

Permitting a Floating Wetland in the Charles River (Cambridge, MA)

November 2021

INTRODUCTION

Floating Wetlands are a novel technology for addressing impaired water quality. By establishing hydroponic growth of wetland species in locations where plants are absent, floating wetlands can aid in the remediation of nutrient pollution and can promote increased biodiversity. While these installations provide ecological services and are of great interest to the public, they do not fit easily within existing permitting processes designed to regulate boats, docks, and alterations to riparian buffer zones.

The Charles River Conservancy (“CRC”, a Cambridge, MA based park-advocacy non-profit) recently partnered with a team from Northeastern University (“NU”) to install and research the impact of a ~700 square foot “pilot” floating wetland in the lower Charles River. The goals of the pilot include: (1) create a visually impactful installation; (2) study the impact of the wetland on local ecology, and (3) use it to engage and educate the community about water quality and river health. Planning, design and permitting of the wetland took roughly 20 months, beginning in late 2018 and culminating with the installation of the wetland in June 2020. Since that time, the CRC has led engagement opportunities centered around the wetland and the NU team has collected and analyzed water samples throughout the summer months. Encouraged by the response and impact of the pilot, the CRC is now planning a larger installation (“Phase Two”) that can expand the reach of the pilot’s goals.

Recognizing the learning curve we traversed to permit the pilot may be useful to others seeking to implement similar installations, the project team wanted to share our experience and process. This document (A) provides a general framework that can be used to begin the permitting process of floating wetlands and other green infrastructure, (B) describes the permits and process for our pilot installation, and (C) looks ahead to additional permissions that would be required for an expanded “Phase Two”.

(A) GENERAL APPROACH TO BEGIN PERMITTING

Throughout our permitting journey, we found that engaging key stakeholders early and often has many benefits. Preliminary conversations serve to flush out both questions and concerns, as well as opportunities. These meetings reduce the element of surprise to all parties and can often build constructive relationships with those who hold the keys to your future success. The some-what complex permit requirements listed in (B) reflect the many agencies at all levels of government having jurisdiction over the Lower Charles River and our project. For this reason, our project serves as a useful case study illustrating the range of entities that should be included in initial outreach and permit planning. These include:

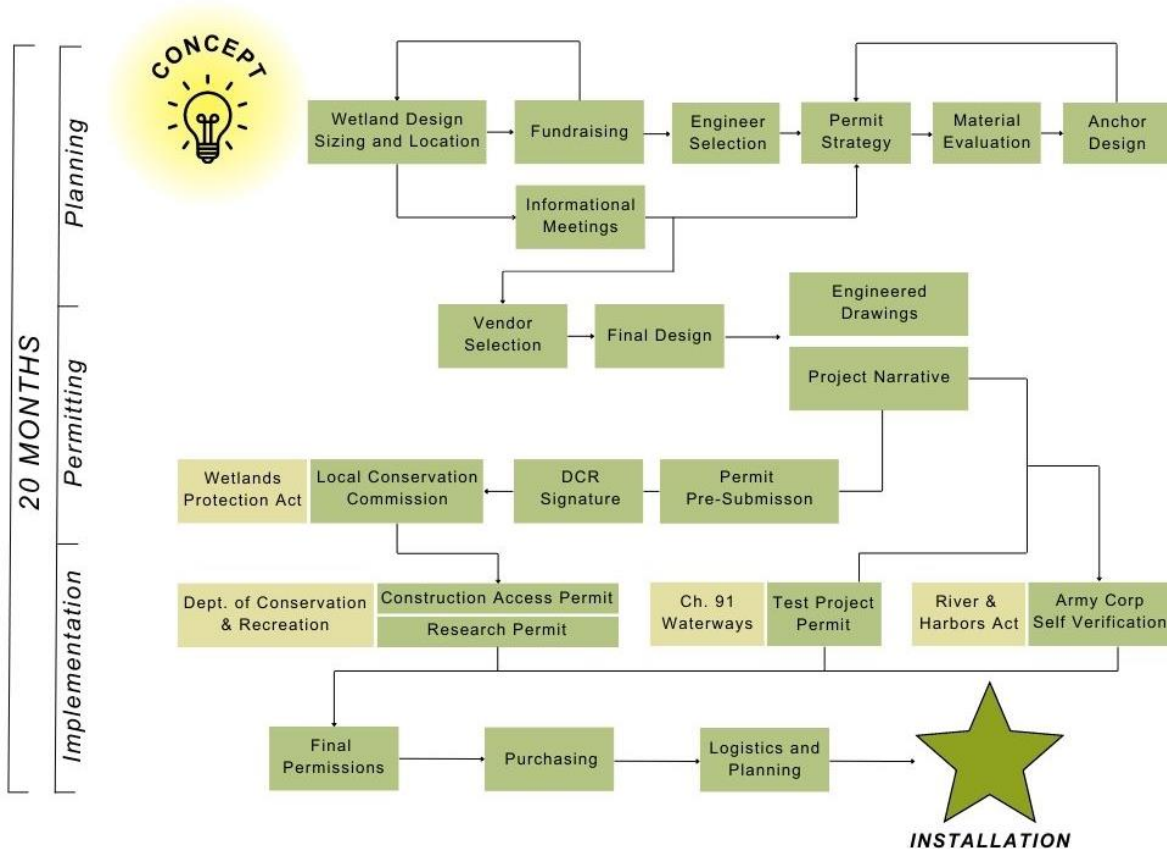
- **Landowner(s)** (if project is being proposed by someone other than landowner)
- **Municipalities**– A city or town’s conservation commission or parks department may be the point of contact
- **State agencies** – some may have direct permitting authority over project, while others will be given notice of permit application and have ability to provide comments
- **Federal regulators** – some will have direct permitting authority over project, while others may have ability to comment and/or procedures that need to be followed
- **Abutters** – they will likely receive notice of one or more permit applications and can support or oppose a project permit being issued
- **Community at Large** – they should have a voice in environmental projects, which should meet their needs; the community can also support or oppose permits
- **Other Advocates** – they can provide valuable knowledge, expertise and support

(B) PILOT PERMITTING

The Charles River Floating Wetland pilot project went through several approvals and received:

1. a Construction Access Permit and a Research Permit from DCR,
2. an Order of Conditions under the Wetlands Protection Act from the Cambridge Conservation Commission,
3. a Test Project Permit under Chapter 91 from the MassDEP, and
4. a Self-Verification Form review by the Army Corps of Engineers.

These permits often required review by other agencies, with either a formal sign-off coordinated by the CRC as the applicant or as part of the permitting agency's internal process. The flow chart shows the permitting path, from idea to installation, and is followed by details and consideration that went into particular permits that we obtained.



Massachusetts Department of Conservation and Recreation (DCR) – (1) consent as landowner, (2) Construction Access Agreement, (3) Research Permit

Jurisdiction: DCR has ownership and jurisdiction over many public waterbodies in the state, including the Charles River. Any work taking place on DCR property will require permission. (See permit application information [here](#)).

Application: As the landowner’s signature is required for certain permits, such as those under the Wetlands Protection Act (WPA), the Charles Floating Wetland needed the consent of DCR before getting certain permit approvals. Additional permits were also required by DCR:

- a one-time construction access permit to install the wetland.
- a renewable annual research permit.

The approval of our WPA Form 3 was a requirement for these permits. The permits also require subsequent actions, such as notification to other state parties when the wetland is relocated and an annual research report. A significant requirement for the DCR research permit is that applicants secure a Certificate of Liability Insurance for \$1,000,000.00. For our project, specific concerns from the DCR regarding what might happen if the wetland became unmoored from the anchor strongly influenced the anchor design and vendor selection for the floating wetland.

Wetlands Protection Act – Notice of Intent Form 3

Jurisdiction: In Massachusetts, floating wetland projects fall generally within the jurisdiction of 310 CMR 10.00. These protections apply to water edges and to the land underneath waterbodies. Any alterations to these areas requires the filing of a Notice of Intent: WPA form 3. This process is administered by the Department of Environmental Protection (MassDEP) through local conservations commissions and includes a public review process. The Notice of Intent application includes a section on other applicable standards (e.g. endangered species, areas of critical environmental concern). Projects that fall under these standards may require additional filings and documentation. (See permit application information [here](#)).

Application: In our case, the Cambridge Conservation Commission was very helpful in pre-permit meetings and was able to provide feedback on how best to complete the application. A few notable choices include the following:

- (1) The impacted resource area (Section B.2) was identified as both “Bordering Vegetated Wetland” and as “Land Under Waterbodies and Waterways,” corresponding to the additional vegetation of the floating wetland and the systems anchor.
- (2) Under Section B.4 we identified the project as “Restoration/Enhancement” with the square feet of bordering vegetated wetland (BVW) corresponding to the size of the floating wetland.

Massachusetts Environmental Policy Act (MEPA)

Jurisdiction: Any project that requires a permit from a State Agency (e.g. MassDEP) is within MEPA jurisdiction however not all projects trigger an agency review as described in [section 11.03 of MEPA Regulations](#).

Application: Through preliminary correspondence with a liaison from the MEPA office it was determined that our project did not exceed any review thresholds with an island containing less than 2,000 SF base area and modifying less than 500 linear feet of bank.

Chapter 91 / Chapter 10A

Jurisdiction: Massachusetts General Law Chapter 91, also known as the waterways licensing program, regulates activities on many waterbodies including: flowed or “filled” tidelands, many navigable rivers, and “Great Ponds” (most ponds larger than 10 acres). (See information about 10A permits [here](#)).

Application: Local harbor masters are given authority under section 10A of the law to grant permission for seasonal moorings such as floats or rafts. In our case, however, the City of Cambridge does not have a harbor master. For this reason, we applied for a Chapter 91 permit under the 310 CMR 9.30 for “test projects.” Unlike other waterways licenses, this permit needs to be renewed annually. (See information about Ch.91 [here](#)).

Army Corps of Engineers – Self Verification Form

Jurisdiction: The Army Corps of Engineers has jurisdiction over “all tidal waters and their tributaries to the head of tide.” (See more information [here](#)). This description covers the Charles River up to the Watertown dam. Army Corps also has jurisdiction over “navigable” rivers, which in Massachusetts include the Merrimack and Connecticut Rivers.

Application: The project was designed with an eye toward eligibility for the self-verification form. Massachusetts General Permit Category 2 (as issued April 2018) allows the permitting of single point moorings as a Self-Verification activity. For this reason, a single anchor design was selected. Under the self-verification form the wetland is treated as an anchored vessel. The US Coast Guard required that the island provide lights visible at night from up to ½ mile from any direction.

(C) PHASE TWO

An expanded second phase of the wetland project is currently being considered. The goals of an expanded project would be to create a permanent floating wetland installation at a scale that might result in measurable change in local water quality and transform a section of the Charles where seawalls restrict public access to the river. The second phase of the wetland may involve the following elements that are expected to trigger additional review and permitting:

- Attachment to existing shores and sea-walls
- Expanded footprint
- Installation of piles
- Modification of existing pedestrian routes to provide public access.

Anticipated permit requirements include the following:

Agency/Permit	Comments
DCR	Considerable input is expected from DCR as the landowner, as well as additional permits required for a larger, more permanent installation.
Wetland Protection Act	Re-file form 3 for the expanded project.
Army Corps of Engineers	File for a general permit. No-longer eligible under SVF.
MEPA	MEPA may be triggered by: 11.03(a)2. “Alterations requiring a variance in accordance with the Wetlands Protection Act.” 11.03(b)1.b. “Alteration of 500 or more linear feet of bank along a fish run or inland bank”
Chapter 91	Expanded application for Waterways License.