Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Wheelwright Pond Dam Removal Project**		
Street Address: **Mill Street (Hardwick)**		
Municipality: **Hardwick and New Braintree**		Watershed: **Chicopee**
Universal Transverse Mercator Coordinates: **Zone 18T E 735805.26, N 4692876.78**		Latitude: **42.352418** Longitude: **-72.136976**
Estimated commencement date: **Aug. 2022**		Estimated completion date: **June 2026**
Project Type: **Dam Removal**		Status of project design: **Dam Removal 95%complete** **MassCentral Rail Trail Bridge: 25% Complete** **RJ McDonald Mitigation: 75% Complete**
Proponent: **Raitto Industrial Park, Inc.**		
Street Address: **36 Mill Street**		
Municipality: **Wheelwright**	State: **MA**	Zip Code: **01094**
Name of Contact Person: **Kristin Dippold**		
Firm/Agency: **Tighe & Bond, Inc.**	Street Address: **1 University Ave**	
Municipality: **Westwood**	State: **MA**	Zip Code: **02090**
Phone: **(814) 335-0763** Fax: **(413) 562-5317**		E-mail: **KDippold@tighebond.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☒**Yes** ☐No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☒**Yes** ☐No
a Special Review Procedure? (see 301CMR 11.09) ☒**Yes** ☐No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☒**Yes** ☐No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☒No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

ENF and Mandatory EIR

- **301 CMR 11.03(3)(a)(4): structural alteration of an existing dam that causes any decrease in impoundment capacity**
- **301 CMR 11.03(1)(a): alteration of one or more acres of bordering vegetated wetland;**
- **301 CMR 11.03(3)(a)(1)(b): alteration of ten or more acres of any other wetlands**

ENF and Other MEPA Review if the Secretary so Requires

- **301 CMR 11.03(3)(b)(1)(b): alternation of 500 or more linear feet of inland bank**
- **301 CMR 11.03(3)(b)(1)(d): alternation of >5,000 sf of bordering vegetated wetlands**
- **301 CMR 11.03(3)(b)(1)(f): alternation of >1/2 acres of any other wetland (LUW, BLSF, Riverfront Area)**

Which State Agency Permits will the project require?

- **Chapter 253 Dam Safety Permit (MassDCR)**
- **Section 401 Water Quality Certification (MassDEP)**
- **Wetlands Protection Act Order of Conditions (MassDEP)**
- **Waterways Chapter 91 License (MassDEP)**

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:
EEA Dam & Seawall Repair and Removal Fund: $75,000
MassDER Priority project funding: $48,000 (FY21)

Summary of Project Size & Environmental Impacts	**Existing**	**Change**	**Total**
LAND			
Total site acreage	300 acres +/-		
New acres of land altered		75 acres +/-	
Acres of impervious area	2.5 acres +/-	No change	2.5 acres +/-
Square feet of new bordering vegetated wetlands alteration		1,564,000 square feet+/-	
Square feet of new other wetland alteration		1,700,000 square feet+/-	
Acres of new non-water dependent use of tidelands or waterways		N/A	
STRUCTURES			
Gross square footage	**N/A**	**N/A**	**N/A**
Number of housing units	**N/A**	**N/A**	**N/A**
Maximum height (feet)	**N/A**	**N/A**	**N/A**
TRANSPORTATION			
Vehicle trips per day	**N/A**	**N/A**	**N/A**
Parking spaces	**N/A**	**N/A**	**N/A**
WASTEWATER			
Water Use (Gallons per day)	**N/A**	**N/A**	**N/A**
Water withdrawal (GPD)	**N/A**	**N/A**	**N/A**
Wastewater generation/treatment (GPD)	**N/A**	**N/A**	**N/A**
Length of water mains (miles)	**N/A**	**N/A**	**N/A**
Length of sewer mains (miles)	**N/A**	**N/A**	**N/A**

Has this project been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

Has any project on this site been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site

The Wheelwright Pond Dam is a run-of-river dam located on the Ware River between Hardwick and New Braintree, Massachusetts.

The dam was associated with an adjacent mill and is located approximately 3.1 river-miles downstream of Wheelwright Road (Route 32) in Ware and approximately 1.8 river-miles upstream of Hardwick Road in Hardwick and New Braintree. The Ware River flows through Worcester and Hampden County, and joins with the Quaboag River in Palmer to form the Chicopee River. The Chicopee River is the largest single tributary to the Connecticut River. The drainage area to Wheelwright Pond Dam is approximately 129 square miles and is primarily composed of forested areas. The U.S. Geological Survey (USGS) StreamStats application shows that less than 10-percent of the drainage area is composed of developed (urban) land as defined by the 2011 National Land Cover Database (2011) (the dataset used by StreamStats), and approximately 10-percent of the drainage area is composed of wetlands.

In the area of the dam, an upstream gravel mining and washing business (R. J. McDonald, Inc.) draws water from the impoundment formed by the dam. A railroad bridge crosses the river approximately 2.8 miles upstream from the dam, and Wheelwright Road (Route 32) crosses the river upstream from the railroad bridge, approximately 3.1 miles upstream from the dam. In between RJ McDonald and the railroad bridge, the river corridor is surrounded by forest and wetland areas.

Barre Falls Dam (MA00962) in Hubbardston, Massachusetts, is located on the Ware River approximately 10 miles upstream of Wheelwright Pond Dam. Barre Falls Dam is a U.S. Army Corps of Engineers (USACE) flood control dam that "substantially reduces flooding along the Ware, Chicopee, and Connecticut Rivers"[1]. The closest dam located upstream of Wheelwright Pond Dam along the Ware River is South Barre Mill Pond Dam (MA00091) in Barre, Massachusetts, located approximately 4.5 miles upstream of Wheelwright Pond Dam. The closest downstream dam on the Ware River is the Ware Industries Upper Dam (MA00594) in Ware, Massachusetts, located approximately nine (9) miles downstream of Wheelwright Pond Dam. Wheelwright Pond Dam does not affect flood levels or operations at the neighboring dams.

The dam is surrounded by the remains of the former mill complex at the right abutment on the west side, and the clearing for the runway of the Tanner-Hiller Airport is located on the east side. The dam is a significant obstruction on a particularly scenic and undeveloped section of the Ware River. The impoundment extends upstream from the dam approximately 2.5 miles, and immediately downstream from the dam the river is artificially wide to accommodate discharges from the spillway. Although the impoundment is narrow, the presence of the dam floods a portion of what would be surrounding floodplain and wetlands, including former oxbows, and separates stream segments that would total approximately 130 miles of connected river corridor and habitat. Removal of the dam would serve to benefit ecological communities, state-listed special concern species, and human recreation.

The dam is also deteriorated; it was inspected and rated in Poor condition during a required dam safety inspection as long ago as 2006. The dam owner began compliance with subsequent dam safety orders, including having performed a Phase II inspection completed in 2009-2010. Although the dam has subsequently been found in marginally improved condition, the dam owner is not financially able to implement needed repairs.

In 2018, given the significantly important natural resources along the Ware River near the project site and the potential for restoring ecological processes impacted by the dam, the Massachusetts Department of Fish and Game Division of Ecological Restoration (MassDER) selected removal of the Wheelwright Pond Dam as a Priority Project. A team of project partners with shared goals, including MassDER, the East Quabbin Land Trust (EQLT), and the dam owner (Riatto Industrial Park, Inc.), subsequently assembled.

[1] www.nae.usace.army.mil/Missions/Civil-Works/Flood-Risk-Management/Massachusetts/Barre-Falls/

In addition to ecological restoration and public safety benefits through dam removal, the project partners seek to increase recreational opportunities by developing a new river crossing for the MassCentral Rail Trail, which will provide a critical link between Central and Western Massachusetts. Successful accomplishment of these goals also requires that adverse impacts to infrastructure that have developed around the impoundment be appropriately mitigated.

This protect partner group, led by MassDER, has worked to identify resources of concern that may be adversely impacted by the dam removal and develop strategies to avoid, minimize, or mitigate these impacts so that the project can proceed without significant adverse impacts.

Please refer to the EENF narrative for additional project details.

Describe the proposed project and its programmatic and physical elements:

This run-of-river dam consists of several distinct components, with a total length of approximately 500 feet, and a maximum structural height of approximately 17 feet. Beginning at the right (west) abutment, the primary spillway extends approximately 75 across the river, then angles approximately 22 degrees upstream, and then continues left approximately 65 feet. This section of spillway is ogee in shape and approximately 10 feet in height. The date of construction is unknown, although design or construction information is shown on drawings prepared by the Worcester County Commissioners dated March 8, 1921. These drawings show that the spillway is constructed of cyclopean concrete and that a combination of wood and steel sheeting provides seepage cut-off below the spillway.

An apron of granite blocks is located downstream of the spillway, and the 1921 drawings show remnants of a timber crib dam upstream from the ogee spillway section. At the left end of the spillway is a concrete outlet structure with two 4-foot by 4-foot openings, once controlled by rack-and-pinion type operators, followed by a large pier that separates the spillway section from the floodgate section of the spillway. This spillway section consists of two pairs of three bays, each six (6) feet eight (8) inches wide, separated by a smaller concrete pier. The bays contained wooden stoplogs that could be remotely dislodged from their supports, opening these floodgates to release significantly more water during a large storm. The timber spillway section was proposed in 1949 and likely constructed in the early 1950s. The river channel was significantly widened to accommodate this timber spillway section.

The dam includes an earthen embankment extending 110 feet further to the left from the timber spillway section to an auxiliary spillway. The spillway has a concrete weir that is 40 feet long and is shown on the same 1921 drawings as the primary spillway. The embankment continues to the left (east) abutment beyond the auxiliary spillway another 150 feet.

The adjacent former mill complex houses abandoned intake structures where water was once diverted to the mill through an open tailrace, with the flow controlled by two large slide gates. Two conduits, also now abandoned, reportedly pass through this same area, and through the old tailrace. The intake structure and gate controls for the conduits are located approximately 150 feet upstream of the dam in an abandoned and collapsing gatehouse near the right (west) bank of the river. It has been reported that the gates have been closed and the gatehouse boarded up since the late 1970's. Information regarding the intakes and gate house could not be verified in the field for this project.

Wheelwright Pond Dam has a maximum structural height of approximately 17 feet and a maximum storage capacity reported in past inspection reports as 250 acre-feet (af). In accordance with Department of Conservation and Recreation Office of Dam Safety classification, under Commonwealth of Massachusetts Dam Safety Rules and Regulations stated in 302 CMR 10.00 as amended by Chapter 330 of the Acts of 2002, Wheelwright Pond Dam is an Intermediate size structure. It was reclassified in 2013 as a Low (Class III) hazard potential dam from Significant-hazard potential.

The hydraulic height of the dam, which is the elevation difference from the downstream channel to crest of the dam's hydraulic control structure, is approximately 10 feet. This height is equivalent to the depth of water impounded under normal conditions.

The intent of the project is to remove Wheelwright Pond Dam sufficiently to return the Ware River to a free-flowing state. The project partners currently anticipate that dam removal will begin with a gradual pond drawdown, taking several years to bring the impoundment down to a free-flowing

level prior to demolishing the dam. The gradual, extended drawdown approach was developed in consultation with MassWildlife and NHESP to minimize potential impacts to rare and sensitive species. The gradual drawdown will allow:

- **Gradual migration of slow-moving, water-dependent species as they adapt to changing water levels;**
- **Monitoring of water levels within public water supply wells near the river corridor to evaluate whether groundwater changes are consisted with those anticipated by the project team; and**
- **Gradual redistribution of impounded sediment into downstream areas.**

The drawdown will occur by removing stoplog timbers from the dam's floodgates, which are located on river left of the dam's primary spillway. Permanent access will be constructed to this area from the abutting Tanner-Hiller Airport to allow a contractor to periodically remove stoplogs and keep the approach area free of debris during the extended drawdown period.

Once the drawdown is complete, the demolition of the dam will occur, including complete removal of the dam's primary spillway, to a width of approximately 125 feet, and to its full vertical extents, and removal of the remnants of the floodgates. Cofferdams will be used to isolate the work areas during these operations.

In tandem with the demolition, sediment that migrated to the dam during the drawdown period will be excavated and stabilized primarily on river left, upstream and downstream of the floodgates. Some sediment will be placed and stabilized on river right as well.

In parallel with the dam removal, the water supply to a gravel washing facility owned by R.J. McDonald will be maintained by creation of a new side channel leading from the river's main channel to the facility's pumping intake.

In the future, following the proposed project, a new pedestrian bridge will be constructed over the river downstream from the dam. The bridge will serve as a key east west connection for the Mass Central Rail Trail, which will ultimately connect Boston to Northampton and from there to Long Island Sound. Elements of the bridge requiring in-water work will be performed as part of the dam removal.

Please refer to the EENF narrative for additional project details.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

As the existing dam is in need of removal, off-site alternatives would not meet project goals and were not considered. Note where alternatives are listed the preferred alternative is underlined. On site alterative actions and methods were assessed, and generally include:

- **No Action Alternative – Continued river discontinuity, to the detriment of riverine and riparian species. Sediment would continue to migrate and ultimately, the dam would fail in an uncontrolled way, resulting in unplanned and unmonitored sediment discharge, impacting state-listed species, and leaving the RJ McDonald facility without a water supply. In order to avoid dam failure, repairs would need to be made and maintenance would need to occur in the interim.**
- **Breach Width Alternatives – Each of the alternatives reviewed would yield a non-jurisdictional dam relative to the Massachusetts Office of Dam Safety criteria since no water would be impounded under normal or flood-flow conditions. Several widths were evaluated:**
    - **Bankfull Breach Width – would pass normal flows, but not allow for creation of off channel overbank areas.**
    - **90 ft – A breach width of 90 feet would meet project goals, but a wider breach has been selected as the preferred alternative to promote additional river restoration.**
    - **<u>Full Breach</u> (preferred) – Would provide free movement of aquatic organisms and allow**

continuity of proposed bank restoration treatments.

Sediment Reuse or Disposal alternatives considered include:

- **Unrestricted In-stream Management – Although one of the ultimate goals of dam removal is the restoration of natural sediment processes within a river system, given the presence of state-listed species that may be impacted by uncontrolled sediment movement, this alternative is not preferred.**
- **<u>Gradual Draw-down with In-stream Management</u> (preferred) – This alternative is preferred since it will allow for deliberate drawdown and monitoring of sediment movement, species habitat, and water levels in the Wheelwright Water District (WWD) public water supply wells that are located near the impoundment.**
- **Grade Control – the relatively uniform distribution of sediment upstream from Wheelwright Pond Dam suggests that this alternative is infeasible; grade control would need to be established at a number of points between the dam and upstream end of the impoundment, which would be costly and result in significant environmental impacts. For these reasons, this alternative does not warrant further consideration.**
- **Dredging in advance of Dam Removal – Limited volumes of mechanical dredging and stabilization is anticipated to safely implement the dam removal. However, mechanical dredging of the total volume of mobile sediment from the affected length of the river in advance of the drawdown is not favored, since sediment deposits are relatively thin and diffuse throughout the upstream channel, and access to the river and sediment disposal would cause significant impacts.**

R.J. McDonald Water Supply alternatives considered include:

- **Installation of a New Groundwater Well – Installation of a new production well to supply the gravel washing facility was considered. It is not clear whether wells could meet facility supply needs and whether there would be an adverse impact on public water supplies.**
- **Northerly River Intake – this alternative is anticipated to be similar in cost compared to installation of a groundwater well and would likely cause greater direct disturbance to the river.**
- **<u>Southerly River Intake</u> (preferred) – This alternative is preferred by the property owner since it is consistent with their operations, and would create Bank, Land Under Water, and increase flood storage, although maintenance will be needed to maintain the supply.**

MassCentral Rail Trial Bridge connection alternatives considered include:

- **River Crossing at Dam – Multiple challenges including unstable building remnants, hazardous material, extreme engineering efforts, and service life of existing materials.**
- **Approximate Historical Alignment – No feasible way to align the rail trail through this area without impacting wetland resource areas, likely causing minor increases in flood elevations and encroaching on the floodway.**
- **<u>Short Span Crossing</u> – (preferred) Requires the shortest bridge span across the river and in turn should lead to lower overall initial construction costs and lower long term maintenance costs.**
- **Mill Street Crossing – This alternative is to cross the river upstream from the dam, from the end of Mill Street. It would involve a long span and a mixed traffic section of trail, which is not preferred.**

Please refer to the full expanded alternatives analysis as provided in the EENF narrative.

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The project has been designed to avoid, minimize, and mitigate environmental impacts associated with the proposed dam removal and other associated activities. Construction-period mitigation measures include ethe use of erosion and sediment controls, the use of coffer dams to isolate work,

and limiting footprints of work to the minimum necessary to meet project goals.

The project is anticipated to result in ecological benefits, including restoration to the scenic Ware River, reestablishing fish passage, and improvements in habitat value through dam removal.

Additional details are presented in the EENF narrative.

If the project is proposed to be constructed in phases, please describe each phase:

The removal of Wheelwright Pond Dam will require careful sequencing, both in terms of implementation of the related mitigation projects and in terms of the water control phasing for removal of the dam itself. The sequence below describes the overall sequencing approach. Note that the first item in each construction activity will involve notifying regulators and deployment of required erosion and sediment controls.

<u>Stage 1 – Preparation</u>

During this stage of the project, initial elements will be implemented to provide access, allow monitoring, and mitigate anticipated impacts. Elements include:

- **Deployment of water level sensors in WWD Wells #2 and #3 to collect groundwater and well level data prior to, during, and following the drawdown. Begin monitoring.**
- **Improve the access road from the Tanner-Hiller airport entrance down to the southwest end of the runway to allow its more frequent use.**
- **Clear an area at the southwest end of the airport runway to mitigate for the conversion of the access road surface, which is located in an area of state-listed species habitat. Grub stumps, grade, top dress with recovered topsoil, and seed with grassland seed mix.**
- **Construct the access causeway and culverts from the edge of the airport clearing to the floodgate section of the dam, and continue it to the south to allow for future sediment placement. Operations include:**
    - **Clearing trees, grubbing sumps, stripping topsoil**
    - **Excavating to footing elevations**
    - **Placing culverts and backfilling**
    - **Placing temporary riprap downstream from flood gates**
    - **Backfill and raise elevations to needed grades**
    - **Stabilize fill areas through loam, seed, and application of erosion control blankets or hydroseed with bonded fiber matrix**
- **Confirm location of underwater state-listed species habitat and adjust monitoring plan and locations if necessary.**
- **Perform initial monitoring of sediment depth and state-listed species habitat upstream and downstream of the dam following the Sediment Management Plan and subsequent coordination with NHESP.**

<u>Stage 2 – Dam Removal</u>

It is anticipated that dam removal and implementation of the R.J. McDonald water supply continuity projects will occur in parallel. However, they are presented separately, since they will be undertaken separately. The dam removal phasing presented below reflects the phasing shown on Sheet C103 of the dam removal drawings included in Appendix C.

Phase 1 – Remove Stoplogs to Lower Impoundment

During the first phase of Stage 2, stoplogs will be removed from the flood gate spillway to lower the impoundment elevation upstream of Wheelwright Pond Dam. This phase is not anticipated to

require water controls, and is anticipated to lower the impoundment water surface elevation during median flow conditions by approximately 10 feet. Stoplog removal will occur gradually to implement the selected sediment management option. A detailed breakdown of Phase 1 is provided below:

1. **Notify pertinent regulatory agencies of the construction schedule.**
2. **The contractor for this phase of the project will use the airport access route and access causeway to bring equipment to the area of the flood gates.**
3. **Excavate debris and sediment from immediately in front of the flood gates to allow for their safe removal. Place the excavated material on the upstream side of the embankment between the floodgates and the emergency spillway.**
4. **Remove the first increment of stoplogs from the floodgates. The targeted increment will be approximately 3 to 4 feet, subject to approval and coordination with NHESP. Stoplogs will be removed deliberately so as not to cause a rapid rise in the river downstream, which may require several days depending on river flows.**
5. **As the river adjusts to lower levels, monitor sediment movement and state-listed species habitat upstream and downstream of the dam following the Sediment Management Plan and subsequent coordination with NHESP.**
6. **Coordinate with WWD to determine whether groundwater levels are within expected ranges.**
7. **Verify that conditions are appropriate to initiate subsequent drawdown increment.**

a. **If yes, repeat steps 3 through 7 until the river is freely flowing through the floodgate opening.**

b. **If not, coordinate with project partners and regulatory community to determine appropriate next steps.**

8. **Once impoundment water levels have been reduced to the minimum level achievable with the floodgates, Phase 1 will be complete. The contractor may demobilize from the east side of the river, although access will be needed in future phases.**

Phase 2 – Dam Removal West Side of Dam (Concrete Spillway and Adjacent Areas)

The majority of demolition related to the Wheelwright Pond Dam removal will be performed during the second phase of construction. Phase 2 construction activities include breaching the concrete spillway and backfilling and plugging the west bank intake structure. During Phase 2 of construction, a temporary cofferdam will be placed upstream of the concrete spillway to maintain flow toward the stoplog spillway and to allow removal of the full vertical extents of the dam. Temporary cofferdams will also be placed downstream of the concrete spillway to prevent tailwater from backing up into the construction area. A detailed breakdown of Phase 2 is provided below:

1. **Establish access from the river right area at the end of Mill Street.**
    a. **Mobilize to the site, undertake temporary fence removal and limited clearing.**
    b. **Install construction entrance, compost filter tubes, and other BMPs required to access the concrete spillway.**
2. **Install temporary coffer dam upstream of the concrete spillway.**
3. **Install temporary coffer dam downstream of concrete spillway.**
4. **Excavate sediment from upstream of the concrete spillway in preparation for breaching the concrete dam. Backfill the intake structure with excess sediment until reaching an elevation of 571 NAVD88, and then use excess material to create the slope for the encapsulated soil lifts. Shift additional sediment out of the way of the work area.**
5. **Demolish concrete dam and timber crib dam to full vertical extents, including timber and steel piles. Cut and demolish concrete at a 1H:1V slope on river right and at the face of the large pier at river left.**
6. **Remove stone apron from stream bottom. Use surplus stones to fill void in building wall adjacent to spillway on downstream side.**

7. **Prepare to transition to Phase 3.**
8. **Relocate sediment to river right, still within the cofferdam established during this phase.**
9. **Remove downstream temporary coffer dam.**
10. **Remove upstream temporary coffer dam redirecting flow toward the breached dam.**
11. **Place erosion control blankets with loam and seed at former construction access road east of the staging area.**
12. **Restore staging area and access road west of the staging area to pre-construction conditions.**
13. **Demobilize west side of dam.**

Phase 3 – Dam Removal East Side of Dam (Stoplog Spillway)

The first portion of Phase 3 will be preparation to haul sediment to its reuse location on river left. Then, the components of the stoplog spillway remaining after Phase 1 will be removed. This will include removal of metal components of the spillway and the concrete pier separating spillway sections. A temporary cofferdam will be placed upstream of the stoplog spillway causing the Ware River to flow over the former concrete spillway. Transition from Phase 2 to Phase 3 will require additional planning during final design if sediment needs to be retained for on-site management. A detailed breakdown of Phase 3 is provided below:

1. **Relocate the Phase 2 upstream and downstream cofferdams to allow river flowage on the right side of the flood gate structure.**
2. **Place timber mats downstream of the stoplog spillway.**
3. **Demolish steel beams and vertical stoplog holders.**
4. **Demolish concrete pier located between stoplog sections.**
5. **Remove timber mats located downstream of the stoplog spillway.**
6. **Haul sediment from river right to river left. Some sediment will have been contained in an area protected within both the Phase 2 and Phase 3 cofferdams. Use access route and causeway constructed in Stage 1 to provide access for additional sediment movement. Place sediment starting from upstream and moving toward downstream of the former floodgate structure as shown on the drawings. If sediment requiring stabilization is less than anticipated, reduce height and downstream extents of fill. Construct stone toe with rootwads to resist erosion and reduce shear stresses.**
7. **Remove all cofferdams and temporary access.**
8. **Restore temporary staging areas and access roads to pre-construction conditions.**
9. **Demobilize from dam removal site.**

Alternative

Water control is left to the means and methods of a project contractor within the limits of a project, and it is important to allow flexibility. It may also be feasible to use the sluiceway on river right to control water during portions of construction, although there are some disadvantages to using this structure as the primary means of water control, including:

- **The inlets are smaller than the spillway at river left so the capacity is lower.**
- **The gates are opened upwards, with the opening forming at the bottom, so control of sediment discharge would be more difficult.**
- **The condition of the sluiceway walls are unknown and the gates are likely inoperable.**
- **The use of this structure draws river flows towards the main access point, which would make access more difficult.**

The structure may be used if desired by the contractor, provided that the contractor reviews

the condition of the structure and agrees to leave it in a condition acceptable to the owner upon completion of the project.

Stage 3 – R.J. McDonald Supply Continuity Construction

Construction of the side channel from the Ware River to maintain supply continuity to the R.J. McDonald facility will occur in tandem with Phase 1 of the dam removal stage. When each increment of water level reduction occurs, the new side channel to the existing intake will be deepened to maintain supply and provide storage. The first increment may require the use of matting to provide access over saturated exposed soils, but the existing river bottom adjacent to the facility is significantly higher in elevation than the main channel, so this area is likely to dewater and dry, facilitating future phases. A potential sequence of construction is as follows:

1. **Coordinate with project partners regarding regulatory notification for shared permits, if any, and notify other agencies administering separate permits.**
2. **Mobilize to site, clear access areas, and establish erosion and sediment controls.**
3. **Establish initial construction access route, using timber mats or similar if necessary.**
4. **Excavate side channel to first intermediate elevation, hauling sediment north to placement area.**
5. **Seed disturbed above-water areas that may lay unworked for more than 14 days.**
6. **Extend intake from new pump to interim elevation.**
7. **Remove initial access route.**
8. **Establish more permanent access routes once soils stabilize.**
9. **Excavate side channel to second intermediate elevation, hauling sediment north to placement area.**
10. **Seed disturbed above-water areas that may lay unworked for more than 14 days.**
11. **Extend intake from pump to final elevation.**
12. **Repeat steps 9 through 11 to final elevation increment.**
13. **Upon completion of the river drawdown, place stone toe and check dam. Seed remaining disturbed areas.**

Stage 4 – MassCentral Rail Trail Bridge

Installation of the MassCentral Rail Trail bridge may occur at any point following establishment of the access causeway from the airport. However, for coordination reasons, the potential for conflicting uses of overlapping areas would be reduced if the bridge construction occurred following dam removal activities. The following construction sequence is anticipated:

1. **Coordinate with project partners regarding regulatory notification for shared permits, if any, and notify other agencies administering separate permits.**
2. **Mobilize to site, clear access areas, including bridge assembly and crane staging locations, and establish erosion and sediment controls.**
3. **Construct abutments, including:**
    a. **Masonry repairs to the river right abutment, and install a new bridge seat.**
    b. **Retaining walls the on river left, including a proposed bridge seat.**
4. **Assemble bridge on river right.**
5. **Use cranes on river right and river left to ease bridge across river into position.**
6. **Install decking, railings, and other fittings.**
7. **Raise grades on either side to finish elevations. Install finished gravel surface.**
8. **Stabilize side slopes**