



FREQUENTLY ASKED QUESTIONS

Why is CRC undertaking this project?

Based on recent inspections, the Office of Dam Safety (ODS) has determined that the dam is Structurally Deficient and in Unsafe condition. ODS has issued a Certificate of Non-Compliance and a Dam Safety Order to the dam owners who are required to bring the dam into compliance with Massachusetts dams safety regulations by repairing, breaching, or removing it.

History and Background of the Dam

The D.F. Riley Grist Mill Dam is located in Hatfield, MA. In 1661, a dam was first built at this location to help power grist mills. After manufacturing various products, including shotguns, the mill was rebuilt in 1881 when the existing dam and buildings were constructed. The dam was called the D.F. Riley Grist Mill Dam, named after the owner from 1935 to 1965, Daniel Riley. It was later renamed the Advocate Dam after the local newspaper, which was printed there during the 1980s. Shortly after purchasing the Old Mill Inn in 2020, the current owners began receiving letters from the Office of Dam Safety requiring that they repair or remove the dam, and in 2023 they called Connecticut River Conservancy for help with removal. As part of the project, we will be developing signage or a kiosk to document the history of the dam and hope to erect it near the rehabilitated pedestrian bridge for visitors to learn more about the history of the area.

Responsibilities of Dam Ownership

The private dam owners are responsible for all costs associated with liability, operation, and maintenance of the D.F. Riley Grist Mill Dam. The Massachusetts Office of Dam Safety requires regular inspections by a qualified engineer to ensure the dam is in safe operating condition. If deficiencies are identified, the owners are required to resolve them as necessary to bring the dam into compliance with dam safety standards. See <https://www.mass.gov/regulations/302-CMR-1000-dam-safety> for more details.

Ownership and Safety

Who owns the dam?

The owners are the Old Mill Inn and Mill River Storage who own the dam abutments.

What is the issue with the dam?

Recent inspections by qualified dam engineers document loss of stone, concrete, and brick from abutments; leaking through abutments; spalling of the concrete on the spillway; and no operable low-level outlet for lowering the impoundment to facilitate inspections or repairs. Inspection reports are public information and can be requested from ODS.

Why is the dam dangerous?

Based on recent inspections, ODS has determined that the dam is structurally deficient and in Unsafe condition. ODS has issued a Certificate of Non-Compliance and a Dam Safety Order to the dam owners who are required to bring the dam into compliance with Massachusetts dams safety regulations by repairing, breaching, or removing it.

Why are the owners pursuing removal?

ODS requires the owners to take action. Due to the high cost of the project and the availability of funds for removal, the owners have elected to pursue removal. Removing the dam will eliminate a safety hazard, ongoing maintenance costs, and the liability burden on the owners. In addition, dam removal will improve water quality and open miles of habitat for fish and other critters.

Liability: Dam owners are responsible for all liability and risks created by the dam, including damages if the dam were to fail. Removing the dam will reduce upstream flooding and eliminate any risk of a dam failure causing a flood downstream.

Operation and Maintenance: The owners are required to pay for a suite of annual costs for upkeep including maintenance, inspection, and permitting. Recent inspections identified multiple deficiencies. ODS has required the dam be repaired or removed. The cost of repair given the condition of the dam will be at least as much as removal and there are no federal or state grant funds available for repair of a dam that no longer serves any practical function.

Ecological Health: Removal will restore full aquatic access to the Mill River along 91 miles of mainstem and tributary streams in the Mill River watershed for a number of migratory fish species, many of which have severely depleted populations. It will also restore natural river processes of flow and sediment transport. The dam causes an unnaturally ponded section of the river upstream of the dam. This more stagnant water accumulates sediment, is warmer than in free-flowing reaches of the river, and experiences reduced dissolved oxygen concentrations during much of the year.

Why is the dam an issue now and why wasn't the problem addressed sooner?

Inspections of the dam have flagged deficiencies since at least 2019. The Dam Safety Order was issued to the owners in July 2021, which sets out requirements for continued inspections and bringing the dam into compliance through repair, breach, or removal by September 2026. Although the owners were looking for solutions prior to receiving the Order, it has now become imperative that the owners take action or face fines.

What about installing hydropower on the dam?

The owners have explored the option of hydropower and have spoken with a vendor who advised against it because the cost would outweigh the benefits. Installing hydropower would be very costly because it would require repairing the dam first and then installing the power generation facilities.

Were alternatives to dam removal considered?

Alternatives, such as no action, full or partial dam removal, have been considered. No action is not an option due to the requirements of ODS. The partial removal explored in a 2019 preliminary design report was deemed aesthetically displeasing for the Old Mill Inn visitors as well as insufficient to meet fish passage goals.

What if the town takes ownership and fixes the dam?

The dam owners previously offered the dam to the Town, but the Town wasn't interested in owning it.

What is the extent of the concrete at the dam?

The height of the concrete above the bedrock is approximately 10 feet. Survey will provide us with a better idea of the concrete/bedrock interface on the downstream face of the dam. The full extent of concrete and depth to bedrock behind the dam will be investigated as part of the bathymetric survey, although some details won't be known until the impoundment is drawn down during removal.

Water Levels

Will dam removal affect nearby domestic wells?

Most residences in the vicinity of the impoundment are on Town water and will not be affected. We will investigate potential impacts on the limited number of domestic wells in the vicinity of the impoundment as a part of the current study. If adverse impacts are anticipated, we will work with the affected landowners to find a solution.

What about irrigation? If we lower water levels, will we affect the aquifer and wells used for irrigation?

Impacts on groundwater levels would be local to the river and would not be regional in nature. Deep wells drilled into the bedrock aquifer will not be affected. We will be investigating potential impacts on shallow irrigation wells and surface water extraction in the vicinity of the impoundment as a part of the current study. If adverse impacts are anticipated, we will work with the affected landowners to find a solution.

Where will the well data and information on impacts come from?

Tighe & Bond will obtain well data from the state and Town as well as speak with local landowners. Potential well impacts will be assessed based on well depths in relation to the estimated water level in the impoundment following dam removal.

Is CRC coordinating with NRCS? Local agricultural landowners work with NRCS regularly and share information about water use.

CRC has contacted NRCS. NRCS does not monitor surface water withdrawals, but they are willing to be a resource about agricultural water use as needed.

What is the extent of the impoundment? What volume of water is being held back by the dam?

We will use hydraulic modeling to determine the upstream extent of the impoundment and evaluate the potential impacts of dam removal.

How far upstream will the effects of dam removal go?

We are currently collecting survey information and will use that along with hydraulic modeling to predict the upstream extent of impacts on water levels in the impoundment.

What about potential pollution in the impoundment? Will it be released when the dam is removed?

Sediment management is a large part of dam removal design. We are testing the sediment in the impoundment as a part of this study and then will work with the Massachusetts Department of Environmental Protection (MassDEP) to develop a sediment management plan. Sediment management options that are considered in dam removal are passive downstream release, excavation and offsite disposal, excavation and on-site reuse, or some combination. Passive release is not typically a feasible option if sediment contains contaminants. The sediment management approach that is approved by MassDEP will be incorporated into the project designs and written into the permits for compliance by the contractor. At this site, it is expected that a lot of the impounded sediment will be stabilized

in place through revegetation. Vegetation often starts taking hold in former impoundments within one growing season.

How will dam removal affect flooding?

Like the vast majority of dams in Massachusetts, the D.F. Riley Grist Mill Dam was not constructed or operated for flood control purposes. It is a run-of-river dam, meaning that it does not store water as flood levels rise (i.e., inflow equals outflow) and therefore its removal is not expected to increase downstream flood risk. The dam does, however, have detrimental effects on flood risk in its current state because it artificially raises upstream water-surface elevations and creates a risk of downstream flooding in the event of a dam failure.

To address concerns about flooding, previous feasibility studies assessed the potential impacts of dam removal on flows and water-surface elevations. One study found that dam removal has a minimal effect on downstream flood flows and a negligible effect on downstream flood levels and flood flow velocities. Another study found that normal water-surface elevations in the first 0.6-mile upstream of the dam will decrease by approximately 6.7 feet following dam removal. Farther upstream, the drop in normal water-surface elevations is expected to be less severe (approximately 1.6 feet or less). In summary, flood risk downstream of the dam is expected to remain unchanged and flood risk upstream of the dam is expected to be reduced.

How will the project affect my property value?

Property values have not been negatively impacted by CRC's previous dam removal projects. The Massachusetts Division of Ecological Restoration commissioned a study to evaluate the economic and community impacts of dam removal. The study can be accessed here:

<https://www.mass.gov/doc/phase-3-economic-community-benefits-from-stream-barrier-removal-projects-in-massachusetts>

Ecosystem and Wildlife

How will the project affect wildlife and existing habitat?

This is a run-of-river dam, so the hydrology will not change when the dam is removed. This means that currently, the volume of water flowing into the impoundment is the same as the volume of water flowing over the dam. The water in the impoundment appears to be slow moving because it is spread out across the impoundment versus passing through a narrow section at the dam. Upstream water levels will, however, reduce as a result of dam

removal. The amount of reduction is being investigated as a part of this study. We anticipate that the same types of habitats will remain (i.e., river channel, banks, and adjacent wetlands) but that the locations and extents of the habitats will evolve. Because the same types of habitats will remain as are currently present, it is expected that the same types of wildlife will continue to thrive along the river.

As a part of this project, we will be reaching out to the state's natural heritage office for records of species that should be shown extra consideration in the design and construction process. We will know more about the potential changes to wetland extents and thus habitats and wildlife once the current study is completed.

What will happen to the wildlife (muskrats, otters, coyotes, foxes, and other mammals) that rely on wetlands. Where does the Wetland Protection Act come in?

We expect that mammals currently utilizing the area will continue to be present. Mammals can adjust to changes in wetland extents and locations and will find the habitats that support their needs. Dam removal will be permitted as an ecological restoration project and will comply with the requirements of the Wetlands Protection Act. Environmental permitting will be undertaken in the next phase of the project.

What will happen to the endangered freshwater mussel species that is present in the impoundment?

The project partners are aware of potential impacts to freshwater mussel populations and have engaged a specialist to evaluate existing populations and develop a management plan. MassWildlife is involved with the project and is providing guidance for this effort.

Will migratory fish return after dam removal?

The D.F. Riley Grist Mill is the downstream-most dam on the Mill River and a barrier to migratory species. Migratory fishes typically begin utilizing upstream habitat soon after dam removal (often in the first year). Access to more spawning and rearing habitat is likely to result in larger populations over a matter of years to decades, as demonstrated in other dam removal projects.

What are diadromous fish and why are dams so problematic for them?

A diadromous fish is a fish that must move between fresh and saltwater to complete its life cycle. Moving between these environments is very difficult on their bodies, and they typically have a limited timeframe to make that journey. Because of this, the delay at a dam or a sequence of dams with fishways can cause as fish search for the fishway entrance or

make multiple attempts to ascend or descend can have real adverse effects on a population.

Because of this fascinating life history, diadromous fishes are especially vulnerable to infrastructure like dams and culverts. To have viable populations of diadromous fish, they need to get in and out of rivers and ponds quickly and safely in order to escape predation and other outside environmental threats.

Has the Hatfield Conservation Commission been consulted about the project?

The Conservation Commission will be involved in the permitting process. Public hearings will take place as a part of permitting, and CRC is planning additional community events. The Town is included in monthly progress meetings.

How will invasives be managed?

The contractor will be responsible for invasives control and management. Requirements will be included in the project specifications provided to the contractor and in permit conditions.

What will the river look like after dam removal?

As part of the dam removal project, the stream channel through the former dam location will be reconstructed, and the banks planted with native riparian vegetation. A natural bedrock cascade will remain at the former dam location. It is expected that the channel through the former impoundment will remain sinuous or form a sinuous network of channels. Newly exposed low-lying areas adjacent to the channel will naturally revegetate. Within a few years of dam removal, the former impoundment is expected to look like the natural reaches of the Mill River upstream and downstream of the site.

Infrastructure, Erosion, Land Use

What are the implications for surrounding infrastructure and buildings?

The current design phase involves a visual assessment of local infrastructure and buildings and an assessment of the potential impacts of dam removal on these structures, including the Old Mill Inn, the historic pedestrian bridge owned by the Town of Hatfield, the Mill River storage units and the Prospect Street Bridge.

What changes to the river geometry are expected? Will bank erosion occur?

The primary meandering, deep flow path through the impoundment, which you can see on Google Earth, is likely to remain the same following dam removal. Hydraulic modeling results for the scenario where the dam is removed will provide information on flow

velocities, shear stresses, and thus the potential for bank erosion. The project engineers (Tighe & Bond) will evaluate the need for bank protection measures in sensitive locations, and these will be included in the design as necessary.

Will people be able to develop on land in the former impoundment that used to be wetlands?

Publicly available parcel information shows that existing wetlands, except for the river channel, are parts of privately owned parcels. No open space restrictions appear to exist except at the Great Swamp MWA near the Interstate 91 bridge. Land development on private property is subject to local regulations.

How have other similar dam removal projects turned out?

There are many examples of dam removals in Massachusetts and throughout the northeast where residents are very happy with the results. Some examples are the Exeter Great Dam Removal (Exeter, NH) and the Shawsheen (Andover, MA) and Mill River (Taunton, MA) dam removal projects. These projects retained the natural beauty of the riverine environment, maintained river and wetland habitats, and supported native wildlife.

Project Costs

What will dam removal cost?

Dam removal is expected to cost \$1 to 2 million. Rehabilitation would cost more because the existing dam would need to be removed and rebuilt, and the owners would be liable for inspections and future maintenance and repairs. Grant funding is available for the removal of dams that are no longer serving their intended functions, and CRC is committed to applying for grants to pay for this project. On the other hand, there are no sources of grant funding for repairing dams that no longer serve a function. Assuming grant funding is secured, construction of the dam removal project is expected to start in 2028.

Who pays Tighe & Bond?

CRC has contracted with Tighe & Bond for permit-level designs and is paying them with grant funds secured specifically for engineering design.

Permits

What permits are needed for the project?

Dam removal requires a rigorous permitting process. Below is a list of regulatory reviews and permits that are likely to be required before construction/ removal can begin.

Federal Regulatory Review

- US Army Corps of Engineers Pre-Construction Notification
- National Historic Preservation Act Consultation and Memorandum of Agreement (also involves state and local review)

Commonwealth of Massachusetts Regulatory Review

- MA Environmental Policy Act (MEPA) Notice of an Ecological Restoration Project
- MA Department of Environmental Protection (DEP) Waterways Program Dredge Permit
- Water Quality Program Certification
- MA Department of Conservation & Recreation (DCR) Dam Safety Program Permit

Municipal Regulatory Review - Town of Hatfield

- Ecological Restoration Order of Conditions from the Conservation Commission

Adapted from Ipswich Mills Dam Removal Project, Frequently Asked Questions (<https://ipswichmillsdam.com/faq/>), Ipswich River Watershed Association.