

Charles River Dam Advisory Committee
Final Report & Associated Materials

Approved September 7, 2022



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I. Recommendation

The Charles River Dam Advisory Committee recommends that the Town of Natick remove the spillway and restore the river, and invest in creating a beautiful and welcoming waterfront park that integrates the river's adjacent public lands and provides a space for the community to meet, contemplate, and enjoy.

The Town of Natick convened the Charles River Dam Advisory Committee to thoroughly evaluate all options to eliminate the hazard of the deteriorating South Natick Dam. The Town of Natick recognized the importance of this landmark to the community, and thus appointed a committee that comprised a diverse set of stakeholders and expertise to complete this investigation and recommend a path forward to Town leaders. The Committee's membership reflects more than 150 years of combined public service, and includes representatives from many municipal boards and commissions, Town Meeting, abutters, the Natick Nipmuc Indian Council, Town staff and more.

Over the course of 18 months of extensive work, the Committee met more than 14 times, distributed extensive community surveys, engaged with homeowners directly abutting the Charles River, received presentations from representatives of the Natick Nipmuc community, and met with various experts. This report is a product of diligent and extensive work and is influenced by wide community engagement.

After this in-depth process and serious consideration, the Charles River Dam Advisory Committee **overwhelmingly recommends removing the spillway and restoring the Charles River**. Sixteen of the 18 Committee members (89%) voted to recommend removing the spillway and restoring the river. Two members (11%) voted to recommend repairing the dam but said they could live with removing the spillway.

The Committee did not come to this recommendation lightly. Members share the community's love for this place — for the gift of this river — and feel a deep responsibility to protect it for future generations.

This dam was built in 1934 with the hope that the new structure would beautify Old Town Park, create a new swimming hole upstream of the spillway, and create work in the midst of the Great Depression. Today, the Committee's recommendation is driven by increased concerns and knowledge of environmental, social, and economic sustainability, and our understanding of the river's connection and contribution to a larger ecosystem. The Committee's research found that removing the spillway and restoring the river will result in the best outcome for the long-term health of the river and our collective wellbeing.

The majority came to this conclusion based upon the factors listed below.

1. Dams negatively impact rivers' ecological systems.
2. Dam removal is a proven approach to rehabilitating rivers and improving habitat for native and migratory species.
3. River restoration offers opportunities to honor all aspects of our history.
4. The river will be safer without a dam.
5. Opportunities to improve recreation as a whole are greater with the river restoration.
6. The aesthetics of this place will change in either scenario.
7. The dam poses a financial risk to the community.
8. The costs of dam repair are greater than the costs of spillway removal.
9. There is more grant money available for projects to remove dams than to repair them.
10. Municipal investment in the park areas surrounding the river provides broad public benefit in either scenario.

The Committee appreciates that many have enjoyed the Mill Pond and water feature created by the spillway (known familiarly as the “waterfall”) since the dam was built, and it acknowledges some residents may feel a sense of loss with a change to this area. The Committee asserts that either option (repair or removal) would result in a profound change to this place and believe that the benefits of river restoration — a renewed connection to a free-flowing river, improved water quality and riverine habitat, the exposure of new land, enhanced recreation, and more — provide greater opportunities to replace this sense of loss with a sense of gain.

The full Committee (all 18 members) further recommends that **the Town should leverage this opportunity to create a beautiful and welcoming waterfront park that integrates the river's adjacent public lands and provides a space for the community to meet, contemplate, and enjoy.** This should include an emphasis on improving recreational opportunities with access for people of all abilities. The Committee recommends that such efforts occur in concert with the restoration project, and encourages Town leaders to link park development and river restoration through funding appropriations, design plans and phased construction, to ensure the best results for the community.

The Committee's rationale and additional guidance regarding the implementation of the Committee's recommendations are provided below.

II. Signatories

The following Committee Members fully support the recommendation to remove the spillway and restore the Charles River in South Natick, and invest in creating a beautiful waterfront park.

Michael Balcom, Downstream Abutter
David Blease, Upstream Abutter
Dirk Coburn, Finance Committee
Teresa Evans, Planning Board
Jeannine Furrer, Historic District Commission
Seth Levine, Recreation and Parks Commission
Jon Marshall, Deputy Town Administrator of Operations
William McDowell, Town Engineer
Jeremy Marsette, Director of Public Works
Claire Rundelli, Conservation Agent
Aaron Spelker, Commission on Disability
Rebekah Stendahl, Environmental Perspective
Christopher Stillman, Conservation Commission
Jillian Wilson Martin, Town of Natick, Sustainability Director
Kristen Wyman, Natick Nipmuc Indian Council
David Yancey, Natick Nipmuc Tribal Council

The following Committee members prefer the option of repairing the dam, but can live with the Committee's recommendation to remove the spillway and restore the Charles River in South Natick, and invest in creating a beautiful waterfront park.

Martin Kessel, Precinct 10 Town Meeting Member
David Lodding, Open Space Advisory Committee

III. Committee Process

The Charles River Dam Advisory Committee was appointed in March 2021 by Interim Town Administrator, Robert Rooney. Mr. Rooney sought to ensure “broad consultation and deep deliberation within the community to help inform the decision(s) the Town must make to address [sic] the deficiencies with the dam.”¹

Representation and Charge

Committee members were appointed with the goal of achieving widespread stakeholder engagement and ensuring critical perspectives were considered as part of the group’s analysis. Of the Committee’s 18 members, five (28%) are current or past direct abutters to the Charles River in South Natick. As noted in the Rationale section, Committee members represent more than 150 years of combined public service to the Town of Natick. A full list of Committee members is provided in the Signatories section of this report.

The Committee was charged with completing a comprehensive community-wide engagement effort, evaluating various options, and presenting a recommendation to the Select Board. The Committee was provided with professional facilitation services by staff from the Consensus Building Institute, access to professional experts and technical information, and support in collecting input from the public.

The Committee worked from April 2021 to July 2022 to study the question of what should happen to the dam from many angles and to make a recommendation. **The group held 14 meetings**, generally lasting 2-3 hours, all open to the public. Because of the pandemic, meetings were held virtually with the exception of several outdoor site visits, including trips to two dam repair and two river restoration sites.

Community Engagement

Community engagement was especially important to the Committee, which engaged with the public during its process in multiple ways.

Committee Perspectives

Commission on Disability
Conservation Commission
Downstream Abutters
Environmental
Finance Committee
Historic District Commission
Indigenous
Open Space Advisory Committee
Planning Board
Precinct 10 - Town Meeting Member
Recreation & Parks Commission
Town Staff
Upstream Abutters

¹ [Memo to Natick Select Board](#), February 23, 2021

Engagement began with a community outreach campaign in May 2021 to raise awareness about the dam’s condition, options for the future, and the Committee’s process. This included a community presentation about the issues, two virtual community input sessions, and a community-wide survey in summer 2021. The community presentation was attended by 151 people; more than 140 people attended the community input sessions; and 455 people responded to the survey. Fifty-six percent of survey respondents shared strong support for removing the spillway, with an additional 16% leaning in that direction.

In promoting these public input opportunities, the Committee worked with Town staff to distribute flyers directly to approximately 400 homes in close proximity to the dam. A large street banner was posted at the intersection of Pleasant and Eliot streets in May 2021; and then hung in the South Natick Dam Park through mid-July 2021. In Natick Center, a large sign was posted on the Common’s bulletin board.

Efforts to engage the community continued throughout the Committee’s process. At the start of and throughout the process, the Town and Committee members engaged with local news outlets, including *The Boston Globe*, *MetroWest Daily News*, *Natick Report*, *WGBH*, *WBZ*, *NECN* and others. Town staff posted information about meetings on Town social media accounts that were widely shared on popular local Facebook pages/groups. Opportunities for engagement were also featured in municipal e-newsletters on a regular basis, and, as applicable, Committee members provided updates to the boards they represented. In addition, more than 510 people subscribed to receive updates on the Committee’s efforts and were sent emails with agendas and key content ahead of every public meeting. The public was also encouraged to find information on the Town’s website at natickma.gov/crdam, which provided agendas, summaries, presentations, and complete video recordings of every committee meeting, in addition to many other resources.

The public was invited to provide written comments, which were compiled and sent to the Committee prior to each meeting. As of July 26, 2022, approximately 220 written and verbal public comments were received from 165 individuals. Of these individuals, 144 expressed an opinion regarding an outcome; of these, approximately 75% (107) supported removal. The Committee also received an online petition signed by 1,051 people in favor of dam repair. During the Committee’s work, many groups, including religious leaders of Natick, Mass Audubon Broadmoor Sanctuary, the Greater Boston Chapter of Trout Unlimited, Sierra Club Massachusetts, Massachusetts River Alliance, Charles River Watershed Association, and the Native Fish Coalition, submitted letters to the Committee in support of removal.

The Committee also sought feedback from the public regarding priorities for community use and recreation with an online survey in December 2021 - January 2022. In total, 980 individuals engaged at least partially with this survey. This survey did not seek feedback on what should happen to the dam, instead focusing on what community use and recreation features community members would like to see in this special area.

While community-wide engagement was a key goal, the Committee also prioritized connecting with direct abutters. The Committee's abutter representatives worked with the Consensus Building Institute to plan and host upstream and downstream abutter meetings in October 2021. Abutters received invitations to participate in the meetings via certified USPS, as well as email, where available. In response to abutter questions, Town staff published an abutter-specific FAQ in November 2021. The full Committee's December meeting was also dedicated to discussing abutter concerns, and Committee members engaged one-on-one with a number of abutters to answer questions and review findings.

The Committee was further pleased to engage youth in its process. The Town worked with Natick Public Schools to connect with local science teachers and students. In spring 2021, Committee members participated in Q&A sessions with Kennedy and Wilson Middle School students and student feedback was included in the Committee's meeting summaries. In spring 2022, a class of Wilson Middle School students studied the dam and participated in a role playing activity, wherein each student was tasked with representing a perspective on the Committee (i.e., upstream abutter, Conservation Commission representative, Finance Committee representative) and providing the Select Board with a recommendation. These students unanimously recommended spillway removal and river restoration.

See the [Appendix](#) for links to summaries of public input.

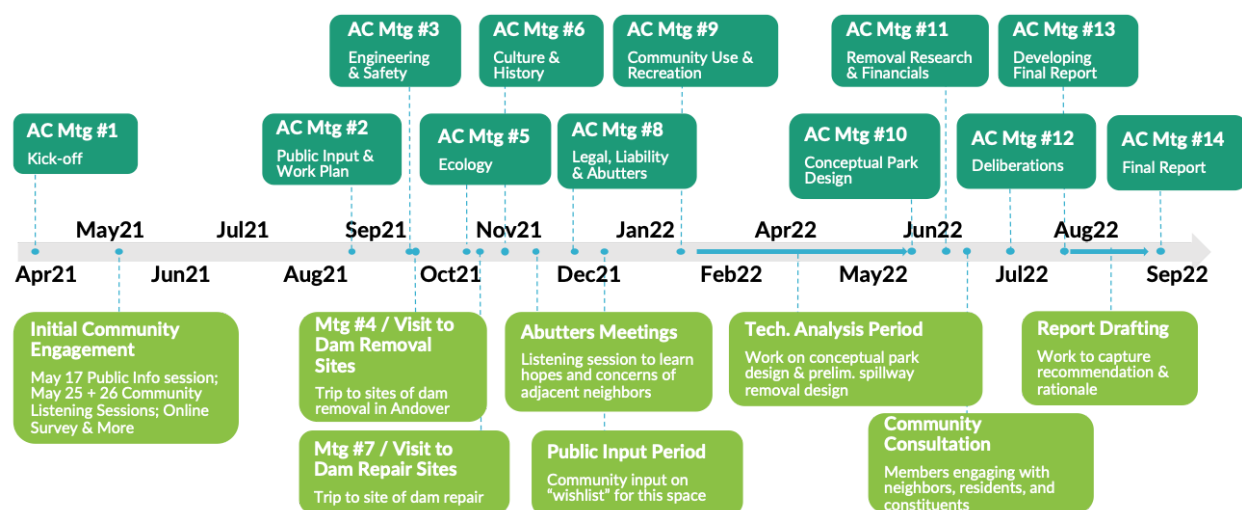
As the Committee looks ahead to the end of this recommendation process and the upcoming planning and permitting, it sees an opportunity to continue public engagement around issues of environmental stewardship and climate resilience, as well as community access with a lens to both equity and recreation. Given the public interest in this process and the Town's decision, the Committee strongly encourages Town leaders to invest time and resources in ongoing communications about this effort.

Information Received and Experts Engaged

The Committee engaged with a variety of experts, including scientists, engineers, archeologists, tribal leaders, landscape architects, and legal counsel, to investigate options and understand issues related to the removal or repair of the South Natick Dam. Consultants with experience in dam repair and dam removal were hired to complete technical analyses, develop and test designs, and secure cost estimates for each option. This work was reviewed in detail by the Committee. The Committee also participated in site visits to two dam repair and two dam removal projects and spoke with the local stakeholders involved. *A full list of the individuals who provided guidance to the Committee is provided in the Acknowledgements section of this report.*

Each of the Committee's 14 meetings was dedicated to understanding specific topics and was promoted thusly on the project website. These topics included:

- Community engagement findings,
- Flooding and safety,
- Ecological impacts,
- Cultural history and Indigenous perspectives,
- Abutter concerns,
- Community use and recreation,
- Financial impacts, and more.



Decision Making

Committee members sought overwhelming agreement on this final recommendation, meaning the support of at least 75% of voting participants, with each member having one vote. Committee members were given the option:

- to endorse and support the final recommendation;

- to indicate they can live with the recommendation;
- to indicate that they cannot live with the recommendation; or
- to abstain from voting to approve the final recommendation.

The first two of these options were considered “support” for the final recommendation. People who abstained would not have their vote counted.

The Committee developed a set of considerations and criteria to guide its decision making. All members agreed to seek to make the process efficient, inclusive and equitable, well-scoped, and well-documented. Together, the Committee wanted to consider the following when making its recommendation: costs (short and long term), liability and legal issues, who would experience what impacts from a project, how the area can continue to be a community asset, sharing the history of the site and Indigenous perspectives, striving for an equitable and inclusive outcome, increasing safety and reducing risk, maximizing recreational opportunities in and out of the water, maximizing ecological and environmental benefits, and considering what will make the place most attractive.

In July 2022, the Committee reached its decision over the course of two meetings, which focused on deliberation. The group had determined at an early meeting that its goal would be to reach overwhelming agreement (75% of voting members), rather than the usual simple majority of 50% plus one, to send the strongest, clearest recommendation to the Select Board. **The Committee reached overwhelming agreement, with all 18 members supporting this recommendation for spillway removal and river restoration (16 members in full support, two members able to live with the recommendation).**

IV. Rationale

Rationale for the Majority Opinion

In reviewing the two options (dam repair or spillway removal), the following were key deciding factors for the Committee.

Environmental Considerations

As stewards of this resource, ensuring the long-term health of the Charles River — and the health and wellbeing of the people and wildlife that rely on the river's ecosystem — was a very important consideration in the Committee's recommendation.

Guided by research and presentations from scientists and environmental advisors, the Committee learned that even small dams have a negative impact on rivers, and that dam removal is a proven strategy for river restoration. The scientific data supporting these findings are well documented, with many regional and national examples of successful river restoration projects. In reviewing the environmental research received, the following findings were especially noteworthy to the Committee and contributed to its recommendation to remove the spillway and restore the Charles River:

1. Dams negatively impact rivers' ecological systems.

Dams degrade water quality. As demonstrated in longitudinal research of small dams across Massachusetts² and other studies reviewed by the Committee, dams trap water and sediment in the impoundment area (the pond upstream of the dam), which slows the flow of water, raises temperatures, and reduces available oxygen, thereby inhibiting conditions for desirable native plants and wildlife. Higher temperatures and trapped sediment can cause the water column in the impoundment area to become so nutrient heavy that damaging algae blooms can occur. Certain types of algae blooms can be toxic to humans, plants, and wildlife. By limiting the amount of sediment that can flow downstream, dams also starve the downstream river of important nutrients, which provide food for the larger river ecosystem.

Climate change is anticipated to worsen the dam's impacts on water quality. With the changing climate, longer stretches of extreme heat with fewer cooling events between are expected. Current climate projections show an increase in "extremes"— more days over 90 degrees, increasing drought conditions in hotter months, and more frequent and

² Zaidel, P. A., Roy, A. H., Houle, K. M., Lambert, B., Letcher, B. H., Nislow, K. H., & Smith, C. (2021) Impacts of small dams on stream temperature. *Ecological Indicators*, 120, article 106878. <https://doi.org/10.1016/j.ecolind.2020.106878>

more severe rain events and storms. Such conditions can lead to a higher likelihood of algae blooms, as warmer conditions with less rain result in more favorable conditions for algae growth.

The dam is a barrier to fish and other wildlife. The dam prevents fish, including both freshwater and diadromous species, access to tributaries where they naturally spawn. This is especially impactful in Natick for trout, which are currently unable to move past the dam to spawn. The removal of the spillway would connect two natural cold water fisheries (Trout Brook and Noanet Brook) with approximately 19.5 miles of main stem river and tributaries. While fish ladders (a series of pools built like steps to enable fish to bypass a dam) may seem like a solution, the Committee learned their success rate is low, and that the dam's existing fish ladder was designed for different fish types than those that live in this habitat. Further, if a fish ladder were able to successfully support fish passage, it would be transporting fish into a warm and oxygen-depleted impoundment, a habitat in which native fish will not thrive.

The argument has been made that other dams still exist on the Charles River and that the removal of the South Natick Dam alone will not result in contiguous fish passage from the Atlantic Ocean to Natick and beyond. Although this is true for some fish species that require access to salt water, there are numerous species that would benefit from increased passable distances within the Charles River, such as the trout that thrive in the cold water fisheries mentioned above. Further, the average age of the 19 dams that remain on the river's main stem is approximately 126 years. Many of these dams have not been maintained, and other dam owners will face similar decisions in coming years.³ Removing the spillway in Natick could set a precedent, catalyzing the removal of other dams along the Charles River, significantly improving the river's health.

2. Dam removal is a proven approach to rehabilitating rivers and improving habitat for native and migratory species.

The Committee was presented with data from Massachusetts-based projects showing that dam removal results in significant ecological benefits to a watershed. Water quality, as measured by temperature and dissolved oxygen levels, improves; barriers to wildlife passage are eliminated; and river banks recover, developing natural riparian buffers and restoring floodplains.

The Massachusetts Division of Ecological Restoration estimates the ecological benefits of removing the South Natick Dam to be especially high as compared to other

³ [Letter to Committee from the Charles River Watershed Association](#), received on January 24, 2022

dams in the state. This is due to the potential gain in connectivity (41 miles) and the presence of coldwater habitat, rare species and aquatic habitats of high ecological value in the dam's upstream and downstream connected stream network.

In listening to the public, the Committee heard some concerns that the benefits of dam removal might come at a cost to wildlife that are accustomed to the presence of the dam. Fortunately, through consultations with environmental and ecological experts, the Committee learned that, **as many species found in ponds are also adapted to life in rivers, dam removal is expected to result in minimal impact to the wildlife currently found in this segment of the Charles River.** Free-flowing rivers provide pockets of water along the banks that are more still and shaded, which replicate the conditions in the current Mill Pond, and which provide opportunities for non-riverine adapted species to thrive as well. The increase in bordering vegetative wetland area on the land exposed by lowered water levels and a re-channelized river will also provide additional wildlife habitat.

The Committee also sought to understand any ecological benefits the dam provides, that may be lost if it is removed, particularly the potential aeration effects of the spillway. While water running over the spillway may currently provide some aeration, because the water flowing over the spillway is already oxygen deprived, the aeration provided by the spillway cannot return the water to the oxygen levels expected upstream of the impoundment area.

In comparison, repairing the dam would not only continue the degradation of water quality and maintain a barrier to wildlife, it would also require the permanent removal of approximately 60 mature trees in Grove Park.

Tree removal would be required to bring the dam into compliance with the Massachusetts Office of Dam Safety's policy on trees on dams.⁴ The Committee sought to further understand this requirement, and contracted with GZA, the Town's geotechnical consultant for dam repair, to design two alternative approaches to repairing the dam with a focus on keeping the trees. The alternative approaches explored included 1) backfilling the wetland between the dam and Pleasant Street and 2) using sheet pilings to fortify the dam on the easterly side of the earthen berm. GZA reviewed designs for these alternative approaches with ODS and ODS stated that Natick would be required to permanently remove all trees on the earthen berm as part of any dam repair scenario.⁵

⁴ MA Office of Dam Safety ["Policy on Trees on Dams"](#)

⁵ [January 25, 2022, Advisory Committee Meeting Presentation](#)

In contrast, removing the spillway and restoring the Charles River would allow these trees to stay. Preserving these trees provides carbon sequestration and cooling effects. Natural spaces with trees are important for public health and maintaining lower average air temperatures.

Additional environmental and engineering studies would accompany the design and permitting phase of a river restoration project, and the Committee is confident this further analysis will ensure the best environmental outcome. The Committee learned that a detailed environmental review, including sediment testing, wetland delineation, and planning for mitigation measures would be required by the Massachusetts Environmental Policy Act, and by other regulators, before the spillway could be removed. The Committee anticipates that the results of this process will be consistent with the data the Committee reviewed for other, similar dams. However, should such analysis result in any new, conflicting information regarding the environmental benefits of river restoration, the Committee advises the Select Board to review the context of this report in light of any such findings.

Cultural and Social Considerations

Throughout the process, the Committee saw an outpouring of appreciation for this beloved area: it is a special place with a deep history, a keystone feature of South Natick, and an important recreational resource. Over the years, the dam has created positive and negative social impacts, and both sides must be considered.

The Committee received presentations on the history of dams in South Natick⁶ and on the history of the Charles River and its connection to the Natick Nipmuc people⁷, and guidance from an archaeologist regarding historical mitigation on dam-related construction projects. The Committee heard from many residents, through public comment and surveys, about what they love about this place and what they wish was different. It also worked with technical experts to evaluate changes to the river (with an interest in recreational navigability) and worked with a landscape architecture firm to reimagine how this area might look and function in either scenario.

Upon reflection of the social factors the Committee considered, the following directly contributed to the recommendation to remove the spillway and restore the Charles River:

⁶ Diamante, Charlotte, May 2020. "The South Natick Dam: From its Inception to the Present Day Storymap "

⁷ [November 9 2021, Advisory Committee Meeting Presentation](#)

3. River restoration offers opportunities to honor all aspects of our history.
The damming of the Charles River in South Natick has impacted many people and cultures, both positively and negatively.

Formed by glacial retreat, the Charles River has existed for thousands of years. The first people to interact with the river were Native Americans, who named it the Quinobequin because of its winding path. The river was an important source of food and method of transportation. In the early 1700s, European settlers began to construct dams in the area despite petitions from Native Americans against blocking natural fish passage⁸. These dams were designed to power a variety of industries and were constructed in several locations along the Charles River and its tributaries. From the mid-18th century to the 19th century, commercial and industrial businesses maintained wooden dams near the site of the present dam. In 1934, after a series of dam failures and declining industry, the present dam was built to beautify the riverside, create a new swimming spot, and provide employment during the Great Depression.

Committee members recognize all aspects of this place's history and believe there are ways to respect and honor it. Removing or repairing the dam will not take away from the historical impacts of dams on the Charles River — positive and negative — nor will it take away from the memories of all the people who have occupied this space. Instead, the change provides our community with the opportunity to decide what the impact of our generation will be.

In 2021, the Committee's Natick Nipmuc representatives shared their knowledge of the river and reasserted their request that the Town remove the spillway to allow for natural fish passage, honor the river, steward the living systems of this area, and ensure that future generations survive and thrive. The majority of the Committee believes the only way to honor the Natick Nipmuc perspective and connection to this space is to remove the spillway and restore the river.

Just like the millstones present today to share important site history, a new park can acknowledge the role of dams in our history. Photos and signage regarding South Natick's industrial period, as well as the recreational uses of the 1900s, can be incorporated into designs of surrounding park spaces to share the history of dams in Natick.

⁸ Carla Cevasco, Carla, June 18, 2019., "Damming Fish and Indians: Starvation and Dispossession in Colonial Massachusetts"

4. The river will be safer without a dam.

The South Natick Dam is classified by the Office of Dam Safety (ODS) as a High Hazard Dam, meaning it is “located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).” As required by ODS and noted in the Town of Natick’s Hazard Mitigation Plan⁹, the Town maintains a Dam Emergency Action Plan, which identifies 148 private properties that could be impacted in the event of dam failure.

The dam’s High Hazard classification is primarily due to the amount of water the dam stores and its proximity to people and infrastructure. The dam and spillway artificially raises the water level and retains approximately 160 million gallons of water (this is well over a billion pounds of fluid). This mass of liquid stored behind the dam represents a very large amount of potential energy. That energy could be released in the event of dam failure and the ensuing destructive power of the water in the form of a moving body of water, soil and debris has the very real possibility of causing massive property damage and threatening public safety. Removing the spillway reduces the amount of water and lowers the elevation of that water, which eliminates the physical risk of a catastrophic release. Dam failure is not likely, but it is not impossible. Anomalous massive rainfall events are clearly becoming more prevalent throughout the country. Removal of the spillway is the most practical way of ensuring the long term safety of the downstream area. The existing dam does not provide any flood control.¹⁰

The dam also creates a public safety hazard to recreational boaters on the river. Spillways are dangerous, as they can be difficult to recognize and may not be visible from upstream due to their low profile and false-horizon appearance. If the crest of a dam is left unmarked and unprotected (as it currently is in South Natick), boaters in the impoundment can be drawn over the spillway.

A free-flowing river will eliminate these risks and be more climate resilient than an obstructed river. As we see evidence of the destructive power of extreme rainfall in other parts of the country this summer, we can use this opportunity to be proactive and protect both the environment and our community. The Committee supports the Town prioritizing public safety and climate resilience through the removal of the spillway.

⁹ [2018 Town of Natick Hazard Mitigation Plan](#)

¹⁰ For the purpose of ensuring clarity, the Committee notes that the risk of dam failure and the potential inundation of downstream properties is different from and not related to the risk of seasonal flooding. As a run of the river dam, the existing dam does not provide any flood control. The removal of the dam would reduce the risk of inundation to downstream abutters, but it would and does not impact the likelihood of seasonal flooding for downstream abutters.

5. Opportunities to improve recreation as a whole are greater with the river restoration.

The Committee considered current and future recreation opportunities, as well as community use of the river and adjacent public land. Informed by public engagement and modeling from engineers, the Committee determined that the greatest value of this area to the Natick community is the public access to the Charles River, rather than the built infrastructure within the river.¹¹

A majority of the Committee finds that, overall, a free-flowing, healthy river would improve a variety of recreational opportunities, including fishing, wildlife viewing, and more. It would also change conditions for on-river recreation, such as canoeing and kayaking.

At present, on-river recreation is influenced by two primary conditions: the presence of the dam and seasonal variations. The spillway creates a safety hazard and requires paddlers heading downstream to exit the river and carry watercraft (e.g., canoes, kayaks, paddleboards) to the next segment of navigable water (i.e., portage). The distance paddlers have to portage varies by season. In wetter conditions, when water levels and flow speeds are high, they may be able to put back in immediately downstream of the dam; in dryer conditions, they may have to portage farther, crossing Pleasant St and carrying watercraft past the Hunnewell fields. These same seasonal changes in depth and flow occur in the impoundment, but are currently less pronounced due to the presence of the dam. Further upstream of the dam, beyond the red footbridge, paddling conditions are also impacted by wet and dry seasons.

If the spillway is removed, water levels will lower and flow speeds will increase as the river carves a channel and flows more naturally. Technical analysis by Stantec¹² shows that water levels will continue to fluctuate seasonally and that conditions in the impoundment will become more comparable to the existing conditions upstream and downstream of the dam, in contrast to the pond environment to which the community is accustomed. These changes will have the most impact on paddlers within 860 feet (about 0.16 miles) of the spillway upstream (to approximately the Massachusetts Water Resources Association (MWRA) sewer crossing). In this area, water levels are anticipated to drop 3-5 feet (resulting, in normal flow conditions, of depths between 0.5-1 feet) and flow speeds are estimated to increase to between 2-3 feet per second. Changes further upstream are expected to be minimal, and downstream conditions will not change.

¹¹ [Community Use & Recreation: Public Survey Synthesis](#), Dec 2021 - Jan 2022

¹² [June 27, 2022, Advisory Committee Meeting Presentation](#)

The Committee was informed that the Town could seek to improve navigability and deepen water levels in this area by engineering a channel in the spillway removal design phase. If the spillway is removed, the Committee recommends the Town pursue this effort.

With park design, the Town has the opportunity to improve public access and accessibility for paddling at this site so more in the community can enjoy this pastime, regardless of the future of the dam. The Committee also notes that this section of the Charles River is not the only destination for paddling in the community or in the region. Natick is fortunate to have other local, public water bodies, such as Dug Pond and Lake Cochituate, that offer recreational paddling opportunities with limited seasonal variation in water level and flow. Further, Committee members note that an unhealthy, dammed river creates conditions that negatively impact on-river recreation, such as algae blooms.

In balance, the Committee recognizes that recreating on a free-flowing river will come with some changes. Paddling opportunities will remain, but they will be more in-sync with nature. The majority of members are at peace with this change and believe that the Town will be able to enjoy recreation at this site and on the Charles River with a healthier, more resilient river.

6. The aesthetics of this place will change in either scenario.

The sound and sparkle of the spillway's water feature were regularly cited in public comment as reasons to repair the dam. However, many also commented that a free flowing river would be beautiful in its own right, and that the spillway, during drought conditions, is not beautiful. These conflicting comments remind us that perceptions of beauty are both subjective and subject to change.

While spillway removal would result in the loss of the water feature, dam repair would also have lasting visual impacts. It would require the permanent removal of the vast majority of mature trees in Grove Park, and the addition of large rocks to armor the park's waterfront. While some trees could remain along Pleasant St, there would no longer be the same visual barrier to traffic and the natural background seen in pictures by the spillway.

The Committee reviewed renderings of the area demonstrating how it could look under repair and removal scenarios, and received conceptual drawings from a landscape architectural firm demonstrating how adjacent parks could be designed to incorporate what many in the community cherish about this space: recognition of its historical context, the sound of rippling water, a picturesque setting, a place close to the Charles

River, a place for reflection, outdoor recreation opportunities, and mature groves of trees. The Committee's conclusion on this matter is that, with investment, either scenario could be beautiful in its own right.

Economic Considerations

The Committee sought to evaluate all aspects of each option, including costs. The costs of dam ownership are extensive and, from this perspective alone, the Committee finds that dam removal is a fiscally responsible decision for the Town. While this was certainly a motivating factor for some Committee members, others did not prioritize economic considerations in coming to their recommendation and would have been amenable to paying more as long as removal was better for the health of the river. The following economic factors are notable:

7. The dam poses a financial risk to the community.

By creating a safety risk to downstream residents and infrastructure (public and private), the dam correspondingly creates a significant liability for the Town. An analysis of assessor data found that the total assessed value of the 148 private properties in the dam's inundation zone is more than \$500 million. Should the dam fail, the Town would be responsible for 100% — or more — of damages to these properties and other potential damages (e.g., infrastructure, loss of life, and/or injury). While the Committee appreciates the risk of dam failure would be significantly lower if the dam is repaired, it also acknowledges the liability would remain. Dam removal would fully eliminate this liability.

8. The costs of dam repair are greater than the costs of spillway removal.

The Committee worked with consultants specializing in dam repair (GZA) and dam removal (Stantec) to review designs and estimate costs related to each option. GZA estimated the cost of dam repair at \$2.6 million, and Stantec estimated dam removal costs at \$1.5 million¹³.

Were the dam repaired, additional costs would be incurred to maintain the dam and comply with safety and environmental regulations over its useful life. Further, when its useful life ended, the dam would once again need to be repaired or replaced.

Conversely, the costs and liability of operating and maintaining a dam would end once spillway removal was complete.

¹³ Stantec's final report to the MA Division of Ecological Restoration noted that additional work and costs may be required to reinforce the MWRA sewer crossing. Upon review, MWRA's opinion was that spillway removal is unlikely to have an adverse impact on the sewer crossing. It is also not clear that the Town of Natick would be responsible for costs related to the MWRA's infrastructure. This would be more closely investigated as part of a spillway removal design and would be reviewed in detail with MWRA at that time.

9. There is more grant money available for projects to remove dams than to repair them.

State and federal agencies, including, but not limited to, the Massachusetts Executive Office for Energy and Environmental Affairs, Federal Emergency Management Agency, U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration, offer more grants, at higher funding levels, for dam removal than for dam repair. The Committee strongly encourages the Town to seek grant funding to support this work.

10. Municipal investment in the park areas surrounding the river provides broad public benefit in either scenario.

The Committee unanimously agreed that, for the continued enjoyment and safety of all those who visit this space, the Town should provide additional funding for the adjacent, riverfront public lands. By using grants to support spillway removal and river restoration, the Town could afford to make needed park improvements without compromising other local funding priorities. Guidance on this topic is provided in Section V of this report.

Minority Opinion Rationale

In weighing the options in front of the Town, two of 18 Committee members indicated that they can live with the Committee's recommendation for spillway removal. However, they would like to share with the Select Board two areas where their thinking diverged from the rest of the Committee – aesthetics and navigation.

Aesthetic Concerns

In many examples provided by consultant reports, it appeared that dam removal was an obvious choice from environmental and economic perspectives. Most dams were relics of earlier industrial activity that served no current useful or aesthetic purpose. In contrast, the South Natick Dam is still serving its primary purposes of recreation and beautification. The graceful spillway design, the flowing water and the beautiful Mill Pond look just as they did in photos from the 1930s and provide the same boating opportunities in the impoundment area.

Several Committee members took a field trip to Paxton and Worcester on November 15, 2021, to visit two dams that had been repaired. The decisions to retain, and not remove, these dams were based on aesthetic, rather than functional, reasons. The series of dams in Paxton are the primary attraction of Moore State Park and were retained for their historical and scenic qualities. The Patch Reservoir Dam in Worcester was preserved because of the Reservoir's scenic and recreational values. The reservoir, in fact,

reminded Committee members very much of the impoundment area (or Mill Pond) upstream of the spillway in Natick, used for boating by the neighbors along the shore as well as by people from the larger community.

The two Committee members would give added consideration to the perspectives of the upstream abutters, considering their homes are the ones most directly impacted by spillway removal. Removal of the spillway would result in the loss of the impoundment area and alter paddling opportunities in the current Mill Pond, which some upstream abutters shared is a reason why they purchased their houses.

In meetings, the Committee heard from many residents with profound connections to the spillway (or waterfall) and to the impoundment area (or Mill Pond) with its ever-changing reflections. The dam/spillway and surrounding areas are an important aspect of Natick's brand identity, as demonstrated by the welcome page on the Town website.

Many in the community had a hard time visualizing a free-flowing river without the spillway. While the two Committee members acknowledge that a more natural river brought about by spillway removal might offer scenic qualities that the community might learn to appreciate, it is their opinion that the Town should prioritize the connection that the community has with the present situation.

Navigability

These two Committee members expect that the Mill Pond currently offers greater opportunities for canoeing and kayaking throughout the year, for a variety of skill levels, than would be the case if the spillway were removed. This was already a popular community activity by 1901, as shown by the photograph posted by the Natick Historical Society of the July 4 festivities that year. When the earlier dam broke, the town got together in 1934 to build the current dam, raising the water level and improving appearances, outcomes that still hold true today. The community's continued interest in boating is evidenced by:

- This Committee's "Community Use & Recreation Survey" indicated that 53% of responding Natick residents felt it was "very important" or "extremely important" for the river to offer "Navigable, safe passage for paddling upstream and downstream."
- The 2016 Master Plan for Parks and Fields and the 2020 Open Space & Recreation Plan both recommended installation of canoe/kayak launches on the river.

- The Natick 2030+ Comprehensive Master Plan recommended “Expand public access to the Charles River,” with an action item to provide kayak launches above and below the dam.

The two Committee members share concerns that the recommendations for canoe/kayak launches in the above reports expected that the water level would stay the same and would continue to enable the same conditions for canoeing and kayaking at this site.

Technical analysis presented to the Committee by Stantec¹⁴ provided initial information on the anticipated width, depth, and flow of the Charles River should the spillway be removed. In particular:

- Stantec’s estimates showed water levels between the spillway and the sewer crossing (about 860 feet upstream) would average 0.5 to 1 foot.
- The estimates showed water speeds of 2 to 3 feet per second (fps) in the area between the spillway and the sewer crossing, with Stantec noting that 3 fps is the upper limit of upstream paddling. In a naturally flowing river, high-water periods (which allow easier boat passage) would coincide with times of fast-moving water (which make boating more difficult).
- There is some uncertainty if “historic rapids” at the dam site would reappear when the dam was removed. This uncertainty raises concerns about the safety of paddling downstream and difficulty of paddling upstream at this site.

Following the transition of this area from a pond to a naturally flowing river, Stantec and Committee members concluded that downstream river navigability would be highly variable – depending on the season of the year, the type of boat, and the skill of the boater – and paddling upstream from the dam in the area between the spillway and the sewer crossing (about 860 feet upstream) could be very difficult.

This would be a major change from present flat water paddling conditions in the area between the spillway and the sewer crossing, in which the pond environment of the impoundment area provides water depths and flow speeds conducive to easy upstream and downstream paddling throughout the year for people with a variety of skill levels.

The two Committee members support the recommendation to engineer a channel intended to provide deeper water in the spillway design phase, with the remaining concern that it is unclear how much such a channel could improve navigability at the site.

¹⁴ [June 27, 2022, Advisory Committee Meeting Presentation](#)

V. Additional Guidance

The Committee understands that its role is to provide a recommendation regarding the South Natick Dam and that Town leaders will be responsible for making and implementing a final decision.

The Committee appreciates that a variety of factors can affect the implementation of a project and that many of these factors may not be known today. In preparing for this next phase, the Committee submits the following guidance:

River Restoration

In pursuing the restoration of this important place, the Committee strongly recommends the following elements are included in the plan for spillway removal:

- Further sediment testing and planning for sediment transport/management
- Limited tree removal necessary only to facilitate equipment access, accompanied by tree replacement
- Invasives management
- Further analysis of environmental impacts and development of mitigation measures, as required by the Massachusetts Environmental Policy Act, and by other regulators
- Improving navigability in the changed river by engineering a deep channel
- Creation of riffles or other strategies to produce the sound of falling water
- Planning for continued studies of the health of the river (e.g., monitoring for temperature and dissolved oxygen levels, presence of macroinvertebrate, fish counting, sediment) to inform the community on the river's progress and current health

Park System Improvements

In tandem with the spillway removal project, the Committee recommends the Town invest in the redesign and future maintenance of adjacent public land, including Grove Park, the South Natick Dam Park, the Multipurpose Park, and area conservation land.

The Committee recommends pursuing park design concurrently with design for spillway removal to create efficiencies in design and permitting work. As part of this process, the Committee recommends engaging technical experts and the Natick community to ensure the future park accounts for the unique and historical aspects of each parcel, but functionally ties them together to provide a place for the community to meet, contemplate, and enjoy.

Key elements the Committee thinks are important to include in the design, construction, and maintenance of future parks include:

- Accessibility, including for the disabled community
- Natural, quiet recreation opportunities, room for sitting and picnicking
- Trees and shade
- Historical markers to recognize the long and varied history of this place including information, photos and signage (as appropriate) of:
 - The Indigenous perspective and experience in this place
 - South Natick's industrial period, recreational heyday, and the history of dams in Natick
 - The natural history of the area and the diverse ecosystem the river supports
- Access to the water's edge, including, but not limited to a boat launch(es) here or in nearby parks to ensure safe "on water" access to this section of the river
- Safe pedestrian connections between area amenities and parks
- Long-term maintenance and upkeep, including of trees and other plantings to ensure their optimum health, the safety of park users, and control of invasives

VI. Acknowledgements

The Charles River Dam Advisory Committee extends its sincere thanks to the residents of Natick for actively participating in this public process and to the Consensus Building Institute for its facilitation and support.

The Committee further thanks the many individuals who generously shared their time and expertise as part of our learning process, including the following people who contributed to presentations for the Committee:

- Michael Chelminski, P.E., Stantec
- Suzanne Cherau, RPA, Senior Archaeologist/Principal Investigator at The Public Archaeology Laboratory, Inc.
- Marc Chmura, E.I.T., GZA
- Gordon Clark, Stantec
- Charlotte Diamont, Wellesley College
- Bob Douglas, Andover Conservation Director
- Bryan Gammons, Senior Environmental Scientist, Tighe & Bond
- Jim Guarente, P.E., GZA
- Christopher D. Haker, P.E., Vice President of Tighe & Bond
- Eric Henderson, Town of Natick, Director of Assessing
- Jon Honea, Andover Conservation Commission
- Mark Jacobson, Paddle Boston, General Manager
- Iris Yung-Ching Lin, PLA, LEED AP, Halvorson's Tighe & Bond Studio
- Karis North, Town of Natick, Town Counsel
- Sheila Pogarian, 8th Grade Science Teacher, Wilson Middle School
- Rebecca Quiñones, Stream Biologist Project Leader, MassWildlife
- Bob Rauseo, Shawsheen River Watershed Association
- Dr. Allison Roy, U.S. Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, UMass Amherst
- Derek Schipper, P.E., GZA
- Nick Wildman, C.E.R.P., MA Division of Ecological Restoration
- Kristen Wyman, Committee member, Natick Nipmuc Indian Council
- David Yancey, Committee member, Natick Nipmuc Tribal Council

VII. Appendix: Supporting Materials

The work of the Charles River Dam Advisory Committee and associated materials have been carefully recorded, both in writing and in actual video recordings of the Committee's virtual meetings. The best way to view these supporting materials is to access them on the Town's website, natickma.gov/crdam.

This appendix provides brief descriptions of and links to the supporting materials, for those who want to better understand the technical content and the 2021-2022 Committee process.

- A. **Answers to Frequently Asked Questions** — A Frequently Asked Questions guide documenting information received throughout the Advisory Committee's process was published on July 15, 2022 and is available [here](#).
- B. **Process and Committee Timeline** — This simple graphic, produced by the facilitation team, shows each Advisory Committee meeting and the associated public engagement work through July 2022. The original concept for the committee that was submitted to the Select Board in February 2021 can be found [here](#).
- C. **Advisory Committee Meeting Documentation** (Agendas, Presentations, Recordings, Summaries) — Every meeting of the Charles River Dam Advisory Committee was documented in a meeting summary that the Committee approved in the subsequent meeting. Meeting summaries are available and organized by date on the project webpage, along with meeting agendas, presentations, and video recordings of each meeting ([here](#) and partially captured below).
 - April 5, 2021 | Meeting #1 (Introductions and Work Plan)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
 - September 2, 2021 | Meeting #2 (Community Engagement Findings)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
 - September 22, 2021 | Meeting #3 (Flooding and Safety)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)

- October 2, 2021 | Meeting #4 (Dam Removal Site Visits)
 - [Meeting Summary](#)
- October 14, 2021 | Meeting #5 (Ecological Impacts)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- November 9, 2021 | Meeting #6 (Cultural History and Indigenous Perspective)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- November 15, 2021 | Meeting #7 (Dam Repair Site Visits)
 - [Meeting Summary](#)
- December 14, 2021 | Meeting #8 (Abutters)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- January 25, 2022 | Meeting #9 (Community Use and Recreation)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- June 14, 2022 | Meeting #10 (Project Updates and Concept Elements)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- June 27, 2022 | Meeting #11 (Stantec Findings and Financial Impacts)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - [Meeting Summary](#)
- July 19, 2022 | Meeting #12 (Community Input and Deliberation)
 - [Meeting Presentation](#)
 - [Meeting Recording](#)
 - Meeting Summary
- July 26, 2022 | Meeting #13 (Deliberation and Preparing Final Report)
 - Meeting Presentation
 - Meeting Recording
- September 7, 2022 | Meeting #14 (Approval of Final Report)
 - Meeting Presentation

- Meeting Recording
- See final materials once they've been approved here

D. **Public Input Documentation** — The public was engaged in multiple ways over the course of the project. The meeting summaries beginning with the October 14, 2021, meeting included all the written comments received from the public in advance of the meeting and the public comments made verbally at Committee meetings. The summary of the public input received in May and June 2021, drafted by the facilitation team, is [here](#). The results of a community use and recreation public survey conducted in December 2021 - January 2022, drafted by the facilitation team, is [here](#).

E. **Abutters Meetings Documentation** — Two abutter-specific information and input sessions were held in November 2021. Those discussions were summarized by the facilitation team and the summary can be found [here](#).

F. **Supporting Resources and Technical Information** - Supporting resources, reports, and documents can also be found on the project webpage. Resources on this page include, but are not limited to: the [December 2021 South Natick Dam Inspection Report](#), the preliminary dam repair design completed by GZA [link to be added], preliminary spillway removal design completed by Stantec [link to be added], [conceptual renderings of future parks by Halvorson's Tighe & Bond landscape architecture studio](#), [Charles River Dam - Emergency Action Plan](#) (2012); [Charles River Dam Inspection-Evaluation Report](#) (October 2017); [Sediment Sampling Results](#) (January 2020).