER OVERFLOW DISCHARGES
LOWER CHARLES RIVER BASIN
FACT SHEET**

This document is intended to provide a summary of CSO abatement activities in the Lower Charles River Basin and a frame of reference and justification for the decision of the Massachusetts Department of Environmental Protection (“DEP”) to extend the CSO Variance for a period not to exceed three years.

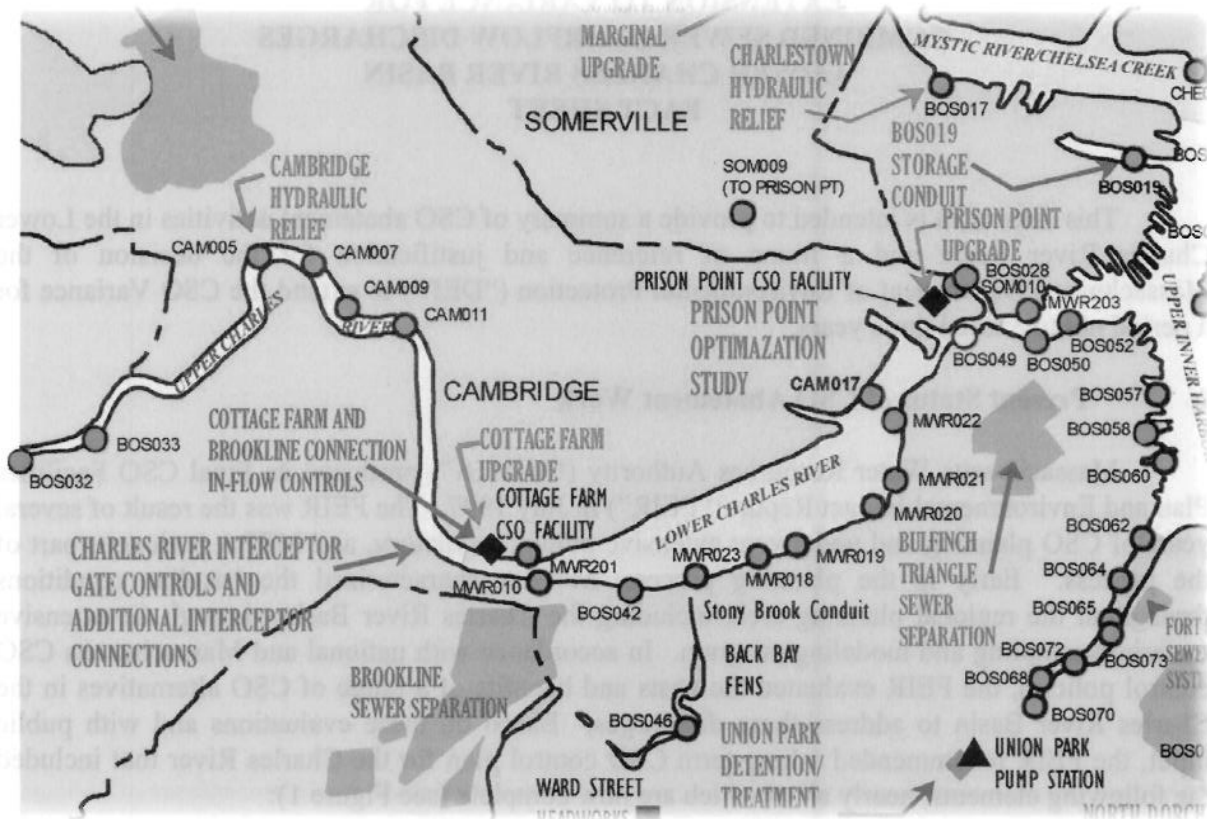
I. Present Status of CSO Abatement Work

Massachusetts Water Resources Authority (“MWRA”) produced its Final CSO Facilities Plan and Environmental Impact Report (“FEIR”) in July 1997. The FEIR was the result of several years of CSO planning and underwent extensive public, regulatory, and MEPA review as part of the process. Early in the planning process, MWRA characterized the baseline conditions throughout the regional planning area, including the Charles River Basin, through an extensive metering, sampling and modeling program. In accordance with national and Massachusetts CSO control policies, the FEIR evaluated the costs and benefits of a range of CSO alternatives in the Charles River Basin to address these discharges. Based on these evaluations and with public input, the FEIR recommended a long-term CSO control plan for the Charles River that included the following elements, nearly all of which are now complete (see Figure 1):

- A \$45 million sewer separation program in the Stony Brook subwatershed, which Boston Water and Sewer Commission completed in September, 2006, with MWRA funding.
- A \$4.5 million upgrade to the existing Cottage Farm CSO Treatment Facility, which MWRA completed in 2002.
- A \$1 million project to improve hydraulic capacity in the Cambridge and MWRA collection systems at outfall CAM005, which MWRA completed in 2000.
- Region wide floatables controls at remaining CSO outfalls, implemented by the respective permittees (MWRA, BWSC and Cambridge) with MWRA funding, which will be fully implemented by December 2007.

Prior to issuing the FEIR, MWRA had already greatly reduced CSO discharges system wide, and especially in the Charles River Basin, by implementing major improvements that significantly increased conveyance, pumping and treatment capacity at and upstream of the Deer Island Wastewater Treatment Plant. Key beneficiaries of these conveyance improvements were the Cottage Farm CSO treatment facility and other wet weather relief points on the Charles River. These major early improvements, together with the FEIR recommended projects that are already completed, have contributed to the closing of seven outfalls (see Figure 1) and have reduced average annual CSO volume to the Charles River by 96% from the level in 1988 (see Figure 2).

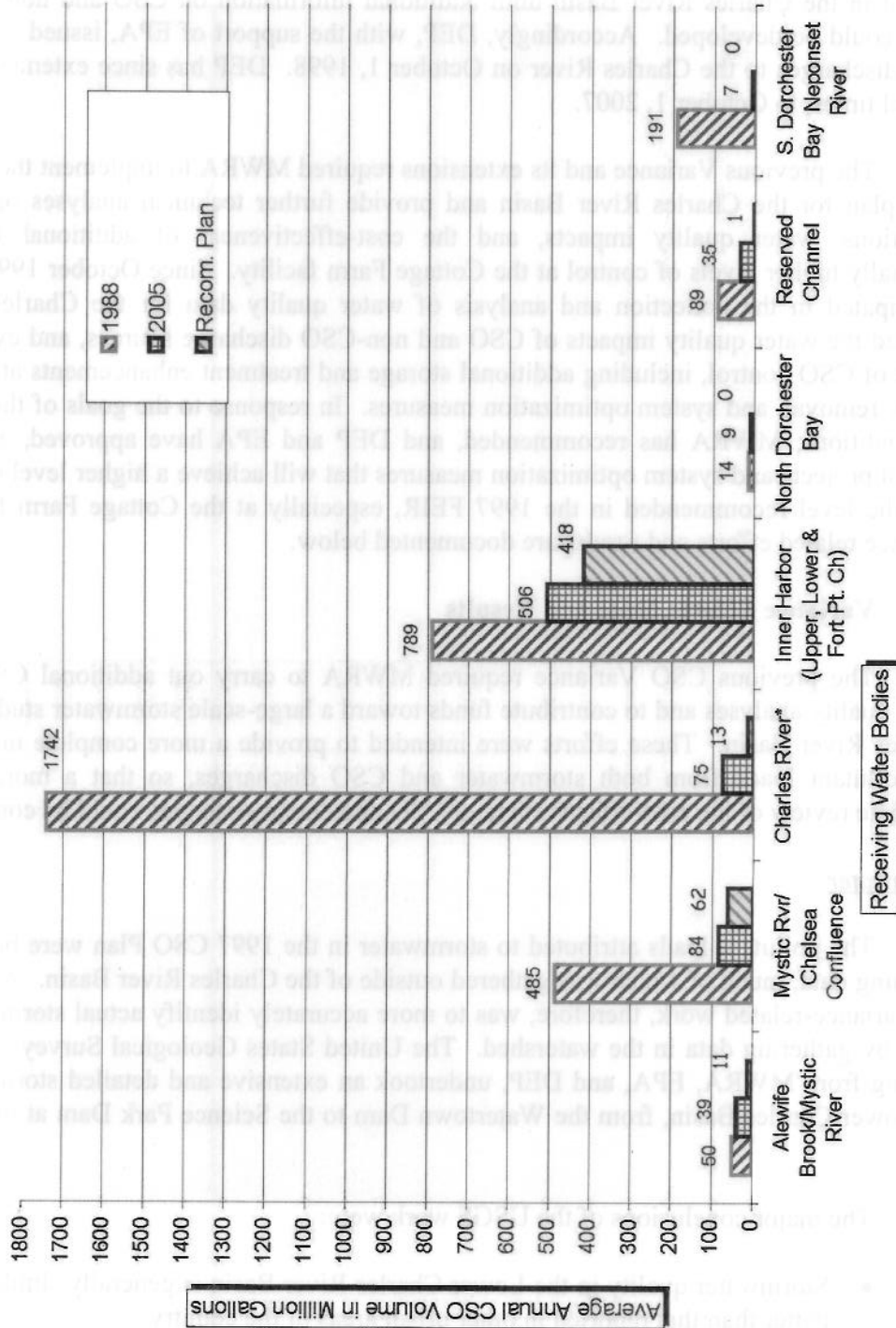
Figure 1: Charles River Basin CSO Locations and Projects



LEGEND

- CSO Outfall Closed as of 3/06
- CSO Outfall To be Closed
- ◐ CSO Outfall To Remain
- ▲ Existing Pump Station
- ◆ Existing CSO Treatment Facility
- Existing Headworks
- - - Existing Conduit/Pipeline/Connection
- Proposed CSO Facility
- Proposed Conduit/Pipeline/Connection
- Proposed Sewer Separation Area

Figure 2 CSO Discharge Volumes are Diminishing



* Includes discharges from outfall BOS046 to the Back Bay Fens

DEP and the U.S. Environmental Protection Agency's Region 1 Office ("EPA") reviewed the information in the FEIR and in early 1998 concurred that the recommended plan for the Charles River Basin should move forward without delay. However, at that time, DEP and EPA decided to defer a final determination on the water quality standard and associated level of CSO control in the Charles River Basin until additional information on CSO and non-CSO pollutant loads could be developed. Accordingly, DEP, with the support of EPA, issued the Variance for CSO discharges to the Charles River on October 1, 1998. DEP has since extended the Variance several times, to October 1, 2007.

The previous Variance and its extensions required MWRA to implement the recommended CSO plan for the Charles River Basin and provide further technical analyses of water quality conditions, water quality impacts, and the cost-effectiveness of additional CSO controls, especially higher levels of control at the Cottage Farm facility. Since October 1998, MWRA has participated in the collection and analysis of water quality data for the Charles River Basin, updated the water quality impacts of CSO and non-CSO discharge sources, and evaluated higher levels of CSO control, including additional storage and treatment enhancements at Cottage Farm, inflow removal, and system optimization measures. In response to the goals of the Variance and its conditions, MWRA has recommended, and DEP and EPA have approved, additional CSO control projects and system optimization measures that will achieve a higher level of CSO control than the level recommended in the 1997 FEIR, especially at the Cottage Farm facility. These variance related efforts and results are documented below.

II. Variance Efforts, Data and Results

The previous CSO Variance required MWRA to carry out additional CSO system and water quality analyses and to contribute funds toward a large-scale stormwater study in the Lower Charles River Basin. These efforts were intended to provide a more complete understanding of the pollutant loads from both stormwater and CSO discharges, so that a more accurate and complete review of the cost-effectiveness of CSO abatement strategies could be conducted.

Stormwater

The pollutant loads attributed to stormwater in the 1997 CSO Plan were based on limited sampling data, much of which was gathered outside of the Charles River Basin. A major focus of the Variance-related work, therefore, was to more accurately identify actual stormwater pollutant loads by gathering data in the watershed. The United States Geological Survey ("USGS"), with funding from MWRA, EPA, and DEP, undertook an extensive and detailed stormwater study in the Lower Charles Basin, from the Watertown Dam to the Science Park Dam at the mouth of the river.

The major conclusions of the USGS work were:

- Stormwater quality in the Lower Charles River Basin is generally similar to or slightly better than that reported in other urban areas of the country.
- Event-Mean Concentrations of fecal coliform in stormwater and tributary streams ranged from 2,000 to 70,000 colonies/100ml.

- The length of the dry period antecedent to a rainfall event is a critical factor in affecting stormwater quality. The longer the antecedent dry period, the larger the stormwater pollutant loads.
- The largest single source of fecal coliform to the Lower Charles Basin is Stony Brook, where fecal coliform loads are very large during storm events. (The measured loads included CSO discharges that have since been reduced significantly. The recently completed sewer separation project and ongoing illicit connection removal programs are expected to significantly reduce this loading.)
- Full implementation of structural BMPs and street sweeping in the watershed would result in an estimated 14% reduction in the fecal coliform load from stormwater.

It is also important to note that due to the commitment of substantial resources by EPA, DEP, Charles River Watershed Association (CRWA), and the communities in the Charles River Basin, there has been substantial progress in eliminating illegal wastewater connections to storm drains and developing “state of the art” stormwater management plans. There has been a resulting significant and measurable improvement in water quality in the River over the past five years, with MWRA sampling showing the River meeting the swimming standard for *E. coli* indicator bacteria approximately 80% of the time compared with only 19% (for fecal coliform) back in 1995. While water quality during dry weather conditions is generally good, water quality continues to be impaired during wet weather conditions. Additional resource commitments toward stormwater management and illegal connection removal will continue to be a key element of work needed for further improvements to water quality in the Charles River watershed.

Cottage Farm CSO Facility Assessment Report

An early condition of the Charles River CSO Variance issued to MWRA required preparation and submission of the Cottage Farm CSO Facility Assessment Report (the “Cottage Farm report” or “report”). The report was submitted in January 2004 and underwent a lengthy public review and comment period, extending to May 2004.

The Cottage Farm report verified that the CSO facility provides significant treatment in compliance with the NPDES permit, and that additional storage at the facility would have great cost and significant adverse impact to the recreational facilities at Magazine Park, with negligible water quality benefit. The Cottage Farm report instead recommended specific system optimization measures to maximize the conveyance of wet weather flows to the Deer Island Wastewater Treatment Plant, minimize overflows into the Cottage Farm facility and maximize the benefit of the facility’s existing storage basins. The report also demonstrated the value of ongoing sewer separation work (i.e. removal of storm inflow from the combined sewer system) by the City of Cambridge and the Town of Brookline in reducing CSO discharges to the Charles River.

On October 1, 2004, after reviewing the Cottage Farm report and related public comments, DEP issued an additional three-year extension to the Charles River variance, to October 1, 2007. Conditions in the current variance that expires on October 1, 2007 require MWRA, the City of Cambridge and BWSC to implement all elements of the recommended CSO control plan for the Charles River, including the additional controls recommended by MWRA in the Cottage Farm report. The variance also requires MWRA to continue to implement the Nine Minimum Controls, perform CSO discharge monitoring, provide public notice of CSO discharges, and conduct

Charles River water quality monitoring. In addition, the variances issued to MWRA, Cambridge and BWSC required these permittees to report on improvements to their sewer systems and storm drain systems that may affect sanitary sewer overflows (“SSOs”) and combined sewer overflows to the Charles River; report on the operational performance of facilities related to the collection and transport of combined sewage flows; and evaluate the feasibility of additional infiltration/inflow (I/I) removal and stormwater controls to further reduce SSO and CSO discharges.

Improving on CSO Control with System Optimization and Inflow Removal

In August 2005, MWRA recommended adding a set of optimization measures and targeted sewer separation projects to its plan to increase the level of CSO control at Cottage Farm and at other Charles River outfalls by improving hydraulic conditions and reducing stormwater inflow. The projects included:

- Brookline Connection/Cottage Farm Overflow Chamber Interconnection and Gate Control
- Charles River Valley/South Charles Relief Sewer Gates Controls and Additional Interceptor Connections
- Bulfinch Triangle Sewer Separation
- Brookline Sewer Separation

These projects add approximately \$20 million to MWRA’s cost for the Charles River CSO plan (which now totals \$73.3 million). The projects were incorporated into the revised Long-Term Control Plan (“LTCP”) approved by EPA and DEP in March 2006 and incorporated into Schedule Seven by the Federal District Court in the Boston Harbor Case (D. Mass. C.A. No. 85-0489) in April 2006. Together with projects in the original plan, they are predicted to reduce treated CSO discharges at the Cottage Farm facility to 2 activations and 6.3 million gallons in a typical year, compared to the 1997 goals of 7 activations and 23 million gallons. Most of the benefit comes from optimization improvements that direct more wet weather flow to MWRA’s Ward St. Headworks and reduce overflows into the Cottage farm facility. The targeted sewer separation projects will lower wet weather flows to the conveyance system, offsetting any hydraulic impacts of directing more flow to the Headworks. These projects, described in more detail below, are now being implemented by MWRA, BWSC and the Town of Brookline subject to design and construction milestones in Schedule Seven.

Brookline Connection/Cottage Farm Overflow Chamber Interconnection and Gate Control

The additional CSO optimization improvements include measures to minimize treated discharges at the Cottage Farm CSO facility by 1) controlling overflows into the facility, 2) increasing flow conveyance to the Ward St. Headworks, and 3) taking advantage of upstream storage capacity in the MWRA North Charles Metropolitan and Metropolitan Relief Sewers in Cambridge.

These measures, shown in Figure 3, include: bringing into operation the historically unutilized 54-inch “Brookline Connection” that crosses beneath the Charles River from the Cottage Farm influent chamber (on the Cambridge side of the Charles River) to an improved connection