UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

May 29, 2020

Martin Suuberg, Commissioner
Massachusetts Department of Environmental Protection
One Winter Street, 2nd Floor
Boston, MA 02108

RE: Lower Charles River/Charles Basin and Alewife Brook/Upper Mystic River Water Quality Standard Variances for Certain CSO Discharges

Dear Commissioner Suuberg:

This letter responds to the Massachusetts Department of Environmental Protection's ("MassDEP") February 7, 2020 submission of water quality standard ("WQS") variances, along with pertinent fact sheets and a response to comments to the Environmental Protection Agency ("EPA") for review as new or revised water quality standards under Section 303(c) of the Clean Water Act ("CWA"). The variances would cover certain waterways affected by combined sewer overflow ("CSO") discharges. Specifically, the variances would apply to CSO discharges by the Massachusetts Water Resource Authority ("MWRA"), the City of Somerville, and the City of Cambridge into the Alewife Brook/Upper Mystic River; and CSO discharges by the MWRA and the City of Cambridge to the Lower Charles River/Charles Basin.

MassDEP issued these variances on August 30, 2019. On February 5, 2020, MassDEP's General Counsel certified that the variances were duly adopted pursuant to Commonwealth law. By this letter, EPA approves these variances through the end of the variance term on August 31, 2024.

A water quality standards variance is a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflects the highest attainable condition during the term of the water quality standards variance. In August 2015, EPA published a final rule updating the federal water quality standards regulation to improve implementation of the Clean Water Act (80 FR 51019) in six key areas, including WQS variances. Specifically, EPA established the WQS variance requirements at 40 CFR § 131.14 to provide a better-defined pathway for states, territories and authorized tribes to adopt WQS variances.

Consistent with Section 303(c) of the CWA and federal regulations at 40 CFR § 131.21, EPA is required to review and approve or disapprove new and revised state water quality standards. As detailed in the attached review document, EPA determined that MassDEP's submitted variances are consistent with the requirements of the CWA and applicable federal regulations. EPA therefore approves the variances.

EPA's approval of Alewife Brook/Upper Mystic River and the Lower Charles River/Charles Basin variances is subject to the consultation requirement of Section 7(a)(2) of the Endangered Species Act

("ESA"). Under Section 7(a)(2) of the ESA, 16 U.S.C. § 1536, EPA has the obligation to ensure that its approval of these new or revised WQS will not jeopardize the continued existence of threatened or endangered species and their critical habitat in Massachusetts.

In a letter dated March 23, 2020, the U. S. Fish and Wildlife Service , New England Ecological Services Field Office, determined that the approval action ("Action") is consistent with the activities analyzed in the Service's January 5, 2016 Programmatic Biological Opinion. The letter also specified that the Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o).

We look forward to continued cooperation with Massachusetts in the development, review, and approval of water quality standards pursuant to our responsibilities under the CWA. If you have any questions, please contact Dan Arsenault (617 918-1562) or Michael Knapp (617 918-1053).

Sincerely,

KENNETH MORAFF Digitally signed by KENNETH MORAFF Date: 2020.05.28 15:47:28 -04'00'

Ken Moraff, Director
Water Division
EPA Region 1

Cc:

Lealdon Langley, Director, Division of Watershed Management, MassDEP
Susannah King, MassDEP
Kevin Brander, MassDEP
Laura Blake, MassDEP
Cathy Vakalopoulos, MassDEP

EPA Region 1 Review of the Massachusetts Department of Environmental Protection Variances for Alewife Brook/Upper Mystic River and the Lower Charles River/Charles Basin

I. Executive Summary

In a letter dated February 7, 2020, the Massachusetts Department of Environmental Protection ("MassDEP") requested approval for two water quality standard variances from the Environmental Protection Agency ("EPA"). The variances are for combined sewer overflow ("CSO") discharges to the Alewife Brook/Upper Mystic River and the Lower Charles River/Charles Basin. The Alewife Brook/Upper Mystic River Basin variance would enable the authorization of limited CSO discharges from the Massachusetts Water Resource Authority ("MWRA") and the Cities of Cambridge and Somerville (NPDES Permit Nos. MA0103284, MA0101974, and MA0101982, respectively) during the term of the variance. The Lower Charles River/Charles Basin variance would enable the authorization of limited CSO discharges from the MWRA and the City of Cambridge (NPDES Permit Nos. MA0103284 and MA0101974) during the term of the variance. During wet weather, when limited CSO discharges would be authorized, Class B requirements found at 314 CMR 4.05(3)(b) for bacteria, solids, color and turbidity, and taste and odor may not be met.

As discussed below, EPA has determined that the variances are consistent with the relevant requirements of the Clean Water Act ("CWA") and federal regulations at 40 CFR Part 131 and EPA therefore approves the water quality standard ("WQS") revisions. Consistent with the requirements of the Endangered Species Act ("ESA"), EPA evaluated the potential impacts of its approval of the variance on federally-protected species and determined that informal consultation with the U.S. Fish and Wildlife Service ("USFWS") was necessary. EPA used the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation ("IPaC") system to determine that EPA's approval of the variances is consistent with the activities analyzed in the Fish and Wildlife Service's January 5, 2016, Programmatic Biological Opinion ("PBO"). The PBO addresses activities excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 ("ESA") (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). In a letter dated March 23, 2020, the USFWS, New England Ecological Services Field Office, determined that the Action is consistent with the activities analyzed in the PBO. The letter also specified that the Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o).

II. Consistency of Variances with Water Quality Standards Variance Regulations at 40 CFR § 131.14

II.A. 40 CFR § 131.14(a)(1) – Applicability. (1) A WQS variance may be adopted for a permittee(s) or water body/waterbody segment(s) specified in the WQS variance.

The variances specify both the permittees and the waterbodies which would be covered. The first variance would cover limited CSO discharges from the MWRA and the Cities of Cambridge and Somerville (NPDES Permit Nos. MA0103284, MA0101974, and MA0101982, respectively) to the Alewife Brook/Upper Mystic River Basin. The second variance would cover limited CSO discharges from the MWRA and the City of Cambridge (NPDES Permit Nos. MA0103284 and MA0101974) to the lower Charles River/Charles Basin. Therefore, the variances are consistent with 40 CFR § 131.14(a)(1).

II.B. 40 CFR § 131.14(a)(2) – (2) Where a State adopts a WQS variance, the State must retain, in its standards, the underlying designated use and criterion addressed by the WQS variance, unless the State adopts and EPA approves a revision to the underlying designated use and criterion consistent with §§ 131.10 and 131.11. All other applicable standards not specifically addressed in the WQS remain applicable.

Massachusetts regulations at 314 CMR 4.05(3)(b) retain the underlying designated uses and criteria for bacteria, solids, color and turbidity, and taste and odor addressed by the variances.

For bacteria, 314 CMR 4.05(3)(b)(4)(b) states: "for other waters and, during the non bathing season, for waters at bathing beaches as defined by the Massachusetts Department of Public Health in 105 CMR 445.010: the geometric mean of all E. coli samples taken within the most recent six months shall not exceed 126 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 235 colonies per 100 ml; alternatively, the geometric mean of all enterococci samples taken within the most recent six months shall not exceed 33 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 61 colonies per 100 ml. These criteria may be applied on a seasonal basis at the discretion of the Department."

For solids, 314 CMR 4.05(3)(b)(5) states, "These waters shall be free from floating, suspended and settleable solids in concentrations and combinations that would impair any use assigned to this Class, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom."

For color and turbidity, 314 4.05(3)(b)(6) states, "These waters shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this Class."

For taste and color, 314 4.05(3)(b)(8) states, "None in such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to this Class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life."

The variances are consistent with 40 CFR § 131.14(a)(2).

II.C. 40 CFR § 131.14(a)(3) – A WQS variance, once adopted by the State and approved by EPA, shall be the applicable standard for purposes of the Act under § 131.21(d) through (e) for the following limited purposes. An approved WQS variance applies for the purposes of developing NPDES permit limits and requirements under 301(b)(1)(C), where appropriate, consistent with paragraph (a)(1) of this section. States and other certifying entities may also use an approved WQS variance when issuing certifications under section 401 of the Act.

The variances specify which permittees and waterbodies would be covered and are consistent with 40 CFR § 131.14(a)(3). The Alewife Brook/Upper Mystic River Basin variance would cover limited CSO discharges from the MWRA and the Cities of Cambridge and Somerville (NPDES Permit Nos. MA0103284, MA0101974, and MA0101982, respectively). The lower Charles River/Charles Basin variance would cover limited CSO discharges from the MWRA and the City of Cambridge (NPDES Permit Nos. MA0103284 and MA0101974).

II.D. 40 CFR § 131.14(a)(3) – A State may not adopt WQS variances if the designated use and criterion addressed by the WQS variance can be achieved by implementing technology-based effluent limits required under section 301(b) and 306 of the Act.

To date, no technology-based effluent limits have been established that would control CSO discharges sufficiently to meet existing water quality standards for the receiving waters.

However, EPA's 1994 National CSO Control Policy (59 FR 18688) establishes the minimum technology-based requirement as the implementation of the Nine Minimum Controls ("NMC"). The NMC include:

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.

Each of the NPDES permits for the MWRA and the Cities of Cambridge and Somerville contain these conditions.

Additionally, consistent with the CSO Control Policy, the MWRA developed a region-wide CSO long-term control plan ("LTCP") in 1997. Among other areas, this LTCP addresses CSO discharges from the MWRA and the City of Cambridge to the Lower Charles/Charles Basin as well as discharges from the MWRA and the Cities of Cambridge and Somerville to the Alewife Brook/Upper Mystic River basin. On numerous occasions, the MWRA evaluated modifications to that plan to enhance the level of control to be achieved. Those planning exercises are identified in Exhibit A to the Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflow Control.[1] In particular, EPA, MassDEP and the MWRA agreed on a revised plan for the Charles River and other receiving waters in March 2006.

[1] The Federal District Court for the District of Massachusetts consolidated two cases designed to remedy the pollution of Boston Harbor resulting from sewage and other wastewater discharges, one brought in June 1983 by the Conservation Law Foundation of New England against the Metropolitan District Commission ("MDC") and the Environmental Protection Agency ("EPA") and the other brought on January 31, 1985 by the United States on behalf of the EPA against the MDC, the Commonwealth of Massachusetts, the Massachusetts Water Resources Authority ("MWRA") and the Boston Water and Sewer Commission. EPA was dismissed as a defendant on September 5, 1985. On September 5, 1985, the district court found the MDC and the MWRA to be in violation of the Federal Water Pollution Control Act ("FWPCA") and granted partial summary judgment. After extensive negotiations and court hearings, the district court issued on May 8, 1986, a long-term scheduling order and the MWRA stipulated to liability for constructing CSO controls. Following another lengthy period of negotiations, the parties agreed on a CSO mitigation plan and schedule which the MWRA implemented. The MWRA agreed to a second stipulation, 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 with the Court on March 15, 2006. As part of that filing, the Parties identified the level of control to be achieved for each outfall.

In December 2015, the MWRA and the Cities of Cambridge and Somerville substantially completed 35 projects outlined in the LTCP to control CSO discharges. The variances for the Lower Charles/Charles Basin and the Alewife Brook/Upper Mystic River basin will enable the MWRA to enhance operation of the current facilities if possible, allow time to complete CSO assessment work (quantification of CSO activations and volumes and associated receiving water quality assessment) and allow the MWRA and the Cities of Cambridge and Somerville to complete updated CSO control plans and affordability analyses. MassDEP will also use this time to determine what additional reductions in CSO events can be attained beyond 2024, if any, and evaluate whether a future water quality standard variance or change to the designated use may be warranted for these waters.

The Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances are consistent with 40 CFR § 131.14(a)(3).

II.E. 40 CFR § 131.14(b)(1)(i) – A WQS variance must include: Identification of the pollutant(s) or water quality parameter(s), and the water body/waterbody segment(s) to which the WQS variance applies. Discharger(s) specific WQS variances must also identify the permittees subject to the WQS variance.

The variances are specific to Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin. Each variance would authorize limited CSO discharges during the term of the variance. During these CSO discharges, Class B requirements found at 314 CMR 4.05(3)(b) for bacteria, solids, color and turbidity, and taste and odor may not be met. The Alewife Brook/Upper Mystic River Basin variance would cover limited CSO discharges from the MWRA and the Cities of Cambridge and Somerville (NPDES Permit Nos. MA0103284, MA0101974, and MA0101982, respectively). The lower Charles River/Charles Basin variance would cover limited CSO discharges from the MWRA and the City of Cambridge (NPDES Permit Nos. MA0103284 and MA0101974). The variances are consistent with 40 CFR § 131.14(b)(1)(i).

II.F. 40 CFR § 131.14(b)(1)(ii) - A WQS variance must include: The requirements that apply throughout the term of the WQS variance. The requirements shall represent the highest attainable condition of the water body or waterbody segment applicable throughout the term of the WQS variance based on the documentation required in (b)(2) of this section. The requirements shall not result in any lowering of the currently attained ambient water quality, unless a WQS variance is necessary for restoration activities, consistent with paragraph (b)(2)(i)(A)(2) of this section. The State must specify the highest attainable condition of the water body or waterbody segment as a quantifiable expression that is one of the following:

(A) For discharger(s)-specific WQS variances:

(1) The highest attainable interim criterion; or
(2) The interim effluent condition that reflects the greatest pollutant reduction achievable; or
(3) If no additional feasible pollutant control technology can be identified, the interim criterion or interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program.

The variance requirements do not result in any lowering of the currently attained ambient water quality. The Alewife Brook/Upper Mystic River Basin and Lower Charles River/Charles Basin variances require the MWRA and the Cities of Cambridge and Somerville to continue to implement CSO NMC and limit CSO discharges to those consistent with 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. *See* footnote 1.

MADEP established the term for these variances based on the time the MWRA needs for receiving water modeling necessary to complete a CSO Performance Assessment, a requirement of the Federal Court Order, *See* footnote 1*,* which is intended to document the level of CSO control achieved to determine the impacts of CSO and non-CSO sources in Alewife Brook and the Upper Mystic River. MADEP states in the fact sheet for each variance (see Section V. Regulatory Requirements, *Highest Attainable Condition*)*,* that it has conducted a review of the past CSO facilities planning documents by the CSO Variance permittees to evaluate whether additional controls could be constructed and concluded that it would not be feasible to construct additional control prior to the expiration of the variances. MWRA has invested $906 million in CSO controls over the last two decades and has substantially completed all 35 CSO projects in the 1997 LTCP as modified. EPA agrees that there are no additional CSO-control projects that could be constructed during the term of this variance that would yield quantifiable results (i.e., there is no additional feasible pollutant control technology).

Therefore, consistent with 131.14(b)(1)(ii)(A)(3), for both variances, MADEP has identified the highest attainable condition("HAC") as the interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the state adopted each variance and implementation of a pollutant minimization program. The first part of the HAC is specified under VARIANCE CONDITIONS A. Level of Required CSO Control During the Variance: "CSO discharges shall be limited to those set forth in attached Exhibit B, with allowance for any conditions that exceed Typical Year 1 conditions." See Attachment A for Exhibit B.

For the second part of the HAC, the Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances require evaluation, design, development of a schedule and implementation of the following pollutant minimization plan projects unless the feasibility evaluation clearly demonstrates that construction is technically infeasible, that the project will not provide water quality benefits through the reduction of CSO volume or frequency, or that the costs alone or in conjunction with other activities specified in Exhibit A, would cause widespread social and economic impact:

1. MWR205 and SOM007/MWR205A Somerville Marginal CSO Reduction Project, Study and Preliminary Design.
2. Alewife Brook Pump Station Optimization Evaluation Project.
3. CSO System Optimization for the Alewife Brook and Lower Charles Basins Project, Study and Preliminary Design.

The variances also require the MWRA to continue providing technical assistance to member communities related to the identification and removal of infiltration and inflow "(I/I").

Additional details of these projects, including timelines, are described in Exhibit A of each variance.

Additional Requirements of this Variance

Lastly, the variances each contain the following related conditions:

1. An expanded CSO and receiving water quality monitoring program.
2. Progress reports and public meetings for the ongoing MWRA CSO performance assessment.
3. A requirement for MWRA to develop and calibrate a receiving water quality model and use such model to present information on the water quality impacts of CSO and non-CSO discharges in the Alewife Brook/Mystic River watershed and the Charles River Basin.
4. A requirement for MWRA and the Cities of Cambridge and Somerville to establish a subscriber-based CSO notification program, and to maintain CSO data on their respective websites.
5. A requirement for MWRA and the Cities of Cambridge and Somerville to provide a scope of work and schedule for developing an updated CSO Control Plan, along with updated affordability analyses, which will be needed to determine if higher levels of control are feasible.

The Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances are consistent with 40 CFR § 131.14(b)(1)(ii)(A)(3).

II.G. 40 CFR § 131.14(b)(1)(iii) – For variances with a term greater than five years, a WQS variance must include: A statement providing that the requirements of the WQS variance are either the highest attainable condition identified at the time of adoption of the WQS variance, or the highest attainable condition later identified during any reevaluation, whichever is more stringent.

Not applicable. The term of the variance is less than five years.

II.H. 40 CFR § 131.14(b)(1)(iv) – A WQS variance must include: The term of the WQS variance, expressed as an interval of time from the date of EPA approval or a specific date. The term of the WQS variance must only be as long as necessary to achieve the highest attainable condition and consistent with the demonstration provided in (b)(2) of this section. The State may adopt a subsequent WQS variance consistent with this section.

Both variances define the end of the variance term as August 31, 2024. The term of the variance provides sufficient time for MWRA to implement the pollutant minimization plan activities including:

1. Completion of CSO assessment work which includes both quantification of CSO activations and volumes, and associated water quality assessment of the receiving water impacts of remaining CSO discharges; and

2. Completion of updated CSO control plans and affordability analyses by the MWRA and the Cities of Cambridge and Somerville which will be used to base water quality standard determinations.

As described in Section II.F. above, the Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances also require implementation of the pollutant minimization plan projects during the term of the variances unless the feasibility evaluation clearly demonstrates that construction is technically infeasible, that the project will not provide water quality benefits through the reduction of CSO volume or frequency, or that the costs alone or in conjunction with other activities specified in Exhibit A, would cause widespread social and economic impact. EPA concurs that the requirements that apply throughout the term of the WQS variance described in section II.F above are the highest attainable condition within the variance term. Therefore, The Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances are consistent with 40 CFR § 131.14(b)(1)(iv).

II.I. 40 CFR § 131.14(b)(1)(v) – A WQS variance must include: For a WQS variance with a term greater than five years, a specified frequency to reevaluate the highest attainable condition using all existing and readily available information and a provision specifying how the State intend to obtain public input on the reevaluation. Such reevaluations must occur no less than every five years after EPA approval of the WQS variance and the results of such reevaluation must be submitted to EPA within 30 days of completion of the reevaluation.

Not applicable. The term of the variance is less than five years.

II.J. 40 CFR § 131.14(b)(1)(vi) – A WQS variance must include: A provision that the WQS variance will no longer be the applicable water quality standard for purposes of the Act if the State does not conduct a reevaluation consistent with the frequency specified in the WQS variance or the results are not submitted to EPA as required by (b)(1)(v).

Not applicable. The term of the variance is less than five years.

II.K. 40 CFR § 131.14(b)(2)(i)(A)(1) and (2) – For a WQS variance to a use specified in section 101(a)(2) of the Act or a sub-category of such a use, the State must demonstrate that attaining the designated use and criterion is not feasible throughout the term of the WQS variance because:

(1) One of the items listing in § 131.10(g) is met, or
(2) Actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented.

MassDEP determined that proceeding at this time with controls necessary for full attainment of the applicable Class B criteria and associated recreational use would result in substantial and widespread economic and social impact as those terms are used in 40 C.F.R. § 131.10(g)(6). EPA has evaluated relevant economic data and agrees that achievement of Class B standards during the term of the variance would cause such impacts. Please see Attachment B for details of EPA's evaluation.

II.L. 40 CFR § 131.14(b)(2)(ii) – Documentation demonstrating that the term of the WQS variance is only as long as necessary to achieve the highest attainable condition. Such documentation must justify the term of the WQS variance by describing the pollutant control activities to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program, which serve as milestones for the WQS variance.

Within the relatively short timeframe of this variance which expires on August 21, 2024, the elements of the pollutant minimization plan referenced in Section II.F above are the highest attainable condition. A shorter variance period would not allow for completion of these tasks, and this work represents the most that could reasonably be accomplished within this period. EPA concurs that the term of the variance is only as long as necessary to achieve the highest attainable condition.

The Alewife Brook/Upper Mystic River Basin and the lower Charles River/Charles Basin variances are consistent with 40 CFR § 131.14(b)(2)(ii).

Attachment A

EXHIBIT B
LTCP Levels of Control from Second Stipulation

CSO OUTFALL	LONG TERM CONTROL PLAN	
	TYPICAL YEAR	
	Activation Frequency	Volume (MG)
ALEWIFE BROOK		
CAM001	5	0.19
CAM002	4	0.69
MWR003	5	0.98
CAM004	To be closed	N/A
CAM400	To be closed	N/A
CAM401A	5	1.61
CAM401B	7	2.15
SOM001A	3	1.67
SOM001	Closed	N/A
SOM002A	Closed	N/A
SOM003	Closed	N/A
SOM004	Closed	N/A
TOTAL		**7.29**
UPPER MYSTIC RIVER		
SOM007A/MWR205A (Somerville Marginal)	3	3.48
SOM007	Closed	N/A
TOTAL		**3.48**
MYSTIC / CHELSEA CONFLUENCE		
MWR205 (Somerville Marginal)	39	60.58
BOS013	4	0.54
BOS014	0	0.00
BOS015	Closed	N/A
BOS017	1	0.02
CHE002	4	0.22
CHE003	3	0.04
CHE004	3	0.32
CHE008	0	0.00
TOTAL		**61.72**
UPPER INNER HARBOR		
BOS009	5	0.59
BOS010	4	0.72
BOS012	5	0.72
BOS019	2	0.58
BOS050	Closed	N/A
BOS052	Closed	N/A
BOS057	1	0.43
BOS058	Closed	N/A
BOS060	0	0.00
MWR203 (Prison Point)	17	243.00
TOTAL		**246.04**

CSO OUTFALL	LONG TERM CONTROL PLAN	
	TYPICAL YEAR	
	Activation Frequency	Volume (MG)
LOWER INNER HARBOR		
BOS003	4	2.87
BOS004	5	1.84
BOS005	1	0.01
BOS006	4	0.24
BOS007	6	1.05
TOTAL		**6.01**
CONSTITUTION BEACH		
MWR207	Closed	N/A
TOTAL		**0.00**
FORT POINT CHANNEL		
BOS062	1	0.01
BOS064	0	0.00
BOS065	1	0.06
BOS068	0	0.00
BOS070		
BOS070/DBC	3	2.19
UPPS	17	71.37
BOS070/RCC	2	0.26
BOS072	0	0.00
BOS073	0	0.00
TOTAL		**73.89**
RESERVED CHANNEL		
BOS076	3	0.91
BOS078	3	0.28
BOS079	1	0.04
BOS080	3	0.25
TOTAL		**1.48**
NORTHERN DORCHESTER BAY		
BOS081	0 / 25 year	N/A
BOS082	0 / 25 year	N/A
BOS083	0 / 25 year	N/A
BOS084	0 / 25 year	N/A
BOS085	0 / 25 year	N/A
BOS086	0 / 25 year	N/A
BOS087	0 / 25 year	N/A
TOTAL		**0.00**
SOUTHERN DORCHESTER BAY		
BOS088	To be closed	N/A
BOS089 (Fox Point)	To be closed	N/A
BOS090 (Commercial Point)	To be closed	N/A
TOTAL		**0.00**

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
NEPONSET RIVER		
BOS093	Closed	N/A
BOS095	Closed	N/A
TOTAL		0.00
BACK BAY FENS		
BOS046	2	5.38
TOTAL		5.38

Attachment B
The U.S. Environmental Protection Agency's Economic and Social Impact Analysis for Massachusetts Water Resource Authority Combined Sewer Overflow Elimination

Overview

To determine the appropriate Clean Water Act ("CWA") section 303(c) action on this WQS variance submission from Massachusetts (MA), EPA has evaluated the Massachusetts Department of Environmental Protection (MassDEP)'s conclusion that meeting the applicable Class B criteria at 314 CMR 4.05(3)(b) for bacteria[2], solids[3], color and turbidity[4], and taste and odor[5] to protect applicable designated uses[6] would cause substantial and widespread economic and social impacts. EPA used its 1995 Interim Economic Guidance for Water Quality Standards (EPA-823-B-95-002, henceforth referred to as "EPA's 1995 Guidance") for this evaluation.

The NPDES permits for the Massachusetts Water Resources Authority ("MWRA"), the City of Somerville and the City Cambridge authorize limited combined sewer overflow ("CSO") discharges to the receiving waters covered by the variances. The MWRA stipulated to liability for constructing CSO controls. *See* footnote 1. EPA's analysis was complicated by the fact that the MWRA spreads costs for CSO control projects equally by billed volume usage across all 43 communities it serves, but each community has a unique cost of existing pollution control, median household income, and secondary indicators reflecting a range of different financial conditions in each community. In addition, for some communities not all secondary indicators were available.

EPA used its 1995 Guidance to calculate and evaluate a municipal primary screener for each community. EPA then evaluated the impact on a subset of individual communities served by MWRA that EPA estimated were most likely to face substantial impacts. EPA also considered additional indicators as described in EPA's 2014 Financial Capabilities Framework for Municipal Clean Water Act Requirements (November 24, 2014 memorandum from Cynthia Giles and Ken Kopocis to Regional Administrators) to draw conclusions about financial conditions in communities that fell into the "impacts unclear" category.

EPA agrees with MassDEP's conclusion that meeting the applicable water quality criteria would require MWRA to eliminate all of its CSO overflows. Although based on the available data impacts may not be

[2] 314 CMR 4.05(3)(b)(4)b. "…for other waters and, during the non-bathing season, for waters at bathing beaches as defined by the Massachusetts Department of Public Health in 105 CMR 445.010: the geometric mean of all *E. coli* samples taken within the most recent six months shall not exceed 126 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 235 colonies per 100 ml; alternatively, the geometric mean of all enterococci samples taken within the most recent six months shall not exceed 33 colonies per 100 ml typically based on a minimum of five samples and no single sample shall exceed 61 colonies per 100 ml."

[3] 314 CMR 4.05(3)(b)(5) "Solids. These waters shall be free from floating, suspended and settleable solids in concentrations and combinations that would impair any use assigned to this Class, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom."

[4] 314 CMR 4.05(3)(b)(6) "Color and Turbidity. These waters shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this Class."

[5] 314 CMR 4.05(3)(b)(8) "Taste and Odor. None in such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to this Class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life."

[6] The receiving waters for the discharges to which the variances apply are Class B waters with the following applicable designated uses: habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, primary and secondary contact recreation, irrigation and other agricultural uses, and compatible industrial cooling and process uses.

substantial for every community, EPA has concluded that eliminating CSO overflows would cause substantial and widespread economic and social impacts for the MWRA service area as a whole.

Cost of Meeting Criteria

As described in the fact sheet for each variance, between 2006 and 2015 MWRA and the cities of Cambridge and Somerville completed 35 CSO control projects in MWRA's LTCP, consistent with the requirements of the federal court order in the Boston Harbor Case (D. Mass. C.A. No. 85-0489), at a total cost of $906.7 million. These projects have reduced typical year CSO discharge volume to the Charles River by 99%, from 1.74 billion gallons in 1988 to 15.10 million gallons in 2019. With the completion of ongoing sewer separation projects by the City of Cambridge, MWRA predicts that typical year CSO discharge volume to the Charles River will be reduced to approximately 7.76 million gallons, and 81.2% of this remaining volume will be treated.

Overflows remaining after the MWRA's $906.7 million investment in controls will occur at hydrologic low points in the system. EPA agrees that rebuilding the community systems entirely would be necessary to ensure that such overflows did not occur.

In a May 24, 2019 letter to EPA, MWRA provided a cost estimate of $18.607 billion for rebuilding the community systems to eliminate all CSO overflows. This cost estimate:

- Was derived using the Construction Index of Engineering News Record to escalate to 2019 dollars the $11.536 billion cost estimate originally provided to EPA and DEP by letter dated October 7, 2005;
- Includes "the current cost of areawide sewer separation (80% inflow removal), relief of transport system upstream and downstream of the headworks, and expansion of transport and treatment facilities;"
- Includes "planning, design, construction and related costs (e.g. land acquisition and construction mitigation) only, and does not include any costs for operation and maintenance;" and
- assumes that no other necessary wastewater system improvements or cost assumptions to eliminate CSOs systemwide have changed since 2005.

MWRA's May 24, 2019 letter also stated that 97% of the costs of CSO control projects would be borne by ratepayers. To estimate the per household cost of total CSO control, EPA annualized $18.607 billion over 30 years at 3% interest resulting in an annual cost to MWRA of $949,315,358 per year for total CSO control. The MWRA as a matter of practice finances sewer system controls over a 30 year period. Currently, and in the recent past, the interest paid has been approximately 3%. EPA assessed financial impacts under these conditions. EPA assumed the annual cost of $949,315,358 per year for total CSO control would be distributed to each household in the MWRA community equally. Thus, EPA divided the $949,315,358 annual costs for total CSO control by the 912,861 households in the 43 MWRA communities (2019 American Community Survey 5-yr estimate) resulting in an estimated annual per household cost of $1,040 for total CSO control.

Evaluation of Whether Impacts Would be Substantial

EPA's 1995 Guidance recommends first calculating a Municipal Primary Screener ("MPS"). The MPS estimates the total annual pollution control costs per household (existing costs plus those attributable to the proposed project) as a percentage of median household income ("MHI"). EPA's 1995 Guidance states: "If the average annual cost per household exceeds 2.0 percent of median household income, then the project may place an unreasonable financial burden on many of the households within the community. In either case, communities move on to the Secondary affordability Test to demonstrate substantial impacts." The MWRA serves 43 individual communities each with its own MHI. The differing pollution

control costs and MHIs for each community result in a unique MPS for each community. Secondary indicators also differ between communities, reflecting a range of different financial conditions across the service area.

To evaluate the economic impact to individual communities in the service area, EPA next calculated the MPS for each community. EPA estimated annual per household wastewater costs for each MWRA community if MWRA was required to implement the projects necessary for total CSO control by adding $1,040 for total CSO control to each community's current wastewater treatment costs. EPA obtained the average billed annual household wastewater treatment costs for each community in the MWRA service area from MWRA's 2019 Water and Sewer Retail Rate Survey[7] and added $1,040 for total CSO control to estimate the average per household costs for each community in the MWRA service area should MWRA be required to implement the projects necessary for total CSO control.

Of the 43 MWRA communities, EPA estimated an MPS above 2.0% for 10 (23%) of them, indicating that those communities would score in either the "impact is likely to be substantial" or "impact is unclear" category as specified in Table 2-2 of EPA's 1995 guidance.

For some communities not all secondary indicators were available. Of the 10 communities with MPS over 2%, EPA further evaluated 6 communities using the Secondary affordability test in the 1996 guidance. Those six communities were: Boston, Chelsea, Everett, Malden, Randolph and Revere. EPA obtained consolidated annual reports from these communities by downloading them from their respective websites. Randolph did not have its annual report available on the internet but provided an electronic copy upon request.

As shown in Figure 1 below, five of the communities scored in the "impact is likely to be substantial" category (Boston, Everett, Malden, Randolph, and Revere). Chelsea scored in the "impact is unclear" category.

[7] http://mwraadvisoryboard.com/

Figure 1: Assessment of Substantial Impacts Matrix for Six Communities Evaluated

Key:	
□	: Impact is not likely to be substantial
X	: Impact is likely to be substantial
?	: Impact is unclear

Everett

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS: 2.3% Secondary Test Score: 2.3			
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Malden

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS: 2.1% Secondary Test Score: 2.0			
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Randolph

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS:	2.1%		
Secondary Test Score:	2.3		
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Revere

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS:	3.0%		
Secondary Test Score:	2.3		
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Boston

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS:	2.1%		
Secondary Test Score:	2.2		
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	?

Chelsea

Assessment of Substantial Impacts Matrix (Table 5-2 from the Guidance)			
MPS: 3.2% Secondary Test Score: 2.7			
Secondary Test Score	MPS		
	Less than 1.0 Percent	Between 1.0 and 2.0 Percent	Greater than 2.0 Percent
Less than 1.5	?	X	X
Between 1.5 and 2.5	✓	?	X
Greater than 2.5	✓	✓	? *

Further Evaluation of Communities in the "Impact is unclear" category: Chelsea

Because Chelsea fell into the "impact is unclear" category, EPA evaluated additional indicators as suggested in EPA's 2014 Financial Capabilities Framework to draw conclusions about whether impacts to Chelsea would be substantial. In addition to a median household income 31% lower than the state average, Chelsea has a poverty rate of 18.8% which is almost double the state average of 10.0%. The per capita income in Chelsea is $24,338, which is 42% below the state average of $41,794. Furthermore, 24.2% of households in Chelsea received Food Stamp/SNAP benefits in the past 12 months, which is over double the state average of 12%. Finally, 6.8% of the population in Chelsea has no health insurance coverage, which is well over double the state-wide rate of 2.8%. On the basis of these additional economic statistics, EPA concludes that the cost of total CSO control would cause substantial impacts to the community of Chelsea.

Evaluation of Whether Impacts are Substantial for the MWRA Service Area as a Whole

Because EPA's detailed analysis of 6 sample communities demonstrates substantial impacts in all those communities, EPA believes it is reasonable to conclude that requiring MWRA to implement the controls necessary to eliminate all CSOs would result in substantial economic and social impacts across the MWRA service area.

Evaluation of Whether Impacts Would be Widespread

Demonstration of substantial impacts alone is not sufficient to justify the need for a variance. The applicant must also demonstrate that any substantial financial impacts would result in widespread socioeconomic impacts. Once EPA's financial analysis demonstrates that the economic impacts of meeting the underlying criteria would likely be substantial for communities in the MWRA service area, EPA evaluated whether those substantial impacts would likely be widespread in communities.

The MWRA serves 43 communities with a combined total population of 6,830,193 people. The MWRA passes almost all costs on to the communities it serves. The communities pass those costs on to their ratepayers. This leads to substantial impacts being widespread throughout the communities. Almost all households and businesses in the MWRA service area pay for wastewater treatment. A substantial community-wide increase in wastewater treatment rates would likely have broad negative effects on community financial health. Such broad negative effects on community financial health would likely alter the ways in which people live, work, play, relate to one another, and organize their activities. If the community financial health is broadly negatively affected, then negative changes in socioeconomic

condition such as household income, unemployment, commercial development potential, and property values would also be expected.

Conclusion

The assessments in the matrices for these communities, in conjunction with social characteristics of the impacted populations, lead EPA to conclude that financing the construction of controls to eliminate CSOs from the collection during the term of the variance would lead to substantial and widespread economic and social impacts in MWRA communities.