TENTATIVE DETERMINATION TO ADOPT A VARIANCE FOR COMBINED SEWER OVERFLOW DISCHARGES TO ALEWIFE BROOK/UPPER MYSTIC RIVER BASIN

FACT SHEET

This document is intended to provide a summary of the activities that have taken place since the Massachusetts Department of Environmental Protection's ("MassDEP") original issuance of the Variance for Combined Sewer Overflow ("CSO") discharges to the Alewife Brook/Upper Mystic River Basin (the "Variance") on March 5, 1999 to the Massachusetts Water Resources Authority ("MWRA"), and the Cities of Cambridge and Somerville, and to provide a frame of reference and regulatory justification for MassDEP's tentative decision to issue a new Variance through August 29, 2029.

I. Background on Boston Harbor Case and the Variance in the Alewife Brook/Upper Mystic River Basin

Boston Harbor Case

As part of the Boston Harbor Case (D. Mass. C.A. No. 85-0489-RGS), MWRA is required to undertake corrective actions through its approved Long-Term CSO Control Plan ("LTCP") to reduce or eliminate CSO discharges to Alewife Brook/Upper Mystic River Basin and other Boston area surface waters affected by CSO discharges. MWRA's approved LTCP comprised 35 wastewater system improvement projects that resulted in elimination of a number of CSO outfalls and substantial reductions in activations and volumes of CSO discharges at other outfalls. MWRA implemented their approved LTCP from 1996 – 2015, at a capital cost of $911 million.

MWRA originally developed a recommended regionwide LTCP in its *Final CSO Facilities Plan and Environmental Impact Report, July 31, 1997* ("1997 Facilities Plan/EIR"). In July 1997, MWRA estimated the cost for the Alewife Brook and Upper Mystic River Basin portions of the plan at approximately $17.2 million. In August 2005, MWRA recommended revisions to its LTCP, including a revised and expanded CSO control plan for Alewife Brook. At that time, MWRA had already completed the 1997 LTCP projects intended to control CSO discharges to the Upper Mystic River/Mystic Basin. In March 2006, MWRA reached an agreement with the U.S. Environmental Protection Agency ("EPA"), MassDEP, the Massachusetts Attorney General's Office and the United States Department of Justice on the revised LTCP, along with a new implementation schedule for Alewife Brook/Upper Mystic River Basin work. The agreement was filed with the Federal District Court as part of a joint motion to amend the court schedule in the Boston Harbor Case.

As part of the agreement, MassDEP and EPA determined that MWRA's revised LTCP satisfied the regulatory requirements for a variance from water quality standards ("WQS") for CSO discharges to the Alewife Brook/Upper Mystic River Basin through 2020, by which time the revised LTCP work would be fully implemented. Accordingly, MassDEP and EPA agreed that MassDEP would issue, and EPA would approve, variance extensions through 2020, and that each variance extension would be consistent with and limited to the requirements in the LTCP.

In April 2006, the Court allowed the joint motion and issued an Order with a new schedule. Under the Order, MWRA had until the year 2020 to complete the remaining CSO work and a subsequent CSO Post Construction Monitoring Program and Performance Assessment Report ("Performance Assessment") to verify that the long-term CSO control goals are achieved. In addition, the United States and MWRA agreed to withdraw the February 27, 1987 *Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows* and replace it with a Second Stipulation that requires MWRA to implement the CSO requirements set forth in the court schedule and to meet the levels of control described in the revised LTCP. The Second Stipulation also sets forth legal obligations of MWRA and communities for further CSO control pursuant to the Clean Water Act.

Pursuant to the federal Court Order, MWRA completed and submitted the Final CSO Post Construction Monitoring Program and Performance Assessment Report on December 30, 2021. MWRA also completed an accompanying Water Quality Assessment Report, which presented the results of receiving water quality modeling (for bacteria) accounting for both CSO and non-CSO pollutant sources in both the Charles River and Alewife Brook/Upper Mystic River Basins.

MWRA's Performance Assessment concluded that the level of control required under the Second Stipulation (from the approved LTCP) was met or exceeded, as to average annual CSO activations and volumes, at 70 of the 86 CSO outfalls for which performance targets were defined. The Assessment also indicated that the required level of control, as of the end of 2021, was not met at the 16 remaining CSO outfalls.

In February 2022, to provide MWRA and its member CSO communities time to implement identified projects and further investigate other CSOs determined to have fallen short of the LTCP goals, an agreement was established and a motion was made to the court, to extend the Boston Harbor Case three years to December 2024. The motion was subsequently approved. During this three-year extension, a six-part framework was agreed to for use in governing any unfinished work. The framework consists of six interrelated components: (1) the submission of the Final Report (completed in December 30, 2021); (2) a three-year extension of the LTCP to complete the investigation and, where feasible, improvements of the sixteen underperforming outfalls; (3) annual reporting to the court and the public; (4) periodic meetings with the stakeholders; (5) the submission of a Supplemental Report in December of 2024 detailing the Typical Year[1] performance of all 86 outfalls covered by the LTCP as compared to the 1992 system conditions, as well as the results of the work performed on the sixteen problem outfalls; and (6) proposed language for two milestone amendments of Schedule Seven. The parties also submitted a jointly developed *Motion of the Massachusetts Water Resources Authority to Amend Schedule Seven* formally setting out for the court the Schedule Seven amendment language recommended by the parties. MWRA continues to adhere to the framework governing the work during the three-year extension on the Boston Harbor case.

[1] "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.

The most recent information about MWRA's LTCP is presented in MWRA's CSO Annual Progress Report 2022, dated May 17, 2023. With the release of the 2022 Annual Report, MWRA updated the hydraulic model for end of 2022 conditions[2] and demonstrated that 72 (rather than 70) of the 86 outfalls now achieve or materially achieve LTCP goals. Of the remaining 14, eight have projects to meet the LTCP goals that are in design or construction and are expected to be completed by the end of 2024. For the six outfalls that remain particularly challenging (SOM001A, MWR018, MWR019, MWR020, MWR201, and CAM005), MWRA is still investigating cost effective measures to meet the goals of the LTCP.

Level of CSO Control

The eight projects in the LTCP that address CSO discharges to the Alewife Brook/Upper Mystic River Basin have a total MWRA cost of $112.6 million (see Table 1) and have resulted in the closure of several CSO outfalls (see Figure 1) and significant reductions in activation frequency and volume of CSOs. MWRA's hydraulic model and water quality model simulations predicted that the recommended control levels will bring CSO discharges into compliance with Class B (fishable/swimmable) water quality criteria 98.5 percent of the time. Levels of CSO control at outfalls on the Alewife Brook for baseline (1992), current conditions (2022), and revised recommended plan (LTCP) conditions are shown in Table 2.

Since the completion of these projects, MWRA and its CSO communities have continued to perform work to further reduce CSOs throughout the metropolitan Boston area, with capital expenditures now totaling over $1 billion. This includes inflow and infiltration removal projects in the Sherman Street and Rindge Avenue areas completed by Cambridge. In addition, Cambridge has required stormwater management detention systems at several large development projects in the Alewife Brook watershed.

Table 1: MWRA Long-Term CSO Control Plan for Alewife Brook/Upper Mystic River Basin

Project	Purpose	Receiving Water	Completed	Cost[1] (million$)
Somerville Baffle Manhole Separation[2]	Remove stormwater from the sewer system; eliminate CSO at outfalls SOM001, SOM002, SOM002A, SOM003, and SOM004, SOM006 and SOM007.	Mystic Basin and Alewife Brook	1996	0.4
Somerville-Marginal CSO Facility Upgrade	Improve disinfection; add dechlorination	Mystic Basin	2000	4.0
CAM004 Stormwater Outfall and Wetland Basin[3]	Convey stormwater flows to wetland system for attenuation and treatment.	Alewife Brook	2013	103.7
CAM004 Sewer Separation[3]	Remove large quantities of stormwater from the sewer system; eliminate CSO at Outfall CAM004.		2015	
CAM400 Manhole Separation[3]	Remove stormwater from the sewer system; eliminate CSO at Outfall CAM400.		2011	
Interceptor Connection Relief and Floatables Control at CAM002 and CAM401B and Floatables Control at CAM001[3]	Upgrade connections between Cambridge and MWRA systems to provide relief; add floatables control.		2010	

[2] The model used in the 2022 Annual Report is being updated for the Updated CSO Control Plan (discussed below) by MWRA, Cambridge, and Somerville.

Interconnection Relief and Floatables Control at Outfall SOM01A	Upgrade connection and provide floatables control.		2013	0.4
Control Gate/Floatables Control at Outfall MWR003 and MWRA Rindge Avenue Siphon Relief	Optimize hydraulic conveyance; minimize overflows while controlling system flooding in large storms; provide floatables control.		2015	4.1
Total				**112.6**

(1) MWRA cost, only; from Proposed FY17 Capital Improvement Program. Total MWRA and City of Cambridge cost for design and construction of the Alewife Brook/Upper Mystic River Basin CSO projects totals more than $200 million. These costs reflect the amount spent at the time of construction and have not been updated to account for inflation.

(2) Implemented by City of Somerville with MWRA funding.

(3) Implemented by City of Cambridge with MWRA funding.

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Figure 1: Alewife Brook and Mystic River CSO Outfalls and Projects

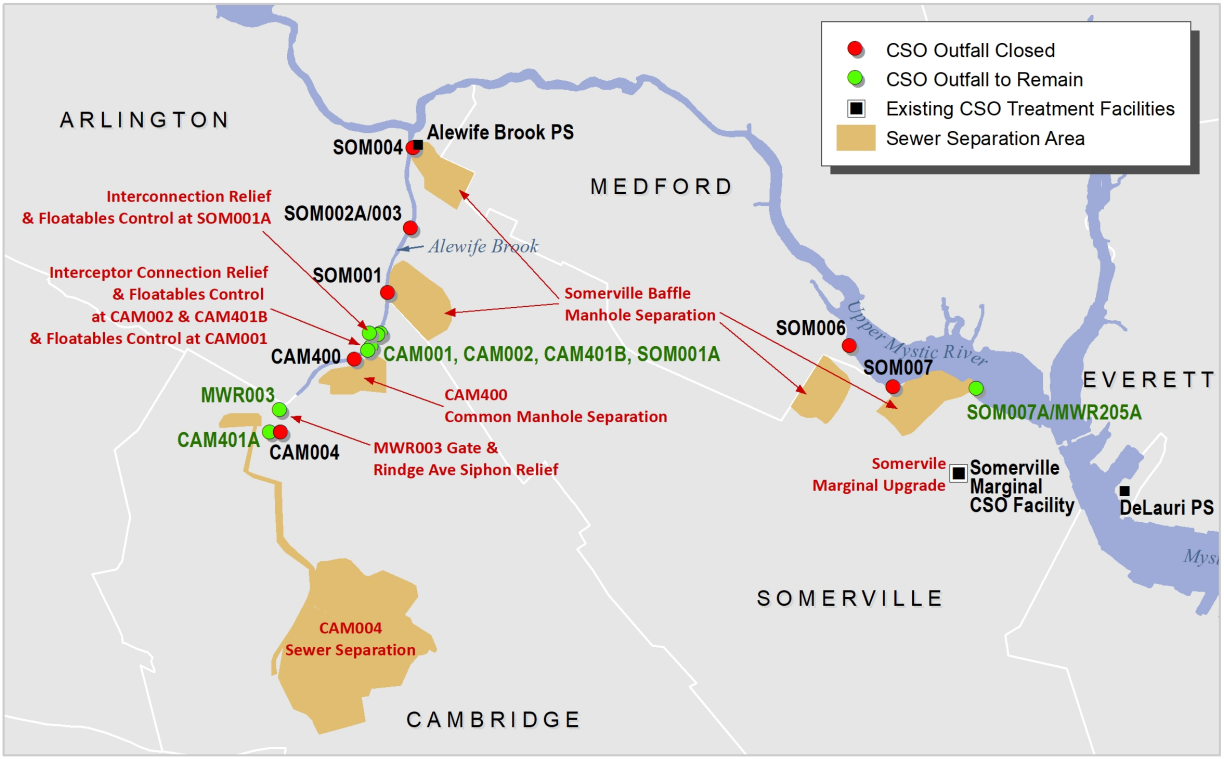

Table 2: Typical Year CSO Discharge Frequency and Volume to the Alewife Brook/Upper Mystic 1992-2022

Outfall currently achieves LTCP activation and volume goals.			Outfall is forecast to achieve LTCP goals after Dec 2021.			
Outfall investigations continue for forecast of LTCP attainment potential.			Model prediction is greater than LTCP value.			
OUTFALL	1992 SYSTEM CONDITIONS [1]		Q4-2022 SYSTEM CONDITIONS		LONG TERM CONTROL PLAN [2]	
	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)	Activation Frequency	Volume (MG)
ALEWIFE BROOK						
CAM001	5	0.15	1	0.02	5	0.19
CAM002	11	2.73	0	0	4	0.69
MWR003	6	0.67	3	0.61	5	0.98
CAM004	20	8.19	Closed	N/A	Closed	N/A
CAM400	13	0.93	Closed	N/A	Closed	N/A
CAM401A	18	2.12	5	0.66	5	1.61
CAM401B			4	0.5	7	2.15
SOM001A	10	11.93	8	4.47	3	1.67
SOM001	0	0	Closed	N/A	Closed	N/A
SOM002	0	0	Closed	N/A	N/I[3]	N/I[3]
SOM002A	0	0	Closed	N/A	Closed	N/A
SOM003	0	0	Closed	N/A	Closed	N/A
SOM004	5	0.09	Closed	N/A	Closed	N/A
TOTAL	**88**	**26.81**	**21**	**6.26**	**29**	**7.29**
UPPER MYSTIC RIVER						
SOM007A/MWR205A [4]	9	7.61	5	4.5	3	3.48
SOM006	0	0	Closed	N/A	N/I[3]	N/I[3]
SOM007	3	0.06	Closed	N/A	Closed	N/A
TOTAL	**12**	**7.67**	**5**	**4.5**	**3**	**3.48**
Alewife/Mystic Total	**100**	**34.48**	**26**	**10.76**	**32**	**10.77**

(1) 1992 System Conditions include completion of Deer Island Fast-Track Improvements, upgrades to headworks, and new Caruso and DeLauri pumping stations. Estimated 1988 Grand Total Typical Year CSO volume (prior to these improvements) was 3,300 million gallons.
(2) From Exhibit B to Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows, as amended by the Federal District Court on May 7, 2008 (the "Second CSO Stipulation").
(3) N/I: Outfall is not included in Exhibit B to the Second CSO Stipulation.
(4) The SOM007A/MWR205A volume includes a fraction of the flow treated at Somerville Marginal facility plus separate stormwater that enters the Somerville Marginal Conduit (outfall) downstream of the facility. The volume presented is therefore not included in the total treated flow calculated below as the treated CSO fraction of the volume at SOM007A/MWR205A is counted in the volume presented for MWR205.

Other Priorities to Ensure Continued Progress

Further water quality improvements in the Alewife Brook/Upper Mystic River watershed will also rely on municipal efforts to locate and remove illegal wastewater discharges to storm drains, implement stormwater Best Management Practices, and address other stormwater impacts as they contribute to wet weather issues affecting these watersheds.

MassDEP also acknowledges the importance of proper operation, maintenance and rehabilitation of MWRA and community sewer and stormwater systems to assure optimized conditions for conveying wastewater flows through the system for treatment at Deer Island and improving stormwater quality. Sewer system repairs and cleaning, as well as optimized operation of the sewer system and facilities during wet weather, have resulted in improved conveyance capacities in a number of locations, removal of localized system flow constraints, and maximum use of in-system storage, all contributing to CSO reduction. Lastly, effective infiltration/inflow ("I/I") removal programs being implemented by MWRA and all of the member communities will be important to achieve and sustain CSO control benefits.

II. Water Quality Monitoring and Modeling in the Alewife Brook and Mystic River

MWRA has been monitoring water quality continuously in the Alewife Brook and the Mystic River since 1989. Studies include measurements of sewage indicator bacteria and nutrients, along with physical measures like dissolved oxygen, Secchi depth and pH. MWRA has submitted reports on the results annually during the full timeframe of the Variance. The reports (e.g., *Goodwin C, Ellis-Hibbett D, Winkler D. 2022. Summary of CSO Receiving Water Quality Monitoring in Upper Mystic River/Alewife Brook and Charles River, 2021. Boston: Massachusetts Water Resources Authority. Report 2022-09. 70 p. plus appendices*) are available at: http://www.mwra.state.ma.us/harbor/enquad/trlist.html. Water quality in the Alewife Brook and Mystic River has improved tremendously over the last 30 years.

In addition to sampling for water quality, MWRA also developed a hydrodynamic water quality model (as required in the 2019 Variance) to estimate the levels of bacteria in the Alewife Brook and Upper Mystic River during several design storms and the Typical Year. As an input to the model, the loads of bacteria from various sources needed to be determined using runoff models and recent bacteria data. The results of these analyses allow MWRA to see what the main drivers of bacteria loads are in the Alewife Brook and Upper Mystic River and gauge the impact that further CSO reduction will have. The assessment of current water quality and discharge monitoring data have indicated that CSOs are not the primary source of impairment with respect to recreational water quality in the Alewife Brook and Upper Mystic River, but confirm that CSOs have transitory impacts particularly in the Alewife Brook, after larger storms. Additional technical details, and a description of the water quality models can be found in the Receiving Water Quality Model Development and Calibration Report and the Water Quality Assessment Report.

III. Variance History

A three-year Variance for CSO discharges to the Alewife Brook/Upper Mystic River Basin was initially issued by MassDEP on March 5, 1999. The Variance is a temporary modification of the WQS issued by MassDEP, and subject to approval by EPA. The Variance allows for excursions of the WQS resulting from limited CSO discharges from the outfalls along the Alewife Brook/Upper Mystic River permitted to MWRA and the cities of Cambridge and Somerville, subject to specific conditions. During wet weather events where the limited CSO discharges occur, Class B requirements at 314 CMR 4.05(3)(b) for bacteria, solids, color and turbidity, and taste and odor may not be met. Other standards and criteria of the receiving waters' Class B designation are unaffected and remain in force. MassDEP, with the concurrence of EPA, issued extensions to the original 1999 Variance in the Alewife Brook/Upper Mystic River Basin through August 2019.

The current CSO Variance took effect on August 30, 2019 and extends to August 29, 2024 ("2019 Variance"). The 2019 Variance was issued to achieve numerous objectives:

- Establish a schedule, consistent with the Court Order, for MWRA to complete the CSO Assessment work, which includes both quantification of CSO activations and volumes, and associated water quality assessment of the receiving water impacts of the remaining CSO discharges.

- Establish and enhance CSO public notification programs, including a requirement to initiate use of a subscriber-based CSO Public Notification Program (requirements for these type of notification programs are now promulgated in 314 CMR 16.00);

- MWRA to continue and expand the water quality monitoring program in the Alewife Brook and Mystic River to demonstrate the effectiveness of CSO controls implemented in the watershed, and to be used in support of receiving water modeling;

- Continue requirements for Nine Minimum Controls, and assess options for further system optimization to reduce CSO discharges;

- MWRA to provide technical assistance in implementation of I/I programs by member communities;

- Establish a schedule for MWRA and the Cities of Somerville and Cambridge to develop Updated CSO Control Plans, to include a recommended plan for further CSO controls to meet the requirements of the Clean Waters Act, and to provide the basis for water quality standard determinations by MassDEP and EPA.

The permittees have met nearly all the requirements of the 2019 Variance. Water quality monitoring was expanded and MWRA has developed and calibrated the Receiving Water Model, resulting in the Water Quality Assessment Report in November, 2021. As noted above, MWRA also submitted the Performance Assessment to EPA and MassDEP in December 2021. The permittees have complied with the requirements on public notification of CSOs and MWRA continues to implement its I/I program to assist member communities.

The remaining requirement is submission of Updated CSO Control Plans, which could not have feasibly been submitted by the end of 2023 due date, given the technical challenges which have arisen, along with the need for extensive public participation and agency coordination. As a result, the MassDEP proposes to adopt a new Variance that will be effective from August 30, 2024 to August 29, 2029 in order to allow MWRA, Cambridge, and Somerville to carry out this work. The Variance will also include conditions that require a pollution minimization program for each permittee to implement actions to more effectively identify and address CSO pollutant loadings, and reporting to advise the public on CSO discharge events and their impacts.

IV. Request for a New Variance

MWRA, Cambridge, and Somerville determined that the substantial collaboration required to develop effective and useful updated plans that meet MassDEP and EPA requirements necessitates an extension of the current schedule set forth in the 2019 Variance. As a result, the permittees submitted an official request to MassDEP in September 2022 to extend the submission date of the final Updated CSO Control Plan by 36 months to December 31, 2026. Updating the Typical Year to consider the impacts of climate change, holding public meetings that will allow for outreach to Environmental Justice populations and public input at critical points in the planning process, thoroughly analyzing proposed alternatives for CSO reduction, complying with Massachusetts Environmental Policy Act requirements (which could involve a Special Review Procedure), and the coordination involved among the three entities in developing Updated CSO Control Plans all require additional time not afforded by the 2019 Variance deliverable schedule.

In May 2023, MassDEP and EPA both concurred that the timeframe established in the 2019 Variance for completing Updated CSO Control Plans cannot be met and instructed MWRA, Cambridge, and Somerville to advance the work as quickly and efficiently as possible in accordance with the MassDEP-approved scopes of work. At that time, MassDEP also affirmed its intention to initiate the process to reissue the Variance to incorporate new submittal dates for the Updated CSO Control Plans, which are acknowledged to be essential in defining further CSO controls.

V. Regulatory Requirements

EPA regulations at 40 CFR 131.14, and MassDEP regulations at 314 CMR 4.03(4), establish the regulatory requirements for issuing WQS variances. Use of variances for CSO discharges is also discussed in detail in MassDEP's *Guidance for Abatement of Pollution from CSO Discharges* (August 11, 1997), and EPA's *Guidance: Coordinating CSO Long-Term Planning with Water Quality Standards Reviews* (July 31, 2001).

Substantial and Widespread Social and Economic Impact

Variances must be supported by at least one of six factors common to both EPA and MassDEP regulations. Included as one of these factors, in both 40 CFR 131.10(g)(6) and 314 CMR 4.03(4)(a)6., is the following:

> *"Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact."*

MassDEP has determined that proceeding at this time with controls beyond those included in the MWRA LTCP to meet the applicable recreational use and criteria, would result in substantial and widespread social and economic impact. This determination is further supported by MWRA's submittal on August 8, 2023, documenting the cost estimate of $22 billion to fully eliminate CSO discharges, based on their assessment of the facilities needed to achieve elimination.

To look at the impact of CSO elimination ($22 billion) on the MWRA service area, an economic analysis was performed using EPA's Clean Water Act Financial Capability Assessment Guidance (February 2023)[3] (EPA FCA Guidance). This analysis included a review of the financial capability parameters in the EPA guidance, and further included additional information on all census tract data within the MWRA service area. Census tracts generally have between 2,500 and 8,000 residents and are as homogeneous as possible with respect to population characteristics, economic status, and living conditions. For the MWRA service area a total of 591 census tracts were analyzed. This accounts for 956,488 households. The economic analysis for census tracts was completed using the following steps:

- GIS information was obtained for all Census tracts in MA and GIS software was used to select Census tracts within the MWRA communities that receive sewer service from the MWRA.
- Current wastewater treatment costs for each community were obtained from the MA 2022 rate survey and the appropriate cost was applied to each Census tract according to its associated community.
- Year 2022 Census data at the Census tract level is necessary to perform the analysis recommended in EPA's FCA guidance.
- The Municipal Preliminary Screener (MPS) was calculated for each Census tract by adding together current and projected per household costs for each Census tract and dividing by the Median Household Income of the Census tract.
- The secondary test scores were calculated for each Census tract. The secondary test comprises six indicators. Four indicators were obtained (Bond rating, Overall Net Debt as a Percent of Full Market Property Value Score, Property Tax Revenues as Percent of Full Market Property Value, and Property Tax Revenue Collection Rate) for each community and those community scores were applied to the appropriate Census tracts. The secondary scores for the indicators Unemployment Rate and Median Household Income at the Census tract level were calculated. The average of the six scores for each Census tract was calculated and each was evaluated using the secondary test.
- The initial economic impact for each Census tract was determined by evaluating the MPS and secondary test for each of them.

[3] https://www.epa.gov/system/files/documents/2023-01/cwa-financial-capability-assessment-guidance.pdf

- The Lowest Quintile Poverty Indicator (LQPI) score for each Census tract was calculated using Census tract level Census data.
- The initial economic impact and LQPI score for each Census tract were combined and each tract was categorized as likely to have a substantial impact, not likely to be substantial, or unclear.

The economic analysis showed that 36 percent of the households would experience substantial impact and 17 percent would have impact unclear. A Financial Alternatives Analysis was also performed consistent with EPA's FCA Guidance and can be found in Attachment A. The results of the economic analysis are provided in the table below.

	# Tracts	% Tracts	# Households	% Households
Substantial Impact	213	36%	343,123	36%
Impact Unclear	88	15%	158,623	17%
Not Likely to be Substantial	275	47%	454,075	47%
Insufficient Information	15	3%	627	0%
Total	591	100%	956,448	100%

Given that this information further elucidates the initial "unclear" result by showing that 53 percent of the households over the large and diverse service area would experience substantial or unclear impacts, combined with the fact that MWRA and the cities have completed implementation of an extensive LTCP, and are now developing Updated CSO Control Plans to make further progress on controlling CSOs in the future that will benefit all households in the MWRA service area, MassDEP concludes that elimination of CSOs at this time would result in substantial and widespread economic and social impact. The Updated CSO Control Plans that will be completed during the Variance term and the conditions of these short term (five year) variances to make incremental water quality improvements will have long-term positive effects on the receiving waters and the goal of achieving WQS.

MassDEP and EPA note that the FCA work to be completed with the Updated CSO Control Plans must be guided by the 2023 EPA Clean Water Act Financial Capability Assessment Guidance, but may adopt different approaches or methodologies consistent with the Guidance, but which differ from the analysis used by EPA described above.

Highest Attainable Condition

Federal regulations at 40 CFR 131.14(b)(1)(ii) also establish that the requirements applicable over the term of a variance must represent the "highest attainable condition" of the waterbody segment. For discharger(s)-specific WQS variances, 40 CFR 131.14(b)(1)(ii)(A) provides that the "highest attainable condition" must be quantified as one of the following:

(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.

For this proposed Variance, MassDEP has incorporated conditions in the Variance that require implementation of the Nine Minimum Controls, actions to address I/I from MWRA and community sewer systems, and CSO abatement projects. These collective actions, and the Variance Conditions noted below, are intended to achieve the highest attainable CSO control conditions feasible during the course of the Variance. The Variance requirement for development of Updated CSO Control Plans will facilitate a determination on the affordability and feasibility of higher levels of CSO controls, at the end of the Variance term.

2024 Variance Conditions

In developing the 2024 draft Variance conditions MassDEP has carried forward many tasks from past iterations of the Variance, and has added additional requirements MassDEP considers vital steps to further minimize CSO discharges, to gather information needed to understand CSO water quality impacts, and to determine compliance with WQS at the close of the Variance period. In addition, some of the tasks carried forward from past iterations of the Variance have been strengthened, so that the collection of Variance requirements achieves the highest attainable conditions to control CSO discharges and improve water quality in the Alewife Brook/Upper Mystic watershed. Draft Variance conditions include:

- A Pollution Minimization Program that mitigates pollutants from CSO discharges, including:
    - Continued implementation of the Nine Minimum Controls;
    - Submittal of detailed metering data for select CSO events;
    - Implementation of sewer separation work resulting in separation of 65 acres of tributary sewer area;
    - Implementation of further sewer system optimization to identify and implement weir modifications where feasible to further reduce CSO activations;
    - Removal of extraneous flow (infiltration/inflow) from the sewer system;
    - An interceptor relief project at the site of the Somerville Marginal CSO Treatment Facility to further minimize CSO discharges at that outfall;
    - Sewer separation projects in Somerville.
    - Completion of a stormwater pump station in Somerville that will allow for future sewer separation projects.
- A requirement for MWRA to continue CSO/receiving water quality monitoring program, to measure CSO impacts to water quality;
- A requirement for MWRA, and the Cities of Cambridge and Somerville to maintain a subscriber-based CSO notification program, and to maintain CSO data on their respective websites;

- A requirement for MWRA and the Cities of Cambridge and Somerville to continue to develop and finalize Updated CSO Control Plans that include active public engagement from Environmental Justice communities and the opportunity for feedback, along with an updated Typical Year that considers the impacts of climate change;
- A requirement for MWRA to continue and enhance their technical assistance program to member communities with the goal of reducing infiltration and inflow into the sewer systems;
- A requirement for MWRA and the Cities of Cambridge and Somerville to provide updated affordability analyses, which will be needed to determine if higher levels of control are feasible.

ATTACHMENT A
FINANCIAL ALTERNATIVES ANALYSIS

Financial Alternatives Analysis Worksheet			
Financial Alternatives Analysis	**Describe how Financial Alternative has been implemented or considered. Where considered, include any plans from community to pursue Alternative**	**Where tools not pursued, describe any associated challenges with the Alternative (e.g., impact to bond rating, interest rate not favorable)**	**Describe outcomes of Alternative (e.g., grant applied for, loan not pursued)**
1. Financing Options for Capital Costs:			
a) Has the community discussed financing options, including timing, terms, and potential grants or forgiveness, with the responsible State Revolving Fund?	MWRA has a regular dialogue with the State Revolving Fund staff to maximize the amount of financing obtained for system improvement projects, within the program's applicant cap. Based on the SRF's annual affordability calculation for awarding principal forgiveness MWRA generally does not qualify. MWRA has recently received principal forgiveness from the SRF provided by the Commonwealth's ARPA Funds granted to the SRF. These funds were provided to all projects on the Intended Use Plan. The amount needed for full CSO elimination far exceeds the capacity of the SRF.		
b) What additional funding sources beyond the SRF such as grants, low-cost loans, or extended term loans has the community considered?	MWRA already finances its capital program through the issuance of bonds. MWRA's strong credit ratings allows MWRA to borrow at low interest rates. MWRA also already actively manages its debt portfolio to take advantage of refunding savings, variable rate debt and other tools to reduce overall debt service costs. MWRA as a regional water/sewer authority is not eligible to directly receive ARPA funding as this funding was provided to municipalities, counties and states. MWRA already applies for a number of grants to help offset capital costs. No grant opportunities of the magnitude needed to fund an undertaking of this scale have been identified.		
c) Has the community considered special assessment districts to finance geographically defined project work?	This idea was considered on two occasions. First when developing the MWRA CSO control plan during which a decision was made to share the program costs among the entire MWRA sewer district. Second, MWRA underwent an extensive sewer assessment methodology with many and various considerations on how to apportion costs. MWRA ultimately landed on the majority of assessments based on contributory flow to the system which incentivizes communities to work to reduce their flows through either I/I reduction or sewer separation.		

d) Has the community considered other revenue sources such as sales or property taxes, rental income from water tower leases, or other potential sources of support?	MWRA does not have taxing authority. MWRA already optimizes non-water/sewer revenue sources as a means to keep rates affordable and predictable. These other revenue sources do not represent a large percentage of MWRA operating costs, nor can they.		
e) Has the community evaluated how it can reduce overall operating and program costs?	MWRA's proposed budget and capital improvement program undergoes a formal public review process. MWRA continually monitors the costs of providing services and takes steps to keep rate increases predictable and sustainable. MWRA evaluates life cycle costs in capital decision making. 56% of MWRA's total budget in FY24 is for debt service to pay off the bonds for the Boston Harbor project, the CSO program and other capital improvements completed to date. MWRA aggressively manages its debt portfolio to keep debt service costs in control. The outstanding bond principal required for full CSO elimination would cost approximately $50.6 billion in debt service expenses resulting in annual rate increases in excess of 25%.		
> Other Considerations:			
2. Rate Design:			
a) In what ways has the community evaluated modifications to its rate structure that could increase revenue and/or reduce burden on the lowest income residents?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures for member communities. However, many of the communities do use rate structures which reduce burdens on lower income residents. Details of local rate structures can be found at https://www.mwraadvisoryboard.com/document-library/2022ratesurvey/	N/A	N/A
b) Has the community prepared a forward-looking financial plan and rate analysis within the last five years? If so, was the plan implemented?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures for member communities.	N/A	N/A

c) Does the community have identified separate rate structures for commercial, industrial, and wholesale customers reflecting their particular demands on the collection and treatment system? Has the utility considered tier-based rates?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures for member communities. However, many of the communities do use separate rate structures for different categories of customers. Details of local rate structures can be found at https://www.mwraadvisoryboard.com/document-library/2022ratesurvey/	N/A	N/A
d) Does the community use inclining block rates that charger higher per gallon rates for higher increments of use?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures for member communities. However, most of the communities do use inclining block rates. Details of local rate structures can be found at https://www.mwraadvisoryboard.com/document-library/2022ratesurvey/	N/A	N/A
e) If charging a flat fee, has the community considered switching to a volumetric fee so that high-output customers pay for the wastewater they generate?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures for member communities. However, most of the communities use a volumetric fee structure.	N/A	N/A
> Other Considerations:	MWRA is a regional wholesale water and wastewater provider with multiple member communities. The MWRA sewer rate revenue methodology is based on a community's flow, population, and strength of sewage and was developed after a multi-year process involving dozens of MWRA Advisory board meetings with representatives of each community, supported by consultant teams and financial and process experts. Other factors were considered as components of the rate methodology but were not included. Once a consensus was developed it had to be approved by the MWRA Board of Directors. Any subsequent change to the current methodology would need to go through a similar review and likely time-consuming consensus building process. In addition to all this, MWRA's General Revenue Bond Resolution requires that all entities within the same classification receiving the same service from MWRA be charged at the same rate and in the same manner.		

a) Does the community currently have, or looked into, setting up a CAP?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures or customer assistance programs for member communities.	N/A	N/A
b) If you have a CAP, what is the enrollment rate? What efforts have been made to ensure low-income households are informed about the program and enroll? Are there ways to make the application process easier for customers to enroll, e.g., by providing for enrollment in-person, online, and mail, in multiple languages, if appropriate; partnering with local organizations to help with outreach and enrollment; allowing for automatic enrollment or using proof of eligibility for other income-qualified benefits?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures or customer assistance programs for member communities.	N/A	N/A
c) Has the community considered other types of customer support beyond a CAP for lower income residential customers?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control customer assistance programs for member communities.	N/A	N/A
d) Are there policies in place to protect customers, including vulnerable populations, from shutoffs?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control customer assistance programs for member communities.	N/A	N/A

e) Does the community have reduced rates for vulnerable populations, such as seniors on fixed incomes?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control rate structures or customer assistance programs for member communities. However, many of our communities have reduced rates for vulnerable populations. See https://www.mwraadvisoryboard.com/document-library/2022ratesurvey/	N/A	N/A
> Other Considerations:			
4. Financial and Utility Management:			
a) Is the utility accounted for as a proprietary/enterprise fund or a separate independent utility?	MWRA is an independent public authority providing wholesale water and sewer services to 61 communities. Water and sewer costs and therefore rate revenue requirements are accounted for separately from each other in accordance with its Enabling Act and Government Accounting Standards Board. 43 communities are currently members of the wastewater system.		
b) Are all rate revenues or other user charges used to fund the utility's operations? Do the rates charged recover the full cost of providing wastewater services (taking into consideration capital costs, operation and maintenance expenses, and environmental costs)?	This element is not applicable to MWRA. As a sewer district, MWRA does not control rate structures for member communities or the manner in which member communities fund their operations. MWRA community assessments for wastewater services are based on each community members' wastewater contributions to the MWRA system and cover all operating, maintenance and capital costs for the wholesale wastewater system.		
c) Does the utility have programs to optimize maintenance and asset management to reduce life cycle costs?	MWRA has a robust asset management program that includes preventative and predictive maintenance, collection and tracking of key performance indicators, benchmarking, and capital planning to assure efficient protection of ratepayer investment in the system.		

d) Are partnerships with other utilities, including joint procurement, or shared management and staffing arrangements, regionalization or consolidation options to provide economies of scale and reduce per customer costs feasible in this community?	MWRA already is a regional service provider. MWRA participates in the use of state-wide contracting and regional collaboratives to control operating costs.		
e) Has the utility or related municipality instituted a stormwater management program when evaluating long-term control plan schedules? If so, are impervious area-based stormwater fees used to fund the stormwater compliance costs?	This element is not applicable to MWRA. MWRA does not manage stormwater, and as a sewer district, MWRA does not control fee structures in member communities.	N/A	N/A
f) Does the utility provide direct financial assistance (through rebates, upfront subsidies, or direct replacement of fixtures) for efficiency improvements including leak repairs or replacement of inefficient fixtures or appliances?	This element is not applicable to MWRA. As a wholesale sewer district, MWRA does not control customer assistance programs for member communities.	N/A	N/A
> Other Considerations:			