Mystic River Watershed Association
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August 12, 2016

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MassDEP
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RE: Public Notice for the Tentative Determinations to
Extend the Variances for CSO Discharges to the Lower
Charles River/Charles Basin and Alewife Brook/Upper Mystic River

The Mystic River Watershed Association (MyRWA) is a non-profit organization dedicated to the preservation and enhancement of the Mystic River Watershed. The mission of MyRWA is to protect and restore the Mystic River, its tributaries, and watershed lands for the benefit of present and future generations and to celebrate the value, importance, and great beauty of these natural resources. This includes working to improve the water quality in the Mystic River and all of its tributaries.

Our organization has followed with great interest the mitigation measures applied to combined sewer overflows (CSOs) in the Mystic River watershed for several decades. In this time, we have worked with nearly every major public and private stakeholder concerned about this issue to advocate for the most effective and efficient possible mitigation measures and to monitor the progress towards improved water quality in the rivers of the watershed. MyRWA has also worked with these parties to directly address the effects of pollution on the Mystic and its tributaries, marshalling thousands of citizen volunteers to clean up the banks of the river and remove invasive species from its waters. Our goal is to completely end the discharge of sewage into the river as soon as possible and, until that time, to minimize the effects of sewage discharge on water quality, human health, and public benefit from our surface waters.

As a result of these interactions, we have the utmost appreciation for, and wish to commend Massachusetts Water Resources Authority (MWRA), the cities of Cambridge and Somerville, MA Department of Environmental Protection (DEP), and US Environmental Protection Agency, Region 1 (EPA), for their careful and engaged stewardship of the truly massive undertaking called for by the CSO Long-Term Control Plan (LTCP) up to this point.

We also recognize that the LTCP as established in the 2006 agreement between the MWRA, EPA, and DEP does not and could not completely end CSO discharges into the Mystic River and its tributaries or, more generally, solve the issues presented by the combined sewer system in place in the surrounding municipalities. Therefore there must inevitably be a continuing and long-term process by which CSO control in the watershed is constantly monitored and re-evaluated, and new solutions sought to eliminate these overflow events.

MWRA's water quality reporting anticipates the difficult decisions that will need to be made at the end of the post-construction monitoring period in 2020. Its 2015 water quality data suggest that the Alewife Brook meets state swimming standards only 11% percent of the time during "heavy rain" (a modest 0.5 inches over 48 hours), indicating that CSO discharges still devastate this water body and routinely render it unfit for human contact and use. These circumstances indicate a failure to meet even the lenient B(CSO) designation established by DEP.

In response to the need for ongoing updates and revisions to the CSO control strategy in the watershed, and in light of the remarkable scale of this infrastructure, the impact of which could be undermined if not measured robustly, we know that it is critical for DEP to adopt a relevant, rigorous monitoring and data collection regimen to determine the effects of the LTCP measures. Without sophisticated, thorough, and transparent monitoring during the 3-year, post-construction monitoring program and system performance assessment, it is quite possible that we will not know how to proceed forward from December, 2020—despite hundreds of millions of dollars in infrastructure investment. We therefore support the granting of a seventh variance extension for the Alewife Brook and Upper Mystic on the condition that this allowance be used to do the most informative possible water quality monitoring and analysis. In furtherance of this goal, we offer several recommendations that we believe would help the permittees to achieve the most successful possible outcome under the LTCP.

Cost-benefit analysis of CSO mitigation measures

Because much of the infrastructure implemented under the LTCP and to be monitored and evaluated under the post-construction monitoring period was fashioned around a cost-benefit analysis performed in 2004, more than a decade ago, we believe that it is imperative to revisit and review this analysis before resting any future decisions on it.

The 2004 CSO Affordability Analysis concluded that additional CSO control investments in the MWRA service area would cause, in the words of the applicable regulations, "substantial and widespread economic and social impact." But, since 2004, the nation's economy has undergone dramatic change, including the impact and substantial recovery from the Great Recession of 2008. This should prompt a complete revisitation of the assumptions regarding median household income (MHI), actual residential sewer rates in the MWRA service area, fair market rent (FMR) growth, and income inequality underlying the 2004 analysis. In particular, the economic recovery of several municipalities in the MWRA service area, including Boston, Cambridge, and Somerville, have been among the strongest in the nation. The robust growth in both MHI and FMR suggests that the relative increase in shelter cost burden associated with CSO investments should have declined since

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the time of the original analysis. The DEP's tentative determination indicates that the MWRA has reviewed changes in MHI and sewer rates since 2004, but we cannot comment on this review as the details of this revised analysis have not to our knowledge been made available for inspection. We request that they be disseminated and that an expanded cost-benefit analysis be performed.

In particular, the 2004 analysis is focused exclusively on understanding the relative household burden of a reference cost level. It did not evaluate actual infrastructure costs or cost scenarios, actual sewerage utility burdens, evolving usage of the rivers, or—importantly—the benefits that would accrue from those expenditures. We believe that a "cost-benefit analysis" cannot consider the burden of costs alone. Although the benefits of CSO mitigation require some effort to calculate, they are as essential as costs if one seeks to make informed and rational decisions about CSO mitigation.

We make the following specific recommendations for consideration in a revised cost-benefit analysis:

- *Infrastructure costs and cost scenarios:* MWRA should publicly present the cost estimate analysis that led it to determine that continued CSO mitigation would have substantial and widespread economic and social impact. What additional CSO mitigation measures were considered, and what cost estimates were associated with those measures? Given that MWRA has emphasized that the cost of particular CSO mitigation projects can be disproportionate to the volume of CSO eliminated or the water quality effects of those projects, it is imperative that the public understand the range of options so that, if some level of additional cost-effective CSO mitigation is possible, it can be identified and pursued.

  Furthermore, significant advancements in green infrastructure technology since MWRA's 2004 analysis warrant revisiting. MWRA should evaluate CSO mitigation scenarios that (i) do not affect, (ii) lightly leverage, and (iii) heavily leverage green infrastructure in a revised cost benefit analysis.

- *Sewerage burdens:* is the EPA reference level for sewerage cost of 2% of MHI consistent with the levels MWRA would have projected in 2004? Are residents currently realizing costs at or near this reference level? Would this be likely to happen if additional infrastructure development were undertaken that further reduced the impacts of CSO discharges? These key questions should be addressed in a revised cost-benefit analysis.

- *Leveraged investments*: Municipalities like Cambridge and Somerville have made substantial independent investments towards CSO mitigation in the past two decades. How do these investments factor into MWRA's own cost-benefit analysis?

- *Evolving usage:* The development environment around the Alewife Brook and the area near the Somerville Marginal facility has evolved significantly in the past decade and a half. Valuable, high-profile, high-impact developments like Assembly Row and the Wynn resort will potentially be directly affected by CSO discharges to the Alewife and Upper Mystic, or will be indirectly affected by public association with the dissipated effluent of those discharges. When the LTCP was designed, the Mystic

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was not being used actively and regularly as a recreational resource to anywhere near the extent that it is now. Hundreds of rowers use it regularly, including more than 110 members of the Gentle Giant Rowing Club, five high school and university rowing teams, and youths and adults enrolled in rowing classes. The City of Somerville runs a youth program with water-based activities on the Mystic River throughout the summer and a canoe rental facility is planned for 2017. These increasingly-popular recreational uses should be encouraged and, as they bring people into contact with waters affected by CSO discharge, needs to be protected.

- *Benefits:* EPA has recently provided specific guidance[1] to communities undergoing CSO mitigation to help them evaluate green and gray infrastructure alternatives, including comparing both market benefits, as well as such non-market benefits as pollution reduction. Ecosystem services frequently considered by environmental economists and relevant to the Alewife and Upper Mystic include flood prevention, habitat provision, and aesthetic and recreational functions.

  CSO mitigation not only helps to bring Mystic River watershed communities into compliance with federal Clean Water Act requirements, but also supports key additional benefits: reducing the contamination damage from flooding, reducing nutrient loading and eutrophication that robs native species of habitats while encouraging the spread of invasives, and supporting public trust in the river as a recreational resource and desirable neighbor. Each of these services is typically valued at thousands of dollars per hectare per year,[2] a figure that likely is higher for the Mystic due to its high-density urban location, indicating a substantial potential loss of value from the deleterious effects of CSO discharges. With respect to nutrient loading, we believe that reductions in CSO discharges typically valued for reduced bacteria loads and recreation safety yield significant co-benefits in nutrient reductions. Moreover, climate change and flood scenario predictions for the Mystic River watershed have changed substantially since 2004. As the level and scope of anticipated sea level rise has grown, and the frequency of major storm events has risen, the value of flood prevention services provided by additional CSO mitigation measures should have increased significantly.

  In particular, MyRWA and partners are working to establish a TMDL for phosphorous and other nutrients discharged to the Mystic River and its tributaries. With this in place, and given evidence that existing nutrient levels may be higher than supported by a TMDL, municipalities will incur a real cost for operating systems that contribute to the eutrophication of the river. While the MWRA treatment facilities were designed to reduce the bacterial contamination of the river due to CSO discharges, they do not address nutrient loading. MWRA should evaluate the financial benefit that accrues through elimination of nutrient discharge through additional CSO control. We expect that even a small decrease in nutrient discharge due to a reduction in CSOs could be worth a lot, particularly when compared to the cost of comparable reduction via runoff prevention.

We strongly recommend that a comprehensive cost-benefit analysis be performed that considers both costs and benefits, along with updated information on sewerage burdens and evolving river usage, to determine the

[1] Report numbered EPA/600/R/13/092, issued August 2013.

[2] See for example de Groot et al., Ecological Economics, 41, 2002, 393–408

appropriate level of CSO mitigation for the Alewife and Upper Mystic. The analysis should be overseen by an independent body, which should have diverse representation from the local, state, and federal levels, particularly including entities having disparate and complementary interests in preserving environmental quality, public health, and economic strength.

Monitoring and public notification requirements

The Tentative Determination requires that Cambridge and Somerville report CSO activations to DEP annually and that "each permittee shall indicate the method of estimating CSO activations and volumes, either by metering data, CSO system model, or a combination of the two." First, we recommend that these municipalities be required to monitor and report on the characteristics of the effluent as well as its volume. Through either measurement of the effluent at the pipes or water samples collected immediately downstream, Cambridge and Somerville should report on relevant chemical and biological constituents of the discharge of each CSO, including nutrients, chlorine, metals, bacteria, and pharmaceuticals. Second, we are concerned that this requirement is too vague to ensure consistent data collection. For example, metered activation volumes from one permittee may not be comparable to modeled activation volumes from another. While reporting of modeling results is helpful, we strongly recommend that all permittees be required to submit actual measurements of CSO activation volume via a metering system standardized to the maximum extent possible.

MWRA has proposed to perform water quality monitoring in the Mystic, Charles, and Neponset watersheds on a rotating basis. Given how critical water quality data collected under this variance extension will be to decision making at the end of the post-construction monitoring phase, we consider this limited sampling strategy to be insufficient. Particularly as water quality monitoring is called for by one of EPA's Nine Minimum Controls, we view the moderate expense involved in this additional data collection as essential. We request that the sampling plan include a minimum of five days of consecutive sampling be undertaken to evaluate the residency and impact of CSO discharges on the water body.

Finally, given evidence presented by multiple speakers at the public hearing on August 8th, 2016 that CSO outfalls supposedly eliminated under the LTCP construction continue to discharge during both dry and wet weather, we strongly advocate for direct sampling at all CSO outfalls—including those permitted to continue polluting as CSOs, those converted to separated systems, and those intended for elimination under the LTCP. We hope that this monitoring will demonstrate that the eliminated and converted outfalls no longer discharge sewage to the affected rivers. But if it does not, the issue will need to be addressed before the LTCP can be declared effective.

Public Notification

The public notification requirements of the Variance should be strengthened. The permit should specify that notifications must be issued when any CSO discharges, not just those at selected outfalls. And given that the permit already calls for the permittees to keep their website up to date, discharge notifications should be posted on those websites in addition to their email distribution to key stakeholders. In particular, the MWRA,

Cambridge, and Somerville are each highly active on social media, with their primary Twitter accounts alone reaching in aggregate more than 20,000 followers. In light of the existing notification requirement, the possibility of severe public health risks associated with CSO discharges, and the frequent use of social media to herald good news, is it not appropriate to immediately disseminate these CSO notifications through key social media channels? If this recommendation is not adopted, the responsible parties should demonstrate why public notification (i) requires 24 hours to accomplish; (ii) is not feasible to broadcast more broadly than an email notice to community groups (with the implicit expectation that they will apply their own resources to alert the public?). In addition, both the Charles River Watershed Association (CRWA) and MyRWA have completed or nearly completed development of a recreational flagging program that can notify boaters of elevated bacteria levels in nearly real-time–information on discharges as they happen are critical to an effective program that keeps recreational boaters safe.

Finally, we appreciate the proposed Determination's requirement, as one of the nine minimal CSO control measures, that MWRA should continue its technical assistance to efforts to eliminate all inflow and infiltration (I&I). We believe that it is important to understand how viable continued I&I reduction is as a CSO mitigation strategy. We therefore ask that MWRA report on its I&I program's success. Furthermore, MWRA should leverage the data it has already collected to provide I&I data at meters, locations of meters, and statistics of drainage (area, pipe length) and report on areas where the highest I&I levels remain, so that municipalities and advocates can focus their efforts on those locations.

To prepare for the rigorous evaluation that will follow the post-construction monitoring, the MWRA should revise its sewer system and rainfall flow models to bring them fully up to date and consistent with all relevant federal data—particularly as it relates to the current and projected impacts of climate change. Considering the increased frequency of higher rainfall storm events, it is critical to communicate on expectations of system performance in realization of new climate norms. We request the development of (i) models for the 'Typical year' under climate change scenarios for 2025, 2050 and 2075 or matching Cambridge's climate work; (ii) the modeled outcome of the system under predictions from the InfoWorks model for the number and volume of discharges; and (iii) communication on how the system is performing during flood events in Alewife so that we can understand how flooding and inundation of structures generate departures from InfoWorks predictions and how frequently the CSO system will be flooded due to the hydraulics of the Alewife.

Green infrastructure

We applaud DEP for highlighting the green infrastructure (GI) projects completed by Cambridge and others as part of their CSO control strategy. We strongly recommend that the post-construction monitoring report include analysis of the impacts of the completed GI projects on the total CSO discharge reduction achieved through the LTCP. Given the substantial advancements in GI technology since the original development of the LTCP, we further recommend that any revised cost-benefit analysis incorporate cost scenarios leveraging GI to the maximum extent practical.

Water quality designation

The post-construction monitoring evaluation must proceed on the assumption that the Alewife and Upper Mystic can and should meet the Class B water quality standards rather than being downgraded to the Class B(CSO) standard indefinitely. As time moves on, the growing, economically expanding, and environmentally conscious community of the Mystic River Watershed will increasingly expect and demand that surface water quality meet the highest standards promised by the Clean Water Act. Continuously improving technology and infrastructure innovation, particularly around green infrastructure, should make it more and more cost-effective to meet these standards. However, as the LTCP did not strive for complete CSO elimination in the Alewife and Upper Mystic, it would appear inevitable that the Variance continue past 2020.

Future directions

Though perhaps outside the direct scope of this variance extension request, we want to draw DEP's attention to a proposal made at the August 8th public hearing by Roger Frymire to regulate water pollution holistically rather than on a piecemeal basis. He has presented evidence that the LTCP's nominal elimination of several CSO outfalls has led to the persistent discharge of sanitary sewage from outfalls that are now redesignated as stormwater pipes. As such, they are no longer subject to CSO-related statutes or regulations. To our knowledge, MWRA has not continued to monitor discharge from these outfalls. We agree that is unacceptable for what amounts to no more than regulatory legerdemain to let polluters off the hook for ongoing unpermitted discharge. Similarly, discharge formerly classified as CSO that, as a consequence of sewer separation, is now classified as SSO is an outcome that is simply unacceptable after hundreds of millions of dollars in infrastructure investment.

As a final point, MWRA has argued that a significant cause of failing water quality in bodies like the Alewife is attributable to environmental sources, such as illicit connections and stormwater runoff in municipal stormwater systems, rather than to CSOs. Although some level of bacterial contamination from other sources exists, the burden of proof should be on MWRA to establish that additional CSO mitigation is not needed in order for the Alewife to meet federal Clean Water Act standards. We believe that additional mitigation is clearly called for. We know from MWRA's own reporting that substantial CSO discharges continue to occur in bodies like the Alewife, and the very existence of variation in water quality across the Mystic River watershed would seem to argue against a dominant role for environmental sources. After all, water bodies in similar locations with similar drainage areas and urban topography should experience similar levels of non-point runoff—but they don't show the same level of water quality degradation as the bodies with high levels of CSO. Instead, the water quality sampling data in MWRA's 2015 CSO report demonstrates that the significant improvement in bacteria levels in, for example, the Alewife is correlated with CSO mitigation measures there.

In closing, we express the hope that CSOs and other forms of sewage discharge will eventually be entirely eliminated from the Mystic River Watershed. Until that time, we hope that only a very few additional variances will need to be issued after the one currently under consideration, and we look forward to working with the DEP, MWRA, EPA, Somerville, Cambridge, and other partners to make certain that is the case.

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We thank the DEP for the opportunity to comment on an issue of great importance to our membership.

On behalf of the Mystic River Watershed Association,

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