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January 15, 2013

The attached variance for CSO Discharges to the Alewife Brook/Upper Mystic River was finalized on March 5, 1999 and has since been extended through September 1, 2013. Both the most recent determination for extension and the original variance are included here.



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**FINAL DETERMINATION TO EXTEND VARIANCE  
FOR COMBINED SEWER OVERFLOW DISCHARGES  
TO  
ALEWIFE BROOK/UPPER MYSTIC RIVER**

The Department of Environmental Protection (the "Department") hereby extends the Variance for CSO Discharges to the Alewife Brook/Upper Mystic River from September 1, 2010 for a period of three years (to September 1, 2013). This action, which authorizes limited CSO discharges, is taken in connection with NPDES permit Nos. MA0103284, MA0101974, and MA0101982, issued to the Massachusetts Water Resources Authority (MWRA), the City of Somerville, and the City of Cambridge, respectively. The Variance extension is issued pursuant to the Massachusetts Surface Water Quality Standards at 314 CMR 4.00, and subject to the specific conditions which follow. The Variance is intended to provide a timeframe to implement the revised recommended CSO control plan for the Alewife Brook/Upper Mystic River watersheds.

The Department grants this Variance based on the technical and cost information in the 1997 MWRA CSO Facilities Plan, the July 1, 2003 MWRA Final Variance Report, and affordability analyses demonstrating that implementation of more stringent CSO controls at this time would result in substantial and widespread social and economic impact as specified in 314 CMR 4.03(4). Issuance of this Variance for CSO discharges to the Alewife Brook/Upper Mystic River is consistent with EPA Guidance: *Coordinating CSO Long-Term Planning with Water Quality Standard Reviews (July 31, 2001)*, which states that longer term variances and renewal of variances are warranted given the extended duration necessary for implementation of Long-Term Control Plan(s).

MWRA and the Cities of Cambridge and Somerville shall implement the revised recommended plan included in the July 1, 2003 MWRA Final Variance Report for the Alewife Brook/Upper Mystic River. The implementation schedule will be as set forth in modifications to the Federal Court Order.

It is anticipated that this Variance will be incorporated into NPDES permits for the MWRA and the Cities of Cambridge and Somerville. Failure by the MWRA and/or the Cities of Cambridge or Somerville to comply with the conditions of this Variance following its effective date and prior to and following permit modification or reissuance will constitute a violation of

the permit as in effect on the date of such violation, as well as the Massachusetts Surface Water Quality Standards and Permit Regulations, 314 CMR 3.00.

## **VARIANCE CONDITIONS**

The CSO Variance is conditioned upon MWRA and the Cities of Cambridge and Somerville complying with the following requirements:

### A. Implementation of the Revised Recommended Plan

MWRA and the Cities of Cambridge and Somerville shall implement the \$117 million Revised Recommended Plan in the Alewife Brook/Upper Mystic River watershed to abate CSO discharges. The implementation schedule shall conform to the requirements of the federal court order, as modified. CSQ discharges shall be limited in accordance with the performance of the Revised Recommended Plan, as characterized in the July 1, 2003 MWRA Final Variance Report after implementation of the Revised Recommended Plan and upon completion of subsequent monitoring to verify that the Long-Term CSO control goals are achieved.

### B. Other Actions to Minimize CSO/Sanitary Discharges

- i. MWRA and the Cities of Cambridge and Somerville shall continue to implement the Nine Minimum Controls (NMC), and monitor CSO activations and volumes. Cambridge and Somerville each shall submit a report to the Department on an annual basis that contains estimates of CSO activations and volumes in the Alewife Brook/Upper Mystic River. The first report shall be submitted by April 30, 2011 for the preceding calendar year. On or before April 30 of each year, MWRA shall submit to the Department the estimated CSO activations and volumes for all CSO outfalls for the previous calendar year in the Alewife Brook/Upper Mystic River using the MWRA sewer system model.
- ii. MWRA shall continue to provide technical assistance related to the identification and removal of I/I to member communities.
- iii. The Cities of Cambridge and Somerville shall respond to any DEP comments on the Infrastructure Studies submitted pursuant to the 2004 Variance Extension, or any other DEP information requests to clarify the conditions of the combined sewer system, including the frequency and volume of CSO discharges, within 90 days of receiving such comments.

### C. Notification to the Public of CSO Discharges and Impacts:

- i. MWRA and the cities of Cambridge and Somerville shall maintain outfall signs which are visible both from the shore and from in stream locations for their permitted

CSO discharges. Pursuant to the NPDES permit, the following language, at a minimum, shall be included:

WARNING:  
WET WEATHER  
SEWAGE DISCHARGE  
OUTFALL (discharge serial number)

- ii. MWRA and the Cities of Cambridge and Somerville shall maintain informational signs at John Waldo Park and other public access locations identified by the Department to advise the public of CSO discharges and potential public health impacts and to provide contact information and website links. The text of the notice shall be subject to prior approval by the Department.
- iii. MWRA and the Cities of Cambridge and Somerville shall issue a joint press release by April 15 of each year to watershed advocacy groups, local health agents, property owners subject to flooding in the Alewife Brook watershed (as defined by the Department in consultation with FEMA and DCR), and newspapers of local circulation in the Alewife Brook/Upper Mystic River watershed, which shall include general information on CSOs, their locations in the Alewife Brook/Upper Mystic River watershed, and potential health risks posed by exposure to CSO events.
- iv. The City of Cambridge, in collaboration with MWRA and Somerville, shall provide email notice to EPA, the Department, local health agents, and the Mystic River Watershed Association of CSO discharge events in the Alewife Brook watershed within 24 hours of the onset of the discharge.
- v. MWRA and Cities of Cambridge and Somerville shall update and maintain their respective websites to include general information regarding CSOs, potential health impacts, locations of CSO discharges, the status of the CSO abatement program, web links to CSO communities and watershed advocacy groups, and information from the most recent information on CSO activations and volumes in the Alewife Brook/Upper Mystic River watershed.

#### D. Receiving Water Monitoring

The MWRA shall continue to perform water quality monitoring in the Alewife Brook/Upper Mystic River to assess the impacts of CSO discharges.

Each year, on or before July 15 for the duration of this Variance, MWRA shall submit to the Department and EPA a report on the previous year's sampling program. The report shall include:

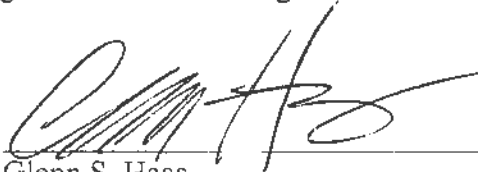
- i. A summary of the receiving water sampling data collected over the past calendar year, including sampling locations and parameters, and comparisons between results during wet and dry weather.

- ii. MWRA has a sampling plan for the Alewife Brook/Upper Mystic River on its website at <http://www.mwra.state.ma.us/harbor/enquad/pdf/2005-12.pdf>. Changes in schedule, sampling sites, and/or parameters will be provided to the Department for review and approval in advance of implementation of the sampling plan, for each year of this variance.

Subject to the conditions included in this Variance, MWRA, and the Cities of Cambridge and Somerville shall be authorized to have CSO discharges during wet weather events to the Alewife Brook/Upper Mystic River, CSO discharges shall be consistent with the performance of the Revised Recommended Plan, as characterized in the July 1, 2003 MWRA Final Variance Report, upon implementation of the Revised Recommended Plan and after completion of subsequent monitoring to verify that the Long-Term CSO control goals are achieved.

8/26/10

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Date Issued



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Glenn S. Haas  
Assistant Commissioner  
Bureau of Resource Protection

9/1/10

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Effective Date

3/5/99

FINAL

Variance for CSO Discharges to  
the Alewife/Upper Mystic Basin

Introduction

In its December 31, 1997 Administrative Determinations for Certain CSO - Impacted Waters, the Department of Environmental Protection (DEP) granted a Variance under its Surface Water Quality Standards at 314 CMR 4.00 for the CSO discharges to the Alewife/Upper Mystic Basin. This Variance is a short-term modification in water quality standards, granted within the context of the NPDES/MA permit. It provides additional time for DEP, EPA, MWRA and others to investigate sources of discharges and to conduct analyses to determine the potential for additional water quality improvements from higher levels of CSO treatment or remediation of stormwater discharges to the Alewife/Upper Mystic Basin.

The Department granted this Variance based on its findings, as supported by the current information, demonstrating that more stringent CSO controls would result in substantial and widespread economic and social impact as specified in 314 CMR 4.03(4).

DEP is formalizing the granting of the Variance for CSO discharges to the Alewife/Upper Mystic Basin by issuance of this Final Variance and associated Variance Conditions. This Variance shall remain in effect from the date of formal issuance, March 5, 1999, for a period of 36 months. During this period, the MWRA, and the Cities of Cambridge and Somerville are required to comply with all of the conditions established by this Variance. At the end of the variance period, or any extension that DEP may determine to be necessary to complete the purposes of this Variance, the Department will review the information provided and determine the surface water quality standard for this basin.

The Variance will be incorporated into the NPDES/MA permits for the MWRA, and the Cities of Cambridge and Somerville, through modification or reissuance during the term of the Variance, with an additional opportunity for public comment. Failure by the MWRA and/or the Cities of Cambridge or Somerville to comply with the conditions of the Variance prior to permit modification or reissuance will constitute a violation of the existing permit, as well as of the Massachusetts Surface Water Quality Standards.

The water quality standard for the Alewife Brook and the segment of the Upper Mystic River (outlet lower Mystic Lake to Amelia Earhart Dam) was modified, through the Variance for the CSO discharges only, which are permitted to the MWRA and the Cities of Cambridge and Somerville; other discharges must meet Class B standards. Provided that the MWRA and the cities of Cambridge and Somerville comply with the Variance Conditions, the Variance allows for exceedances from Class B criteria for CSO discharges.

The Variance requires the MWRA, and the Cities of Cambridge and Somerville, to implement any and all CSO control actions related to the Alewife/Upper Mystic Basin as described in the MWRA's Combined Sewer Overflow Final Facilities Plan/Environmental Impact Report (FFP/EIR) approved by DEP in its December 31, 1997 correspondence, unless modified and agreed to in writing by DEP.

The information gathering and assessment conditions established by this Variance are designed to require the MWRA and the Cities of Cambridge and Somerville to obtain the information necessary for the Department to determine the appropriate water quality standard and level of CSO control pursuant to the DEP Guidance for Abatement of Pollution from CSO Discharges (dated 8/11/97). The Department anticipates that these receiving waters; the Alewife/Upper Mystic Basin; will eventually be designated Class B (CSO), because the Department has not identified a feasible means to completely eliminate all CSOs in this Basin. Information generated during the term of the variance will be used to determine the number and treatment of overflows based on the relative costs and benefits of additional controls where CSOs have not been or will not be eliminated.

The Variance conditions are also designed to require the MWRA and the Cities of Cambridge and Somerville to gather and provide data on stormwater pollutant loads to the segment, in order to assist DEP and EPA to assist in determining whether additional CSO or stormwater controls will yield greater benefits for their relative costs and whether additional control of both CSOs and stormwater is appropriate. Although the MWRA will be gathering and assessing data under the Variance conditions, the responsibility for remediation of stormwater impacts ultimately remains with the various municipal, industrial, commercial, or other stormwater dischargers. That notwithstanding, the MWRA would not be precluded from voluntary participation.

In support of the final determination of required CSO controls and the associated water quality standard, DEP will utilize information included in the 1997 MWRA CSO Facilities Plan, all data and information gathered pursuant to conditions of this variance, and any other credible water quality data or other information gathered under other initiatives, by such groups as EOEA Mystic River Watershed Team.



Conditions Established By and Enforceable Through the Variance

The Department of Environmental Protection requires the MWRA, and the Cities of Cambridge and Somerville to fulfill these requirements as conditions of the Variance:

A. Actions to Minimize CSO/Sanitary Discharges

- (1) The MWRA, and the Cities of Cambridge and Somerville shall fully implement the Nine Minimum Controls in accordance with their respective documentation filed with EPA.
- (2) For CSOs which discharge to Alewife Brook and the Upper Mystic River, MWRA and the Cities of Cambridge and Somerville shall provide estimates of CSO activations and volumes over the period of this Variance, as follows.
  - i. The MWRA shall provide to EPA and DEP, on a quarterly basis, estimates of CSO activations and CSO volumes for ALL CSO outfalls to the Alewife/Upper Mystic Basin. By June 1, 1999, the MWRA shall submit to EPA and DEP a plan for achieving compliance with this requirement; using a combination of meters and flow estimates.
  - ii. The City of Cambridge shall provide to DEP and EPA, on a quarterly basis, a report on its CSO activations and volumes, based on metered data at each of the CSO outfalls.
  - iii. The City of Somerville shall provide to EPA and DEP, on a quarterly basis, estimates of the CSO activations and volumes from all of their permitted discharges. By June 1, 1999, the City shall submit to DEP and EPA a plan for achieving compliance with this requirement, using a combination of metering and flow estimates.
- (3) The MWRA shall reevaluate the possibility of additional Infiltration/Inflow (I/I) controls in the North sewer system at key locations (to be determined by the MWRA in consultation with EPA/DEP and relevant municipalities) as a means to further mitigate CSO activations, volumes, and durations. The MWRA shall report on the results of this analysis by September 1, 1999.

The MWRA shall update relevant portions of its 1994 Master Plan relative to I/I management, based on actions performed by its member municipalities (discharging wastewater to downstream portions of regional wastewater facilities tributary to CSO overflows) to determine whether additional I/I removal could result in substantive reductions in CSO overflows at a reasonable cost.

- (4) By January 1, 2000, the Cities of Cambridge and Somerville shall notify, in writing to the MWRA, DEP and EPA, whether they have found conditions within their combined sewer systems that are significantly different than those assumed to exist when the MWRA performed its SOP Program; and where implementation of additional SOP-type actions are likely to provide for significant reduction in CSO discharges. By March 1, 2000 (unless extended by DEP), the MWRA, in consultation with the Cities of Cambridge and Somerville, shall provide EPA and DEP with an assessment of the likely water quality benefits of each item provided by the Cities of Cambridge and Somerville.
- (5) For the MWRA sewer member communities in the Alewife/Upper Mystic Basin, the MWRA shall:
- i. provide copies of its Best Management Practices (BMP) Plan;
  - ii. provide existing GIS sewer system mapping of the municipal and relevant portions of the MWRA's wastewater system;
  - iii. if requested, provide technical guidance to member communities on how to perform dye testing, smoke testing, drain sampling, television inspection, and other procedures to identify or confirm the presence of illicit connections; and
  - iv. if requested, review/comment on the sewer member communities' stormwater management plan to identify opportunities for enhanced pollution prevention.

B. Actions to Further Assess CSO/Stormwater Pollutant Loads

Sampling Program

In the MWRA's FFP/EIR, the recommended level of CSO control in the Alewife/Upper Mystic Basin was developed based on the cost-performance comparison of CSO control alternatives and related CSO and non-CSO pollutant loads; (1) entering the Alewife/Upper Mystic Basin as upstream boundary conditions and baseline flows/loads and (2) stormwater loadings entering the CSO planning area from separate stormdrains and watercourses.

DEP is requiring that additional sampling data be obtained from these sources to more fully characterize and define flows and loads for incorporation into the sewer system and receiving water modeling runs and to validate the analyses provided in the CSO Facilities Plan.

To the extent possible, the Cities of Cambridge and Somerville shall coordinate the stormwater sampling with ongoing stormwater management activities.

(1) Receiving Water Sampling

The MWRA shall continue to actively participate in EOE/DEP Basin activities by performing water quality monitoring in the Alewife/Upper Mystic Basin to assess the impacts of CSO discharges.

- i. On or before July 1, 1999, the MWRA shall submit a report to DEP and EPA summarizing the 1998 receiving water sampling data collected in the Alewife/Upper Mystic Basin in accordance with the *Combined Work/Quality Assurance Project Plan for Water Quality Monitoring and Combined Sewer Overflow Receiving Water Monitoring in Boston Harbor and its Tributary Rivers* dated April 1998. This report shall include an interpretive discussion of sampling locations, results, and a correlation of the data with rainfall/precipitation records.
- ii. Each year, on or before April 1 for the duration of this Variance, MWRA shall submit to DEP and EPA a Report on the past year's sampling program and a proposal for receiving water sampling for the current year. The Report shall include, at a minimum:
  - a. A summary of the receiving water sampling data collected over the past calendar year, including sampling locations and parameters.
  - b. An interpretive discussion of the results, and a correlation of the data with rainfall/precipitation records and with estimates of active CSO discharges.
  - c. A proposed plan for current year sampling activities intended to measure the effect of CSO discharges in the Alewife/Upper Mystic Basin. The proposed plan shall build upon existing data in the Basin and shall include information on sampling locations and sampling parameters.

(2) Stormwater Sampling

MWRA and the Cities of Cambridge and Somerville shall perform representative sampling<sup>1</sup> semiannually for the duration of this variance at stormdrain locations throughout the Alewife/Upper Mystic Basin as further described below (the final timeframe and locations to be jointly determined by DEP and EPA, in consultation with MWRA, Somerville and Cambridge) to allow for determinations of stormwater loadings in the Alewife/Upper Mystic Basin. Samples collected shall be analyzed for fecal coliform, e. coli, enterococcus, nutrients, BOD, and TSS.

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<sup>1</sup> In its scope of work, the MWRA and the communities shall propose automated sampling, a series of grab samples, or other methods to collect samples to adequately characterize stormwater loads at the selected locations.

- i. The City of Cambridge shall conduct sampling at two locations from drainage areas discharging to Alewife Brook.
- ii. The City of Somerville shall conduct sampling at 5 locations from drainage areas discharging to Alewife Brook and the Mystic River.
- iii. The MWRA shall conduct sampling at 3 locations from areas which drain to the Upper Mystic Basin (as defined in the 1997 MWRA CSO FP).

Sampling locations proposed for meeting the requirements of this section shall, to the extent possible, represent runoff from the predominant land uses within each community in the Alewife/Upper Mystic Basin. Final sampling locations and timeframes for conducting the sampling work shall be subject to approval by DEP and EPA. DEP and EPA will review the sampling plan each year, along with community stormdrain information being gathered under separate concurrent initiatives, to determine if modifications to the sampling plan are required.

The MWRA, and the Cities of Cambridge and Somerville, shall submit a draft scope of work for carrying out the sampling work set forth in this section, on or before September 1, 1999. The MWRA and the communities may elect to collaborate and file a single proposal for the sampling effort. Subject to the approval of DEP, these sampling efforts may be collectively coordinated and carried out by any qualified party. In all cases, the sampling results shall be reported to DEP and EPA within one month of the sampling date.

#### C. Assessment of CSO Controls in the Alewife/Upper Mystic Basin

##### (1) Report Preparation

By January 1, 2002, the MWRA shall file a report with DEP summarizing and assessing the information obtained during the Variance process (and any other relevant documentation which is produced and available during this period) and reassess the recommended CSO control plan included in the Final Facilities Plan for the Alewife/Upper Mystic Basin. This Report must include, at a minimum:

- i. information on the combined sewer systems in Cambridge and Somerville to the extent that these systems are substantially different from the systems as modeled in the Final Facilities Plan.
- ii. a reassessment of the recommended CSO abatement plan in the Alewife/Upper Mystic Basin and alternatives representing higher levels of CSO control, up to and including elimination. The

reassessment must include: an analysis of the CSO, stormwater, and upstream pollutant loads of the alternatives; predictive modeling to estimate the water quality impacts of the alternatives<sup>2</sup>; and the costs of the alternatives.

iii a final recommended plan for CSO abatement in the Alewife/Upper Mystic Basin.

(2) Based on its analyses of CSO and stormwater impacts in the Mystic/Alewife Basin, the MWRA shall work with EPA and DEP to attempt to identify and describe one or more "triggers" appropriate to act as a basis for determining when additional CSO controls (treatment and/or storage) would yield greater benefits for their respective costs.

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DEP will provide guidance to MWRA on stormwater pollutant concentrations, based on the results of the stormwater sampling required under the variance and other relevant documentation compiled on stormwater quality. The impacts of reasonable stormwater management initiatives may also be considered.

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