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FINAL DETERMINATION TO ADOPT A WATER QUALITY STANDARDS VARIANCE FOR COMBINED SEWER OVERFLOW DISCHARGES TO LOWER CHARLES RIVER/CHARLES BASIN

The Massachusetts Department of Environmental Protection (“MassDEP”) hereby adopts a Variance for Combined Sewer Overflow (“CSO”) Discharges to the Lower Charles River/Charles Basin, from September 1, 2024 to August 31, 2029. This discharger-specific Water Quality Standards Variance (“Variance”) authorizes limited CSO discharges from the Massachusetts Water Resources Authority (“MWRA”) and the City of Cambridge, which are subject to NPDES and Surface Water Discharge permits Nos. MA0103284 and MA0101974, respectively. During wet weather events where the limited CSO discharges are authorized, Class B requirements at 314 CMR 4.05(3)(b) for bacteria, solids, color and turbidity, and taste and odor may not be met. The Variance is a water quality standards revision subject to EPA review and approval under EPA’s regulations at 40 CFR Part 131. It is adopted pursuant to the Massachusetts Surface Water Quality Standards (“SWQS”) at 314 CMR 4.00 and the federal Water Quality Standards (“WQS”) regulations at 40 CFR Part 131, and subject to the specific conditions that follow. This Variance is intended to establish requirements to (1) achieve the highest attainable water quality conditions in the receiving water; (2) provide for an assessment of the level of CSO control achieved, and the associated water quality impacts of CSO and non-CSO sources; (3) continue public notification of CSO events and their impacts; and (4) continue to assess the costs and feasibility of achieving higher levels of CSO control beyond the requirements of this Variance. The Variance does not alter the underlying designated uses of the receiving water, nor authorize any backsliding of the current ambient water quality in these receiving waters. It serves to modify the water quality standard only for the discharges associated with the permittees noted above, which also serves as the basis for developing NPDES permits. MWRA remains subject to the orders of the United States District Court for the District of Massachusetts, Civil Action Nos. 85-0489-MA and 83-1614-MA, including amended Schedule Seven, dated October 19, 2011 (the “Federal Court Order”) regarding its implementation of the revised Long-Term CSO Control Plan (“LTCP”)¹.

¹ In the event of any future amendment by the court in the aforementioned actions, MassDEP will determine whether the court’s actions will require a change to the Variance requirements.

MassDEP adopts this Variance based on its determination described in the accompanying fact sheet that implementation of more stringent CSO controls to meet the underlying designated use and criteria at this time would result in substantial and widespread social and economic impact as specified in 314 CMR 4.03(4)(a)(6) and 40 CFR 131.10(g)(6). Further, implementation of the requirements that follow represent the highest attainable interim effluent conditions during the term of the Variance until such time as information to support further regulatory determinations is available. Information gathered during the term of the Variance is intended to be used to make a subsequent determination on the appropriate water quality standard for the Charles River segments that are currently affected by CSO discharges. Issuance of this Variance for CSO discharges to the Lower Charles River/Charles Basin is consistent with EPA's regulations at 40 CFR 131.14 and with the U.S. Environmental Protection Agency's 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 plans.

In December 2015, MWRA and the City of Cambridge, in coordination with other municipal partners, completed the 35 CSO Control Projects in MWRA's LTCP, consistent with the requirements of the Federal Court Order. MWRA issued a Final CSO Post Construction Monitoring Program and Performance Assessment Report on December 30, 2021², also a requirement of the Federal Court Order, which documents the level of CSO control achieved. In addition, MWRA undertook a CSO/water quality assessment by first developing and then using a receiving water model³, to determine the impacts of CSO and non-CSO sources in the Charles River, pursuant to EPA's 1994 *Combined Sewer Overflow (CSO) Control Policy* ("EPA CSO Policy").

Once approved by EPA under federal Clean Water Act section 303(c), this Variance and its conditions will be incorporated into NPDES and Surface Water Discharge permits for the MWRA and the City of Cambridge at the time of reissuance of those permits, consistent with 40 CFR 131.14(c) and 314 CMR 4.03. Failure by the MWRA and/or the City of Cambridge to comply with the conditions of this Variance following its effective date and as implemented in their NPDES and Surface Water Discharge permits will constitute a violation of the permit, as well as the Massachusetts SWQS (314 CMR 4.00) and the Surface Water Discharge Permit Program regulations (314 CMR 3.00).

The Variance is a short-term modification of the Massachusetts SWQS, issued by MassDEP and subject to EPA approval. In order to develop Updated CSO Control Plans and complete activities identified in the Pollutant Minimization Program (PMP), MassDEP has concluded a five-year variance is necessary and appropriate. The Variance allows limited CSO discharges, as set forth in Exhibit C, from the outfalls along the Lower Charles River and Charles River Basin permitted to MWRA and the City of Cambridge, subject to specific conditions. Other standards and criteria of the receiving waters' Class B designation are unaffected and remain in force.

² <https://www.mwra.com/media/file/2021-12-task-6-final-cso-post-construction-monitoring-program-and-performance-assessment>

³ <https://www.mwra.com/media/file/cso-post-construction-monitoring-and-performance-assessment-task-52-receiving-water>

VARIANCE CONDITIONS

This Variance is conditioned upon MWRA and the City of Cambridge complying with their individual and joint requirements, as identified below:

A. Level of Required CSO Control During Variance

CSO activations and volumes shall be consistent with the requirements included in the “Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflow Control” (“Second Stipulation”), filed March 15, 2006, as amended in the aforementioned actions. Accordingly, CSO discharges to the Lower Charles River/Charles River Basin shall be limited to those set forth in attached Exhibit C (with allowance for any conditions that exceed Typical Year⁴ conditions). In the event of any future amendment by the court in the aforementioned actions, MassDEP will determine whether the court’s actions will require a change to Variance requirements. Further, this Variance requires additional actions set forth in Sections E and F below, which shall be implemented to reduce CSO pollutant loads and impacts during the term of this Variance. Consistent with 40 CFR 131.14(b)(1)(ii)(A)(3), these collective requirements reflect the greatest pollutant reduction achievable within the five-year term of this Variance.

B. Receiving Water Quality Monitoring

MWRA shall continue the water quality monitoring program in the Lower Charles River and Charles River Basin to demonstrate the effectiveness of CSO controls implemented in the watershed. The work shall be adequate to assess the water quality impacts of remaining CSO pollutant sources and loads over a range of storms events, and the associated level of attainment of water quality standards in the Lower Charles River and Charles River Basin.

On or before July 15 each year, for the duration of this Variance, MWRA shall submit to MassDEP and EPA a report on the previous year's sampling program. The report shall include 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, a characterization of rainfall events for which wet weather sampling was done, and a correlation of the sampling data with CSO activations and volumes.

⁴ Typical Year" rainfall has been the basis for development, recommendation and approval of MWRA's LTCP, the establishment of the federal court mandated levels of control, and the assessment of system performance toward attainment of the LTCP levels of control. The Typical Year was developed from 40 years of rainfall records (1949-1987, plus 1992), and it includes 93 storms with a total precipitation of 46.8 inches. For the future Updated CSO Control Planning (See Section F), MWRA and Cambridge are developing a “Revised Typical Year” for the Variance Waterbodies, which incorporates anticipated precipitation changes and sea level rise due to climate change. Remedial alternatives for the “Revised Typical Year” will be evaluated in the Updated CSO Control Plans in Section F herein.

C. CSO Performance Assessment

1. CSO Activations and Volumes

Schedule Seven Compliance Order Number 250, dated February 18, 2022, Civil Action No. 83-1614-RGS requires that by December 31, 2024, MWRA shall file a supplemental report to MassDEP and EPA that contains:

- (i) The final Typical Year performance of all 86 outfalls as compared to 1992 system conditions and the LTCP; and
- (ii) The MWRA's final results and conclusions as to the 16 outfalls⁵, which shall include an alternatives analysis describing what further actions could be taken, and costs associated with those actions, to further reduce or meet LTCP activation and volume goals for any of the 16 outfalls that have not met their respective LTCP goals. This supplemental report, coupled with the performance assessment report and water quality assessment report filed in December 2021, will provide information to EPA, MassDEP, and the Court to make the final determinations as to attainment of the levels of control in the LTCP and draw any final conclusions.

2. Annual CSO Discharge Report

MWRA and the City of Cambridge shall continue to monitor CSO activations and volumes, and shall submit Annual CSO Discharge Reports as follows:

- (i) Beginning April 30, 2025, and each successive April for the duration of this CSO Variance, the City of Cambridge shall submit an Annual CSO Discharge Report to MassDEP and EPA that contains estimates of CSO activations and volumes for all their permitted CSO outfalls within the Variance waterbodies for the prior calendar year. The City shall include data from their CSO metering program, which may be supplemented by estimates generated using calibrated sewer system modeling. For each CSO event, the City shall also provide rainfall data associated with the CSO discharge, including the depth, duration, and intensity of the rain event, and an estimate of the storm recurrence interval, based on NOAA Atlas 14, Volume 10, or as updated.
- (ii) Beginning April 30, 2025, and each successive April for the duration of this Variance, MWRA shall submit an Annual CSO Discharge Report to MassDEP and EPA that contains estimates of CSO activations and volumes for all permitted CSO outfalls within the Variance waterbodies, for those owned and operated by MWRA, for the prior calendar year. MWRA shall include data from the MWRA CSO metering program, which may be supplemented by estimates generated using calibrated sewer system modeling. For each CSO event, MWRA shall also provide rainfall data associated with the CSO discharge, including the depth, duration, and intensity of the rain event, and an estimate of the storm recurrence interval, based on NOAA Atlas 14, Volume 10, or as updated.

⁵ The 16 outfalls are: SOM001A; SOM007A/MWR205A; MWR205; BOS014; BOS017; CHE008; BOS009; BOS003; BOS062; BOS065; BOS070/DBC; CAM005; MWR018; MWR019; MWR020; and MWR201.

D. Notification to the Public of CSO Discharges and Impacts

1. MWRA and the City of Cambridge shall issue a joint press release by April 15 of each year to watershed advocacy groups, local health agents, and newspapers of local circulation in the Charles River watershed, which shall include general information on CSOs, the location of outfalls in the Charles River watershed, potential health risks posed by exposure to CSO events, and information on how to receive public notifications, as required by 314 CMR 16.00, about CSO discharges.
2. MWRA and the City of Cambridge shall comply with their respective MassDEP approved CSO Public Notification Plans, approved August 23, 2023 and June 16, 2023, respectively, and any approved modifications to such plans, pursuant to 314 CMR 16.00.
3. By August 31, 2025, MWRA and the City of Cambridge shall complete an evaluation of the feasibility of installing and implementing a real time, on site public notification system for CSO discharges, such as a warning light system. The evaluation shall include, but not be limited to, an assessment of costs, coordination with property owners and abutting municipalities, power needs, permitting requirements, logistics of installation and implementation, and success of similar systems in other cities. Simultaneously, MWRA and the City of Cambridge shall identify and implement interim measures for enhanced notification to the public of CSO discharges. MWRA and the City of Cambridge shall consult with watershed advocacy groups to inform development of the scope of the evaluation and identification of interim measures.
4. MWRA and the City of Cambridge shall post all final reports and all draft reports that are going out for public notice, that are required by the Variance on a publicly accessible website at the same time they are submitted to MassDEP.

E. Other Actions to Minimize CSO Discharges

1. MWRA and the City of Cambridge shall continue to implement the Nine Minimum Controls, as set forth in their respective NPDES and Surface Water Discharge Permits and the Variance conditions; these must include the following components:
 - a. Proper operation and regular maintenance programs for the sewer system and the CSOs;
 - b. Maximum use of the collection system for storage;
 - c. Review and modification of the pretreatment program to assure CSO impacts are minimized;
 - d. Maximization of flow to the POTW for treatment;
 - e. Prohibition of dry weather overflows from CSOs;
 - f. Control of solid and floatable materials in CSOs;
 - g. Pollution prevention programs that focus on contaminant reduction activities.
 - h. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and

- i. Monitoring to effectively characterize CSO and the efficacy of CSO controls.

Any enhancements to the MWRA and community Nine Minimum Controls programs identified by MassDEP or the permittees during the development of the Updated CSO Control Plans can and shall be implemented, after obtaining all the necessary approvals, as measures to further reduce CSO discharges so that highest attainable interim effluent conditions can be achieved and maintained during the Variance period.

2. Variance Pollutant Minimization Program as required by 40 CFR 131.14(b)(1)(ii)(A)(3): In addition to compliance with the provisions of Sections A, E, and F of this Variance, MWRA, and the City of Cambridge shall complete their respective actions included in Exhibits A and B of this Variance, which collectively shall comprise the Pollutant Minimization Program.

F. Updated CSO Control Planning

MWRA and the City of Cambridge shall implement their Scopes for Updated CSO Control Plans, which were submitted to MassDEP and EPA on April 1, 2022 and approved by MassDEP on July 22, 2022. The Updated CSO Control Plans shall conform to the EPA CSO Policy and MassDEP's 1997 *Guidance for Abatement of Pollution from CSO Discharges*, and shall specifically include the following elements:

1. A description of the existing level of CSO control.
2. An evaluation of the costs and water quality benefits of further CSO control alternatives, up to and including elimination of CSO discharges. Use of Green Infrastructure technologies shall be considered.
3. A public participation plan sufficient to provide ample opportunities for the public to be informed about the development of the Plans at critical junctures, and to have opportunities to provide informed comments on the CSO abatement alternatives and recommendations. In addition to public meetings already held, MWRA and the City of Cambridge shall hold public meetings to present on Alternatives Screening/Affordability Analysis (anticipated Fall 2024/Winter 2025) and Results of Alternative Analysis (anticipated Spring 2025). MWRA and the City of Cambridge shall conduct robust public outreach to Environmental Justice communities that abut the Variance waters.
4. An affordability analysis consistent with EPA's February 2023 Clean Water Act Financial Capability Assessment Guidance, along with any other relevant information to assess financial capacity. MWRA and the City of Cambridge shall each complete their own affordability analysis.
5. A Draft Updated CSO Control Plan, including a Recommended Plan, shall be submitted to MassDEP and EPA by December 31, 2025. The Plan, once implemented, shall achieve compliance with the federal Clean Water Act, the Massachusetts Clean Waters Act, the federal Water Quality Standards regulations (40 CFR Part 131) and the Massachusetts SWQS regulations (314 CMR 4.00), including any documentation needed to support issuance of a Variance, or for changing the classification of any CSO-impacted receiving waters with Use Attainability Analyses. This condition may be satisfied through

submittal of one joint Draft Updated CSO Control Plan or three separate Draft Updated CSO Control Plans. Concurrent with submittal to MassDEP and EPA, MWRA and the City of Cambridge shall commence a public comment period, which shall include a public meeting and public hearing.

6. A Final Updated CSO Control Plan, which addresses comments received on the Draft Updated CSO Control Plan, shall be submitted for MEPA review by January 31, 2027. This condition may be satisfied through submittal of one joint Final Updated CSO Control Plan or three separate Final Updated CSO Control Plans.

During the period between January 31, 2027 and August 31, 2029, MassDEP, in coordination with EPA, will review the Final Updated CSO Control Plan(s), review and consider public comments on the Plan(s), confer with the MEPA office on compliance with the Massachusetts Environmental Policy Act, and take action to approve or disapprove the Plan(s). MassDEP and EPA actions will include determinations on compliance with the Clean Water Act and Massachusetts Surface Water Quality Standards.

Subject to the conditions included in this Variance, MWRA and the City of Cambridge shall be authorized to discharge limited CSOs during wet weather events to the Lower Charles River/ Charles Basin.

8/30/2024

Date Issued

9/1/2024

Effective Date



Kathleen M. Baskin
Assistant Commissioner
Bureau of Water Resources

Exhibit A
MWRA Variance
Additional Pollutant Minimization Measures

Below is a summary of the specific Additional Pollutant Minimization Program Measures that MWRA shall undertake during the 5-year variance period beginning September 1, 2024. These activities are intended to further the goals of improving water quality in the Lower Charles River/Charles Basin by further identifying and removing pollutant loads. These measures are consistent with the requirements of 40 CFR 131.14, and allow for progress to be made towards attaining designated use(s) and water quality criteria. Collectively with Sections A, E, and F of the Variance, the following actions comprise the Pollutant Minimization Program to be implemented by MWRA during the course of the Variance.

1. Summary of Metering Data for CSO and SSO Events

Upon request by MassDEP or EPA, during the term of the Variance, for a wet weather event which results in a CSO discharge or MWRA wet weather Sanitary Sewer Overflow (SSO) in the Lower Charles River/Charles Basin watershed, MWRA shall, within 30 days of such request, provide a summary and interpretation of the following data for the storm event:

- a. Hourly rain gauge data (location, depth, peak intensity) and estimate of storm recurrence interval;
- b. CSO/MWRA SSO event estimated or verified start and stop times;
- c. Community meter data, for the service area upstream of the CSO/MWRA SSO location;
- d. Figures that depict the metered catchment areas with appropriate labels (e.g., streets, waterbodies, etc.); and
- e. A description of any flow restrictions in downstream collection system facilities which affected the CSO/SSO event.

Collection of such data will allow for more refined understanding of CSO events and therefore more targeted and effective future CSO abatement measures.

2. Regional Inflow and Infiltration Abatement Plan

MWRA shall continue to provide technical as well as financial assistance to member communities related to the identification and removal of Infiltration/Inflow (I/I). MWRA shall submit to MassDEP for review and approval, within 90 days of the effective date of this Variance, a scope and implementation plan for the following elements of MWRA's Regional Inflow and Infiltration Abatement Plan:

- a. Continued implementation of the Community Support Financial Assistance Program for member communities;
- b. Technical outreach to member communities on effective private inflow removal programs (e.g., sump pumps, roof leaders);

- c. Technical assistance on evaluation of improvements to local infrastructure that may reduce the risk of sewer backups and SSOs. MWRA will assist communities to determine if impacts from regional collection system(s) are adversely impacting the sewer conveyance system; and
- d. Public education on the impacts of excessive I/I on the sewer system.

This work to identify and remove I/I will result in fewer CSO and SSO events, and thus improved water quality.

3. Evaluation of Floatables Control

By October 1, 2025, complete an evaluation of floatables control for each of MWRA’s outfalls that discharges to the Lower Charles River/Charles Basin and submit a written report to MassDEP. The evaluation shall assess the effectiveness of the current controls and identify recommendations for improvements. MWRA shall implement the recommendations identified by the evaluation.

4. Evaluation of Odors

By June 1, 2025, complete an evaluation of odors emanating from the collection system in the vicinity of CSO structures, identify potential best management practices (BMPs) for reducing odors near CSO structures, and submit a written report to MassDEP. MWRA shall implement the most feasible BMPs identified by the evaluation.

5. Implement the following project during the term of the CSO Variance, in accordance with the project description:

Project Name	Potentially Impacted Outfall(s)/Regulator(s)	Project Description
CAM005 Weir Raising and Lengthening	CAM005	Further investigate through internal survey all physical dimensions in the CAM005 Regulator to determine if the CAM005 weir can be raised to reduce activations but also increased in length to minimize increases to upstream wastewater levels. Anticipated date of completion: December 2025

At the same time MWRA submits the Annual CSO Discharge Reports required by C.2(ii), MWRA shall submit a report describing progress on this project.

Exhibit B
City of Cambridge Variance
Additional Pollutant Minimization Measures

Below is a summary of the specific Additional Pollutant Minimization Program Measures that the City of Cambridge shall undertake during the 5-year variance period beginning September 1, 2024. These activities are intended to further the goals of improving water quality in the Lower Charles River/Charles Basin by further identifying and removing pollutant loads. These measures are consistent with the requirements of 40 CFR 131.14, and allow for progress to be made towards attaining designated use(s) and water quality criteria. Collectively with Sections A, E, and F of the Variance, the following actions comprise the Pollutant Minimization Program to be implemented by the City of Cambridge during the course of the Variance.

1. Summary of Metering Data for CSO and SSO Events

Upon request by MassDEP or EPA, during the term of the Variance, for a wet weather event which results in a CSO discharge or City of Cambridge wet weather SSO in the Lower Charles River/Charles River Basin, the City of Cambridge shall, within 30 days of such request, provide a summary and interpretation of the following data for the storm event:

- a. Hourly rain gauge data (location, depth, peak intensity) and estimate of storm recurrence interval;
- b. CSO/SSO event estimated or verified start and stop times;
- c. Meter data, in 15-minute increments from 24 hours prior to the CSO/SSO event, extending to 24 hours following cessation of the CSO/SSO event;
- d. Figures that depict the metered catchment areas with appropriate labels (e.g., streets, waterbodies, etc.); and
- e. A description of any flow restrictions in downstream collection system facilities which affected the CSO/SSO event.

Collection of such data will allow for more refined understanding of CSO events and therefore more targeted and effective future CSO abatement measures.

2. Evaluation of Floatables Control

By October 1, 2025, complete an evaluation of floatables control for each of the City of Cambridge's outfalls that discharges to the Lower Charles River/Charles Basin and submit a written report to MassDEP. The evaluation shall assess the effectiveness of the current controls and identify recommendations for improvements. The City of Cambridge shall implement the recommendations identified by the evaluation.

3. Evaluation of Odors

By June 1, 2025, complete and evaluation of odors emanating from the collection system in the vicinity of CSO structures, identify potential best management practices (BMPs) for

reducing odors near CSO structures, and submit a written report to MassDEP. The City of Cambridge shall implement any BMPs identified by the evaluation.

4. Implement the following projects during the term of the Variance, in accordance with the project description:

Project Name	Potentially Impacted Outfall(s)/Regulator(s)	Project Description
Willard Street Sewer Separation	CAM005, CAM007, Cottage Farm	Sewer separation of 20 acres of Combined Sewer tributary to MWRA's North Charles Sewer upstream of Cottage Farm. Anticipated date of completion: November 2024
River Street Sewer Separation	CAM005, CAM007, MWRA Cottage Farm	Sewer separation of 5 acres of Combined Sewer tributary to MWRA's North Charles Sewer upstream of Cottage Farm. Anticipated date of completion: September 2026
Land Boulevard Sewer Separation	CAM17, Prison Point	Developer I/I project for infiltration removal. Anticipated date of completion: December 2025

At the same time the City of Cambridge submits the Annual CSO Discharge Reports required by C.2(i), the City of Cambridge shall submit a report describing progress on each project.

EXHIBIT C

Long Term Control Plan Levels of Control

CSO OUTFALL	LONG TERM CONTROL PLAN	
	TYPICAL YEAR	
	Activation Frequency	Volume (MG)
UPPER CHARLES		
BOS032	Closed	N/A
BOS033	Closed	N/A
CAM005	3	0.84
CAM007	1	0.03
CAM009	2	0.01
CAM011	0	0.00
TOTAL		0.88
LOWER CHARLES		
BOS028	Closed	N/A
BOS042	Closed	N/A
BOS049	To be closed	N/A
CAM017	1	0.45
MWR010	0	0.00
MWR018	0	0.00
MWR019	0	0.00
MWR020	0	0.00
MWR021	Closed	N/A
MWR022	Closed	N/A
MWR201 (Cottage Farm)	2	6.30
MWR023	2	0.13
SOM010	Closed	N/A
TOTAL		6.88